- 4 -

FACILITY REQUIREMENTS

4.1 INTRODUCTION

This chapter identifies facility recommendations and requirements to accommodate the forecasted level of demand at SBA. The recommendations and requirements reflect the analysis of demand from the aviation activity forecasts presented in **Chapter 2 - Aviation Activity Forecasts**. These recommendations and requirements are developed in coordination with SBA management and stakeholders and under the guidance of the Federal Aviation Administration (FAA) Advisory Circulars (AC) 150/5070-6B, *Airport Master Plans* (AC 150/5070-6B); AC 150/5300-13B, *Airport Design* (AC 150/5300-13B); and AC 150/5060-5, *Airport Capacity and Delay* (AC 150/5060-5).

This chapter is organized as follows:

- Airfield System Capacity
- Runway Length Analysis
- Commercial Passenger Facilities
- General Aviation Facilities
- Apron
- Cargo Facilities
- Support Facilities
- Access and Circulation
- Terminal Parking Needs – Horizon Year 2041
- Utilities and Electrical Needs
- Non-Aeronautical Properties
- Summary

The airport has three primary components – the airfield and surrounding airspace, the airside facilities, and the landside facilities. Each component contributes to the safe, efficient, and secure operation of the airport as whole, providing an integrated environment for passengers, air carriers, tenants, staff, and contractors.

The FAA's design standards, presented in a series of ACs, heavily influence the design and construction of airside facilities. The primary AC that addresses airfield design is AC 150/5300-13B, *Airport Design* (AC-13B).

An early step in reviewing an airport's long-term needs is to assess capacity and delay issues in order to provide direction of airfield planning. An airport's annual capacity, known as the Annual Service Volume (ASV), is the number of flight operations an airfield can accommodate during a year. Existing and forecast annual demand is compared with the ASV to determine the percentage capacity at which the airport is operating and to gauge the timing of future airfield capacity improvements. As annual demand approaches ASV, average delays increase. A typical goal is to construct a new runway before delays begin. These are the primary considerations for the airside facilities analyzed in this chapter.

Facilities that support airside facilities but are not part of the aircraft movement area, such as terminal buildings, some hangars, aprons, access roads, and parking facilities, are considered Landside Facilities. The airport has two major initiatives currently underway, a Terminal Improvement Project (TIP) and a general aviation (GA) redevelopment. These two projects have significant impacts on the airport's capacity, safety, and security. Facility requirements related to elements currently included in these two initiatives are covered in this chapter and integrated within the context of the master plan; however, considerable sections of data and analysis from these initiatives are not included in this section. An example of the data sections not included involves the landside circulation element that covers parking, roads, circulation, and long-term landside programming—highly detailed attributes related to this, and other landside elements, may be found in the Corgan - July 2023 Terminal Improvement Project Preferred Concept - Basis of Design) in **Appendix XX**. For the General Aviation Redevelopment project, additional information may be found within the FBO Redevelopment Report from Jacobs in **Appendix XX (PENDING DATA)**.

4.2 AIRFIELD SYSTEM CAPACITY

This section provides details of each analysis done to calculate the ASV, capacity, and delay at SBA for the planning period of 2021 to 2041.

4.2.1 Airfield Geometry

The airport has three runways and multiple taxiways to provide access around the airfield. The three runways are 7/25, 15L/33R, and 15R/33L. Runway 7/25 has an orientation of east to west and is the longest and widest of the three runways – 6,052 feet in length and 150 feet wide. Runway 7/25 has two parallel taxiways (Taxiway A, the only full-length parallel taxiway, and Taxiway B) and eight taxiways that connect to the runway (Taxiways A1, A3, A4, A5, B1, C, D, and E,).

Runways 15L/33R and 15R/33L are parallel runways that intersect Runway 7/25 in a northwest to southeast orientation and have 363 feet of separation between centerlines. Runway 15L/33R is 4,180 feet long and 75 feet wide. Runway 15R/33L is 4,184 feet long and 100 feet wide. Runway 15R/33L has a parallel taxiway to the west, Taxiway D (not a full-length parallel taxiway). Runway 15L/33R has a full-length parallel taxiway, Taxiway E. Taxiways B, C, D and H connect to both 15/33 runways. Taxiway F connects between Taxiways B and C. Taxiway G connects to Taxiway B. Taxiways F and G do not connect to any runways. Taxiways E1, E2, and E3 connect from Taxiway E to Runway 15L/33R.

4.2.2 Critical Aircraft

The existing critical aircraft at SBA is the Boeing 737-800, and the future critical aircraft is a newer Boeing 737-800 MAX model. These aircraft are both commercial passenger jets with an Airport Reference Code (ARC) of D-III. The critical aircraft definition is included in **Chapter 2 - Aviation Activity Forecast**. Airfield design uses D-III standards for Runway 7/25, associated taxiways, and other areas expected to be used by the 737-800 and 737-800 MAX aircraft.

Vector Airport Systems (VAS) is an active data collection platform in use at SBA. VAS uses active and passive data collection methods to develop a full complement of data for all aircraft operations occurring at SBA. One primary element of the VAS system is an array of camera installation sites that capture imagery of aircraft operations. The system operates 24 hours per day and captures an image of each passing aircraft. This imagery is post-processed and integrated with the secondary VAS elements, external data streams such as composite radar return, and FAA System Wide Information Management Data (SWIM). SWIM Flight Data Publication Service (SFDPS) provides en-route flight data to National Airspace System (NAS) data consumers. SFDPS allows consumers to receive real-time data for analytics, business processes, research, and other activities. These data are post-processed and sewn together to provide a full situational awareness of each operation.

Based on the system design deployed at SBA, the VAS captures every operation except touch and go operations. Tail numbers are used to report specific aircraft data such as type, weight, propulsion, and other parameters associated with the FAA master aircraft record. A user can query this data to determine accurate and high-fidelity data on aircraft types using the airport for both normal operating times during the day or times late at night during tower closure.

The previous SBA ALP lists the existing critical aircraft for Runways 15L/33R and 15R/33L as the Beech Baron 58, a B-I (Small) aircraft. Based on VAS data, a total of 719 operations were conducted by either A-II (Small) or B-II (Small) aircraft in 2021. These operations exceed the FAA's 500-operation threshold for determining the critical aircraft, and the crosswind runways will be designated as B-II (Small). Per AC 150/5300-13B, A-II (Small) and B-II (Small) share the same design matrix. An appropriate aircraft to represent the crosswind runways for the existing B-II (Small) design is the Cessna Citation CJ2. There is no forecasted change to the critical aircraft of the crosswind runways.

4.2.3 Airfield Demand / Capacity Analysis

The airfield demand/capacity analysis evaluates the ability of the airfield to handle the expected number of aircraft operations. Consideration is given to annual and peak demand.

4.2.3.1 Analysis of Annual Service Volume (ASV)

The Airport's ASV and hourly capacity are calculated using the methodology the Federal Aviation Administration (FAA) documented in AC 150/5060-5, *Airport Capacity and Delay*. Calculations using this method require the mix index and runway-use configuration. The mix index is an equation (C+3D) that determines the percentage of aircraft operations that have a Maximum Takeoff Weight (MTOW) over 12,500 pounds. C represents the percent of aircraft over 12,500 but under 300,000 pounds. D represents the percent of aircraft over 300,000 pounds. Data was downloaded from VAS to determine weight categories for operations based on MTOW. **Table 4-1** shows the summary of data from VAS.

Table 4-1: **Operation Weight Categories**

Weight Category (MTOW)	Total Operations	Percent of Operations
Operations <12,500 pounds	46,255	74.4%
C (≥12,500 pounds, ≤ 300,000 pounds)	15,914	25.6%
D (>300,000 pounds)	0	0%
Total Operations	62,169	100%

Source: SBA January to December 2021 VAS Operations Data

Based on operations data from VAS, 25.6 percent of operations fell within weight category C. This percentage of operations represents the 2021 base year mix index for SBA and was used to determine the ASV. While operations data from VAS does not equal the total operations at SBA for 2021, the data provides insight into the larger and heavier aircraft that operate at SBA. The ASV mix calculation is shown in **Table 4-2**.

Table 4-2: **2021 ASV Mix Index Calculation**

Annual Service Volume Factors	Total Operations	Percent of Operations
Operations <12,500 pounds	76,944	74.4%
C (≥12,500 pounds, ≤ 300,000 pounds)	26,475	25.6%
D (>300,000 pounds)	0	0%
Total Operations	103,419	100%
Mix Index (C+3D)	26,475	25.6%

Source: SBA 2021 Operations Data

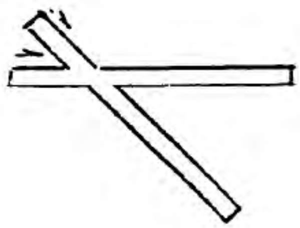
VAS data was extrapolated out to equal the 2021 base year operations forecast. Out of the 26,475 operations, the types of operations and totals for each can be broken out into the following categories:

- 10,328 Air Carrier Operations (SBA Forecast Summary)
- 12,311 Air Taxi Operations (SBA Forecast Summary)
- 3,836 General Aviation Operations (Remaining operations after accounting for Air Carrier and Air Taxi)

With the mix index calculated, the runway-use configuration can be determined from AC 150-5060-5 by selecting a configuration model that most closely matches the study airport. Based on the configuration of intersecting runways, the proper runway-use configuration to use for SBA is configuration 9. Configuration 10 is not used because the centerline separation between the 15/33 runways does not fall between 700 feet to 2,499 feet. Using the mix index and runway Configuration 9, the hourly capacity for operations per hour, and ASV can be determined (AC 150-5060-5). **Figure 4-1** below shows the runway-use configuration.

Figure 4-1: **Runway-use Configuration 9**

9.



0 to 20	98	59	230,000
21 to **50**	77	**57**	200,000
51 to 80	77	56	**215,000**
81 to 120	76	59	**225,000**
121 to 180	72	60	265,000

Source: AC 150-5060-5, Figure 2-1

The mix index of 25.6 percent falls into the 21 to 50 percent mix index category. Runway-use configuration 9 calculations yield the following results:

- Hourly Capacity of 77 VFR Operations Per Hour
- Hourly Capacity of 57 IFR Operations Per Hour
- ASV of 200,000 operations Per Year

When determining the mix index for the 2041 forecast year, air carrier and air taxi operations are projected to make up 27 percent of operations based on the SBA forecast summary. VAS data was not extrapolated out for the 2041 forecast year because the air carrier and air taxi operations were greater than 25.6 percent, meaning the mix index will remain within the 21 to 50 percent category. This means the future ASV, VFR hourly capacity, and IFR hourly capacity will remain the same.

To confirm that the ASV output related to **Figure 4-1** above is accurate, two assumptions in the ASV calculation method need to be evaluated:

- IFR Weather Conditions
- Runway-use Configuration

4.2.3.2 IFR Weather Conditions

The ASV calculations mentioned above (**Section 2.3.1**) assume that IFR weather conditions occur roughly 10 percent (or less) of the time. **Table 4-3** shows wind data observation totals for SBA. Based on wind observation totals, IFR conditions happen 9.2 percent of the time. This satisfies the ASV calculation method assumptions.

Table 4-3: SBA Wind Observations

Weather Conditions	Total Observations	Percent of Observations
All Weather	100,430	49.90%
IFR	18,522	9.20%
VFR	82,329	40,90%
Total Observations	201,281	100%

Source: ADIP, SBA Wind Observations 2011 - 2020

Runway-use Configuration

The ASV calculations mentioned above (**Section 2.3.1**) assume that roughly 80 percent of the time the airport is operated with the runway-use configuration that produces the greatest hourly capacity. At SBA, aircraft operate on all three runways annually and there is no information for runway closures that would change the runway-use configuration for SBA to be below 80 percent of the time. This satisfies the ASV calculation method assumptions.

With both assumptions satisfied, the ASV based on runway-use configuration 9 is accurate for SBA.

4.2.3.3 Analysis of Capacity

As mentioned in the previous section, SBA falls into runway-use configuration 9, resulting in hourly capacities of 77 VFR and 57 IFR operations per hour. To confirm that these hourly capacities are accurate for SBA, six capacity assumptions from AC 150/5060-5 need to be evaluated. These six assumptions are:

- Runway-use Configuration
- Percent Arrivals
- Percent Touch and Go's
- Taxiways
- Airspace Limitations
- Runway Instrumentation

Runway-use Configuration

The configuration for SBA is one of AC 150/5060-5's predetermined runway-use configurations (number 9) and satisfies the assumption relating to hourly capacity in the AC.

Percent Arrivals

SBA has scheduled air carrier operations and air taxi operations. There are currently 202 based aircraft – aircraft that depart and return to the airport. Vector data also shows arrivals and departures being a near 50-percent split. Based on these factors, we can assume that arrivals equal departures and this satisfies the assumption relating to hourly capacity in the AC.

Percent Touch and Go's

There were a total of 36,695 local operations for SBA in 2021, and this segment of operations is forecasted to increase to 38,440 operations in 2041. All local operations are assumed to be touch-and-go operations. Touch-and-go operations make up approximately 35 percent of operations in 2021 and approximately 33 percent of operations in 2041. Touch-and-go operations for 2021 to 2041 fall within the 0 to 40 percent range for the 21 to 50 percent mix index category. This satisfies the assumption relating to hourly capacity in the AC.

Taxiways

Runways 7/25 and 15L/33R both have full-length parallel taxiways with ample entrance and exit taxiways. Runway 15R/33L has a partial-length parallel taxiway, but due to the runway-use configuration for SBA falling into configuration 9, the other runways should only be considered in this assumption. The airfield does have multiple points where taxiway crossings can be problematic due to the close separation of the 15/33 runways, but SBA has an ATCT that directs aircraft movement on the airfield. These factors satisfy the assumption relating to hourly capacity in the AC.

Airspace Limitations

Mountains to the north of SBA sometimes cause ATC to change landing clearances for aircraft during times of high traffic. However, the mountains do not limit aircraft operating at SBA. There is no curfew in effect at SBA. This satisfies the assumption relating to hourly capacity in the AC

Runway Instrumentation

The FAA specifies aircraft separation criteria and operational procedures based on aircraft size, availability of radar in the terminal area, availability of instrument procedures, and the presence of an ATCT. The presence of these facilities and procedures improves airfield capacity as traffic can be managed more efficiently. Runway 7/25 is equipped with an Instrument Landing System (ILS), and SBA has both an ATCT and radar. The ATCT operates between the hours of 6 A.M. to 11 P.M. This satisfies the assumption relating to hourly capacity in the AC.

With each of the six assumptions satisfied, the hourly capacities based on runway-use configuration 9 are accurate for SBA.

Recommendations

SBA is currently operating at 52 percent of its annual capacity. SBA is forecasted to handle 116,887 operations in 2041. The increase in operations will result in SBA operating at 58 percent of annual capacity. No major airfield change will be required for airport capacity purposes.

4.2.3.4 Analysis of Delay

Per AC 150-5060-5, delay is the difference between constrained and unconstrained operating time. As total operations increase, the amount of capacity left at an airport decreases and individual aircraft delay increases. The FAA recommends that planning for additional airfield capacity should start when annual demand reaches 60 percent of the ASV, and construction of additional airfield capacity should begin at 80 percent of ASV.

To determine delay, the following information is needed:

- Annual Demand
- Ratio of Annual Demand to ASV
- Average Delay Per Aircraft

Annual Demand

There were 103,419 operations in 2021, and operations are forecasted to increase to 116,887 annual operations in 2041.

Ratio of Annual Demand to ASV

The ASV for SBA is 200,000 annual operations. This results in the ratio of annual demand to ASV to be 0.52 for 2021, and 0.58 for 2041.

Average Delay Per Aircraft

The ratios of annual demand to ASV for 2021 and 2041 are used to determine average delay per aircraft using AC 150-5060-5. **Figure 4-2** shows the average delay per aircraft graph. The full band of the curve is used for SBA because most operations are GA. The average delay per aircraft in minutes for 2021 is 0.2 on the low band, and 0.5 on the high band. The average delay per aircraft in minutes for 2041 is 0.2 on the low band, and 0.7 on the high band.

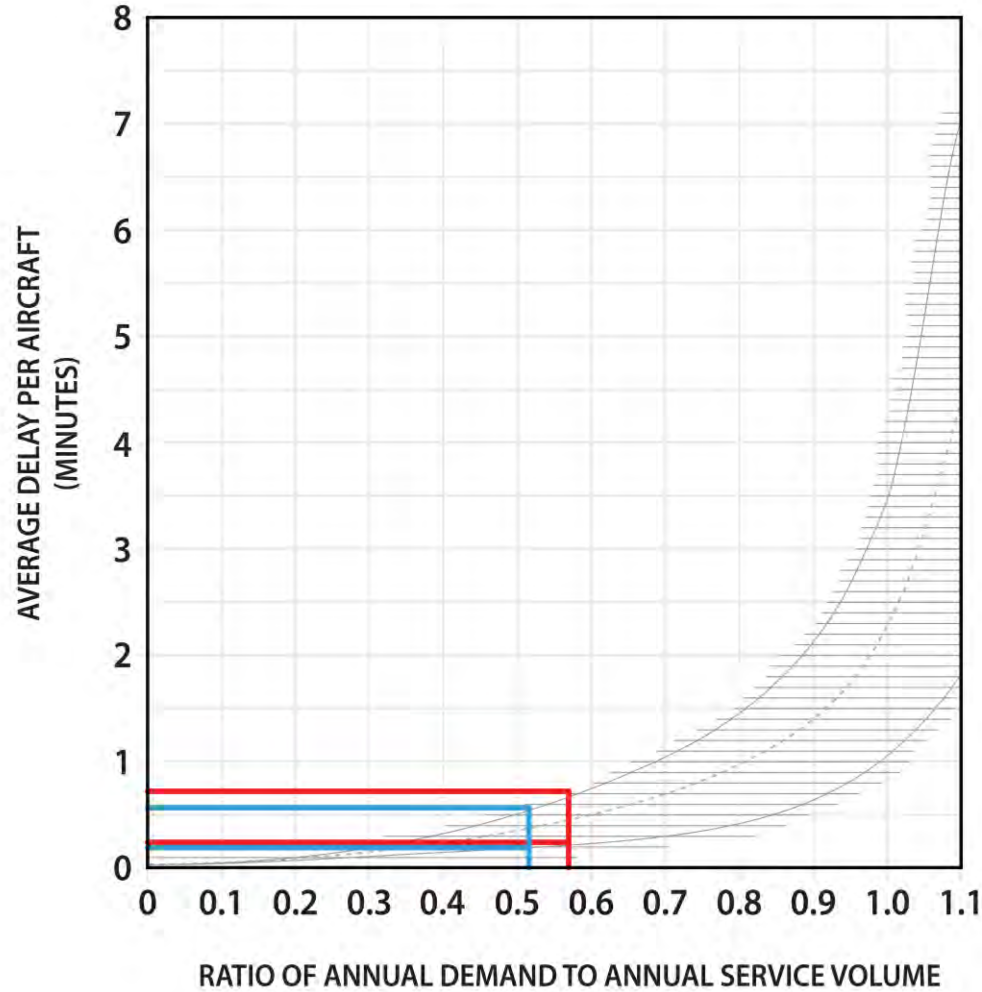
Using the previous information, the annual delay for SBA can be calculated. **Table 4-4** lists the breakdown of annual delay at SBA for 2021 and 2041.

Table 4-4: **SBA Annual Delay**

Year	Average Delay Per Aircraft (Minutes)		Annual Delay (Minutes)	
	Low	High	Low	High
2021	0.2	0.5	20,684	51,710
2041	0.2	0.7	23,377	81,821

Source: SBA 2021 Operations Data

Figure 4-2: Average Delay Per Aircraft



Source: AC 150-5060-5, Figure 2-2 Average Delay Per Aircraft for Long Range Planning – Adapted by Mead & Hunt, Inc. 2023
Note: Base Year 2021 (Blue), Forecast Year 2041 (Red)

Recommendations

All airports experience delay, and delay increases as total operations increase. There are no recommendations for major airfield improvements to increase capacity at SBA because the ratios of annual demand to ASV are under 60 percent for 2021 and 2041. Therefore, there are no recommendations to reduce delay as the range of delay is at acceptable levels for the planning period.

4.2.3.5 Crosswind Runway Justification

There are two elements to analyze for crosswind justification: capacity and crosswind component. The first element for analysis is capacity. As previously stated in the Analysis of Capacity section, the ASV for SBA is 200,000 annual operations. SBA currently operates at 52 percent of ASV and will operate at 58 percent of ASV in 2041. There are no recommendations for major airfield improvements for capacity because SBA has enough capacity to handle forecasted operations. Since SBA has two crosswind runways and capacity is not an issue, there is no justification for a crosswind runway based on capacity.

The second element for crosswind runway justification is crosswind component. Per AC 150-5300-13B, the desirable wind coverage for an airport is 95 percent of the time based on the total number of weather observations during the recording period of at least ten consecutive years. Primary runways are generally oriented to favor the prevailing wind, minimizing challenges associated with crosswinds. Small, light aircraft are more affected by crosswinds than larger, heavier ones. The allowable crosswind component for SBA is 16 knots, which is based on a RDC of D-III. The D-III design code is used because the critical aircraft for SBA are the Boeing 737-800 and 737-800 MAX aircraft. **Table 4-5** shows the crosswind component percentages at SBA.

Table 4-5: **SBA Crosswind Component Percentages**

Runway	Crosswind Components (knots)			
	10.5	13	16	20
All Weather				
15/33	96.17%	97.70%	99.38%	99.87%
7/25	98.55%	99.28%	99.82%	99.97%
Combined	99.84%	99.98%	100.00%	100.00%
IFR				
15/33	98.51%	99.18%	99.80%	99.97%
7/25	99.57%	99.80%	99.95%	99.99%
Combined	99.90%	99.98%	100.00%	100.00%
VFR				
15/33	95.66%	97.37%	99.29%	99.85%
7/25	98.33%	99.17%	99.79%	99.97%
Combined	99.83%	99.98%	100.00%	100.00%

Source: ADIP, SBA Wind Observations 2011 - 2020

No crosswind component falls below the 95 percent threshold. Therefore, there is no justification for a crosswind runway based on wind coverage.

Recommendations

There is no justification for a crosswind runway based on wind coverage or capacity. It is recommended that one of the crosswind runways be analyzed for an alternative use. Removal of one crosswind runway and reconfiguration of the parallel taxiways are discussed in length in the next chapter.

4.2.4 Airport Design Standards/Compliance

The FAA is responsible for the overall safety of civil aviation in the United States; therefore, FAA design standards and policy focus first on safety, with secondary goals including efficiency and utility. Design standards, which are presented in ACs, heavily influence the planning and design of airport facilities.

AC 5300-13B uses a coding system to determine standards for designing airports based on the operational and physical characteristics of the aircraft that operate or intend to operate at an airport. Two categories yield the Airport Reference Code (ARC): the Aircraft Approach Category (AAC), which is based on aircraft approach speed, and Airplane Design Group (ADG), which is based on the wingspan and tail height. The Runway Design Code (RDC) adds a third component to the ARC based on runway approach visibility minimums and is expressed as Runway Visual Range (RVR). The RDC, which is the FAA classification for the airfield design, determines the scale and setbacks of airfield facilities based on the design aircraft. RDC coding classifications are shown in **Table 4-6**.

Table 4-6: **Runway Design Code Designations**

Aircraft Approach Category (AAC)		
AAC	**Approach Speed**	
A	Approach Speed less than 91 knots	
B	Approach speed 91 knots or more but less than 121 knots	
C	Approach speed 121 knots or more but less than 141 knots	
D	Approach speed 141 knots or more but less than 166 knots	
E	Approach speed 166 knots or more	
Airplane Design Group (ADG)		
Group Number	**Wingspan (in feet)**	**Tail Height (in feet)**
I	< 49’	< 20’
II	49’ - < 79’	20’ - < 30’
III	79’ - < 118’	30’ - < 45’
IV	118’ - < 171’	45’ - < 60’
V	171’ - < 214’	60’ - < 66’
VI	214’ - < 262’	66’ - < 80’
Approach Visibility Minimums		
RVR (Feet)	**Flight Visibility Category (statue miles)**	
VIS	Runways designed for visual approach use only	
5,000	Not lower than 1 mile	
4,000	Lower than 1 mile but not lower than ¾ mile	
2,400	Lower than ¾ mile but not lower than ½ mile	
1,600	Lower than ½ mile but not lower than ¼ mile	
1,200	Lower than ¼ mile	

Source: AC 150/5300-13B

4.2.4.1 Runway 7/25 Design Standards

Runway design standards include runway safety areas (RSAs), runway object free areas (ROFAs), runway obstacle free zones (ROFZs), runway protection zones (RPZs), and setback distances for taxiways and other airport facilities. Runway length has additional design criteria and will be assessed in a separate section of this chapter. Design criteria for Runway 7/25 is shown in **Table 4-7**. **Figure 4-3** shows the surfaces for Runway 7/25 and areas requiring mitigation. **Figures 4-4** and **4-5** show the RPZs for Runway 7/25 and areas requiring mitigation.

Table 4-7: **Runway 7/25 Design Standards Compliance**

Runway Design	FAA Standards	Runway 7/25	
	D-III[1]	7	25
Runway Width	100'	150'	
Shoulder Width	20'	20'	
Blast Pad Width	140'	200'	200'
Blast Pad Length	200'	148'	992'
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	1,000'	1,000'	
Length Prior to Threshold	600'	600'	
Width	500'	500'	
Runway Object Free Area (ROFA)			
Length Beyond Departure End	1,000'	1,000'	
Length Prior to Threshold	600'	600'	
Width	800'	800'	
Runway Obstacle Free Zone (ROFZ)			
Length Beyond End	200'	200'	
Width	400'	400'	
Precision Obstacle Free Zone (POFZ)			
Length	200'	200'	N/A
Width	800'	800'	N/A
Approach Runway Protection Zone (RPZ)			
Length	2,500' / 1,700'	2,500'	1,700'
Inner Width	1,000' / 500'	1,000'	500'
Outer Width	1,750' / 1,010'	1,750'	1,010'
Departure RPZ			
Length	1,700' / 1,700'	1,700'	1,700'
Inner Width	500' / 500'	500'	500'
Outer Width	1,010' / 1,010'	1,010'	1,010'
Runway Separation, Runway Centerline to:			
Holding position	250'	250'	250'
Parallel Taxiway	400'	413'	
Aircraft parking area	N/A	N/A	

Notes: 1 Visibility Minimums for Runway 7, 1/2-mile; for Runway 25, not lower than 1 mile.
Source: AC 150/5300-13B

Figure 4-3: **Surfaces for Runway 7/25**

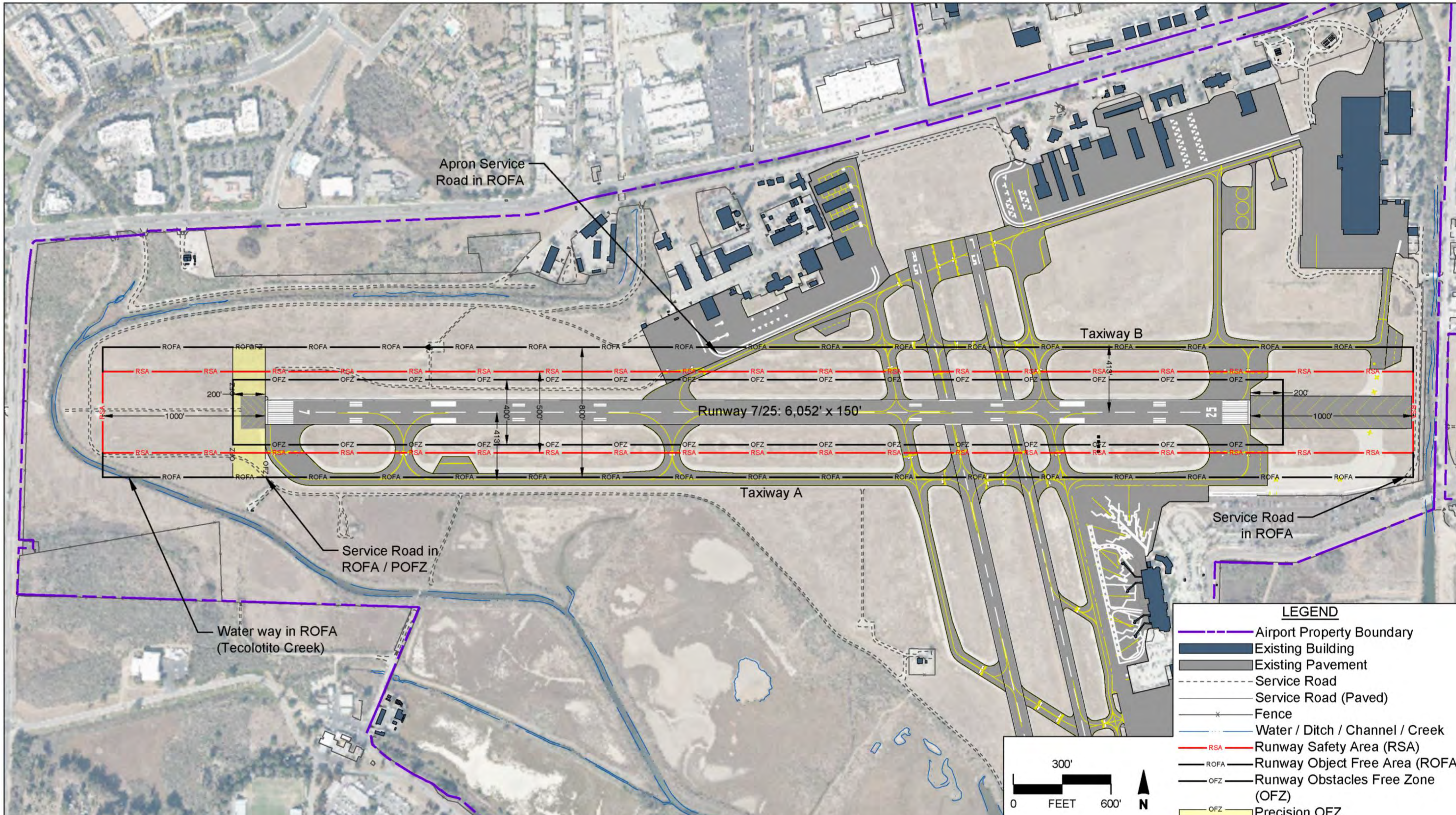


Figure 4-4: RPZ for Runway 7

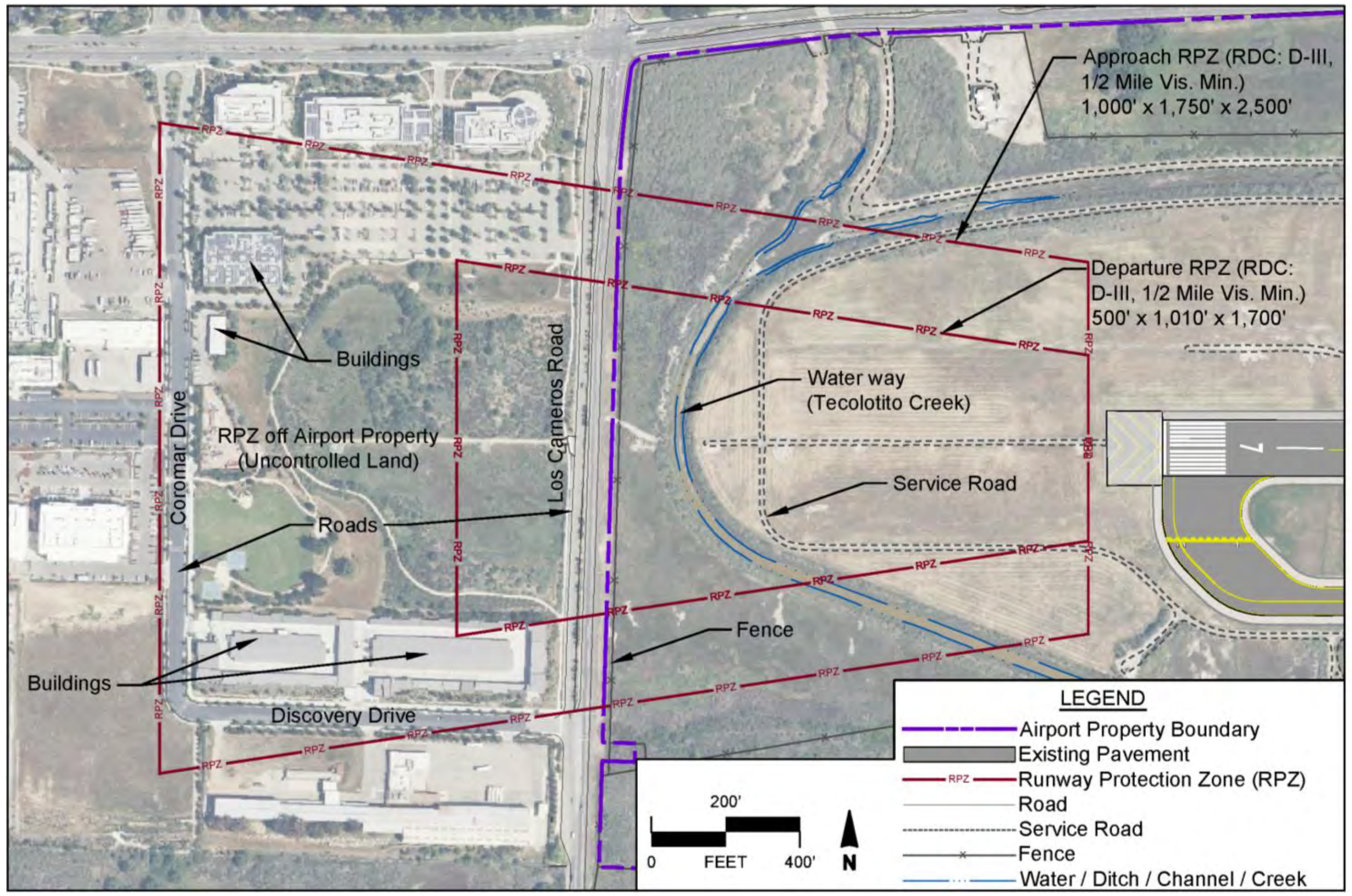
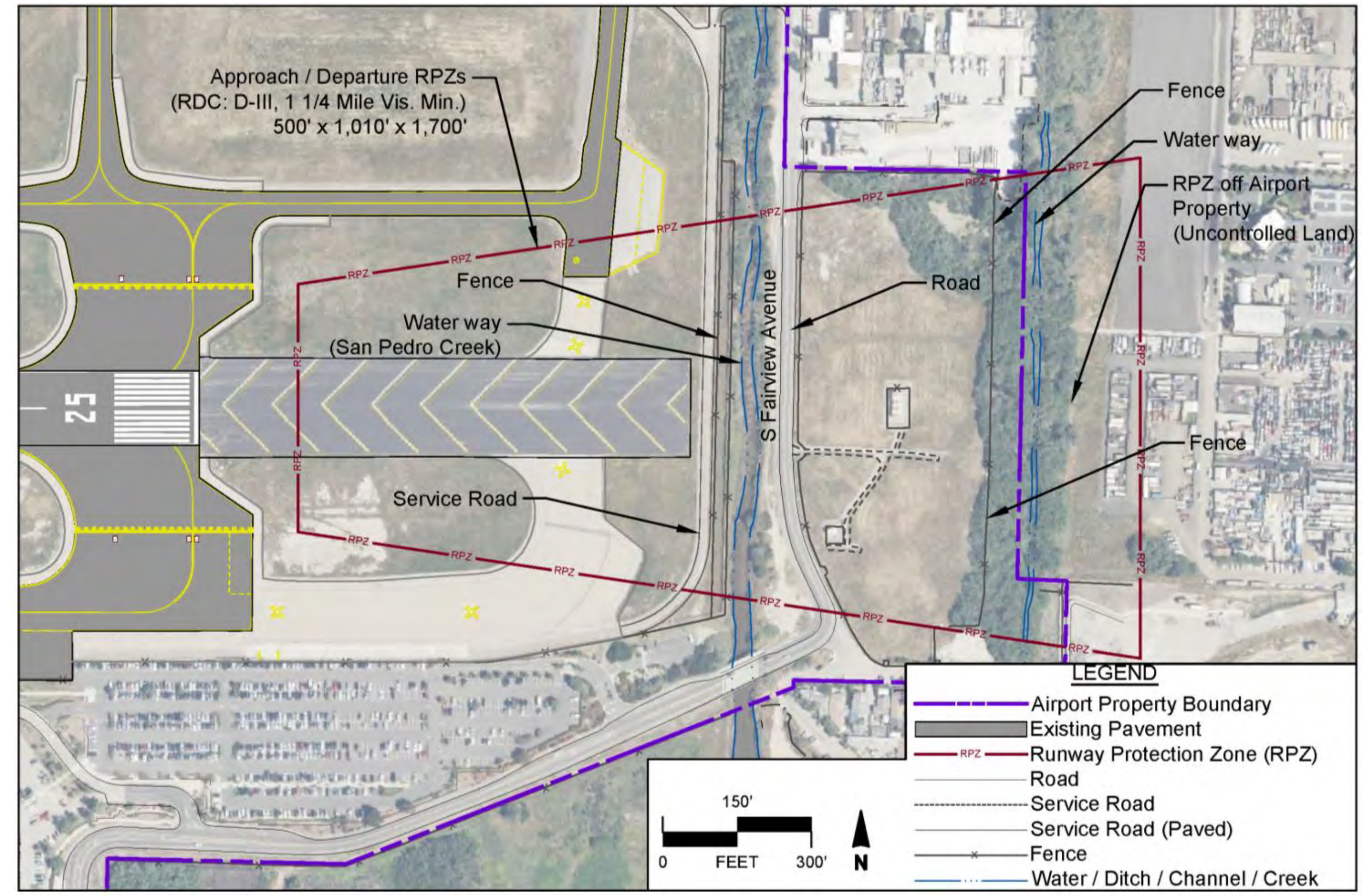


Figure 4-5: RPZ for Runway 25



Runway Design

Runway 7/25 is 150 feet wide, 6,052 feet long, and is classified as D-III. This classification means the runway can accommodate an aircraft with a wingspan between 79 and 118 feet, a tail height between 30 and 45 feet, and an approach speed between 141 and 166 knots. The FAA requirements for this design classification include a minimum runway width of 100 feet, shoulder width of 20 feet, and runway blast pad width of 140 feet length of 200 feet. Runway 7/25 is 50 feet wider than the minimum required width of a D-III runway. The shoulder width on Runway 7/25 measures 20 feet wide and meets the design standard. The Runway 7 blast pad measures 200 feet wide and 148 feet long. The Runway 7 blast pad is short of meeting the blast pad width standard by 52 feet and exceeds the design standard length by 60 feet. The Runway 25 blast pad is 992 feet long and 200 feet wide. The Runway 25 blast pad exceeds the width design standard by 60 feet and the length design standard by 792 feet.

Runway Safety Area

The FAA requires the RSA for runways with a D-III design classification to extend 1,000 feet beyond the departure end of the runway. The RSA extends 1,000 feet beyond the departure end, meeting this requirement. The FAA also requires the RSA to extend a minimum length of 600 feet prior to the runway threshold and have a minimum width of 500 feet. This RSA meets the minimum FAA requirements, extending 600 feet prior to the threshold and having a width of 500 feet. There are no penetrations to the RSA.

Runway Object Free Area

The Runway Object Free Area (ROFA) for Runway 7/25 extends 1,000 feet beyond the departure end, 600 feet prior to the threshold, and has a width of 800 feet, which meets the minimum FAA requirements. However, there are features that reside within the ROFA: a service road that directly abuts runway end 7; Tecolotito Creek, which is 794 feet away from Runway End 7; a service road that is 940 feet from Runway End 25; and an apron service road.

Runway Obstacle Free Zone

The FAA requires the Runway Obstacle Free Zone (ROFZ) to extend 200 feet beyond the runway end and measure 400 feet wide. The ROFZ for Runway 07/25 meets these requirements and has no penetrations.

Precision Obstacle Free Zone

Runway 7/25 has a precision obstacle free zone (POFZ) because of the instrument approach to Runway 7 having visibility minimums lower than 3/4 mile. The standard design for a POFZ is 200 feet long by 800 feet wide and begins at the landing threshold of a runway. The POFZ for Runway 7 is penetrated by a service road that also penetrates the ROFA.

Runway Protection Zones

The FAA requires that the RPZ for a D-III runway with an end that has minimums lower than 3/4 mile to have an inner width of 1,000 feet, an outer width of 1,750 feet, and a length of 2,500 feet. For minimums that are not lower than 3/4 mile, the RPZ must have an inner width of 1,000 feet, an outer width of 1,510 feet, and a length of 1,700 feet

The RPZs for both ends of Runway 7/25 meet design standards, but they have objects, roads, and land uses inside the boundaries of each RPZ that are not standard. See **Figures 4-4** and **4-5** for the Runway 7/25 RPZs.

The Runway 7 RPZ has the following items inside of the boundaries:

- Los Carneros Road
- Discovery Drive
- Coromar Drive
- Airport Service Road
- Water Way (Tecolotito Creek)
- Fences
- Buildings
- Uncontrolled Land (RPZ off Airport Property)

The Runway 25 RPZ has the following items inside of the boundaries:

- S Fairview Avenue
- Airport Service Road
- Water Ways
- Fences
- Uncontrolled Land (RPZ off Airport Property)

Runway Separation from Taxiway Centerline

The FAA requires the holding position line for a D-III runway to measure at least 250 feet from the runway centerline, and both runway ends have holding positions that are 250 feet from the runway centerline and meet FAA requirements. Additionally, the runway centerline to the parallel runway centerline is 413 feet, which meets the FAA 400-foot requirement.

Recommendations

The following list provides recommendations for Runway 7/25.

- Relocate service roads out of runway protection zones or to locations that maximize mitigation.
- Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone.

4.2.4.2 Runway 15R/33L Design Standards

Runway design standards include RSAs, ROFAs, ROFZs, RPZs, and setback distances for taxiways and other airport facilities. Runway length has additional design criteria and will be assessed in **Section 3**. Design criteria for Runway 15R/33L is shown in **Table 4-8**. **Figure 4-6** shows the surfaces for Runway 15R/33L and areas requiring mitigation. **Figures 4-7** and **4-8** show the RPZs for Runways 15R/33L and areas requiring mitigation.

Table 4-8: **Runway 15R/33L Design Standards Compliance**

Runway Design	FAA Standards	Runway 15R/33L	
	A/B-II (Small)[1]	15R	33L
Runway Width	75'	100'	
Shoulder Width	10'	10'	
Blast Pad Width	95'	N/A	
Blast Pad Length	150'	N/A	
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	300'	300'	
Length Prior to Threshold	300'	300'	
Width	150'	150'	
Runway Object Free Area (ROFA)			
Length Beyond Departure End	300'	300'	
Length Prior to Threshold	300'	300'	
Width	500'	500'	
Runway Obstacle Free Zone (ROFZ)			
Length Beyond End	200'	200'	
Width	250'	250'	
Precision Obstacle Free Zone (POFZ)			
Length	N/A	N/A	N/A
Width	N/A	N/A	N/A
Approach Runway Protection Zone (RPZ)			
Length	1,000'	1,000'	1,000'
Inner Width	250'	250'	250'
Outer Width	450'	450'	450'
Departure RPZ			
Length	1,000'	1,000'	1,000'
Inner Width	250'	250'	250'
Outer Width	450'	450'	450'
Runway Separation, Runway Centerline to:			
Holding position	125'	125'	125'
Parallel Taxiway	240'	300'	
Aircraft parking area	N/A	300'	

Notes: 1 Visibility Minimums for Runway 15R/33L are Visual
Notes: 2 Per AC 150/5300-13B, A-II (Small) and B-II (Small) share the same design matrix
Source: AC 150/5300-13B

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Figure 4-6: **Surfaces for Runway 15/33**

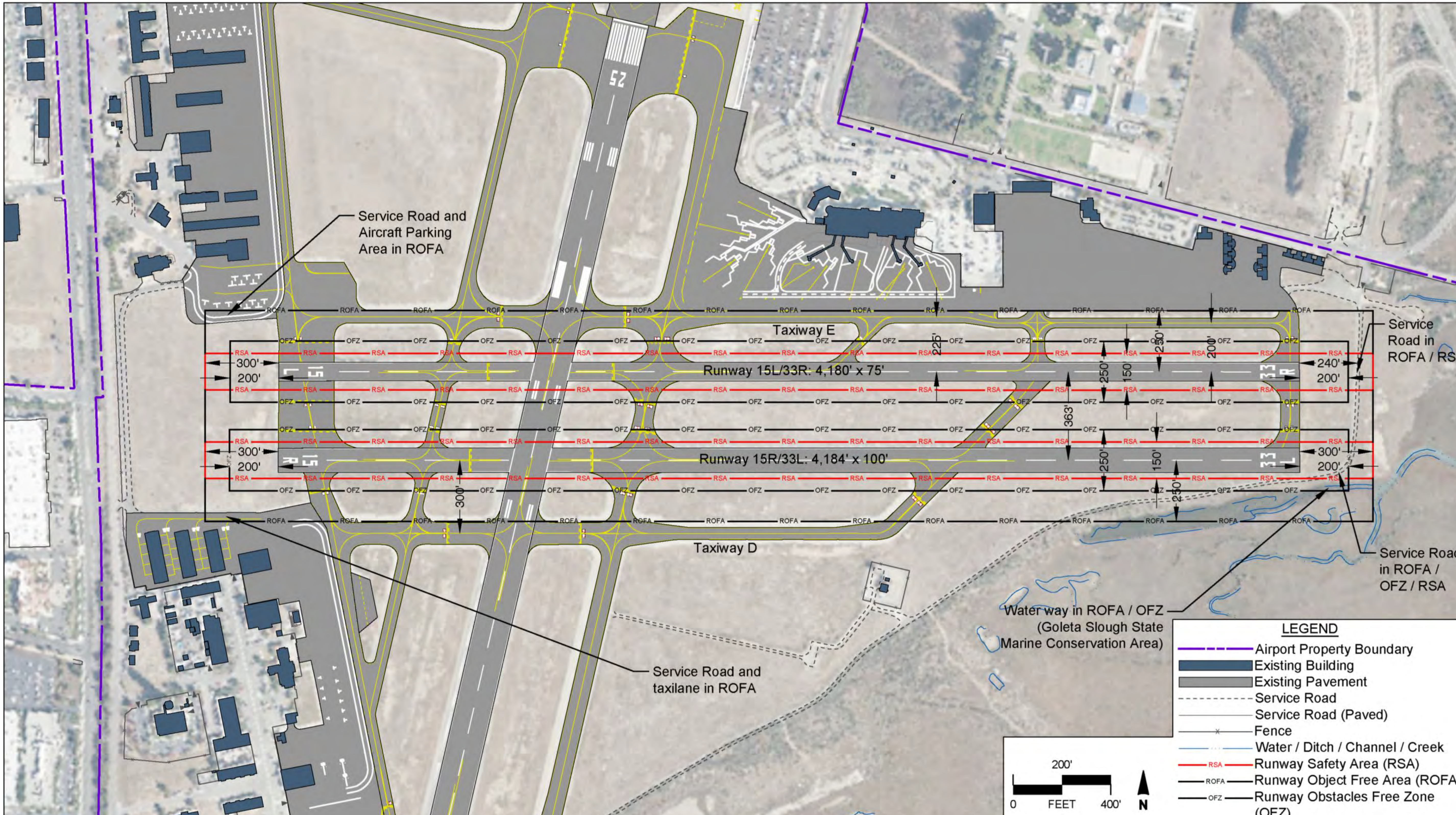


Figure 4-7: RPZ for Runway 15

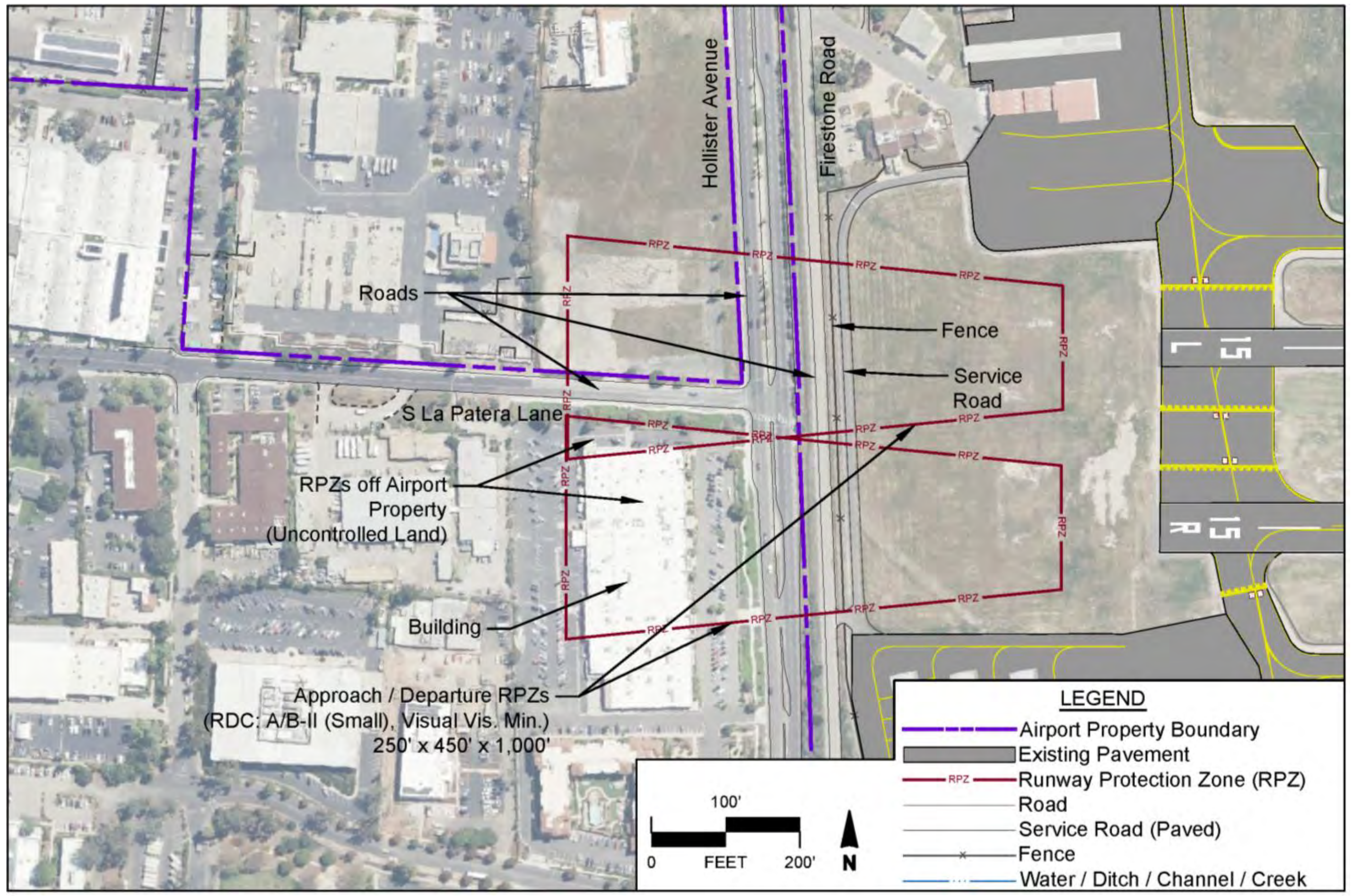
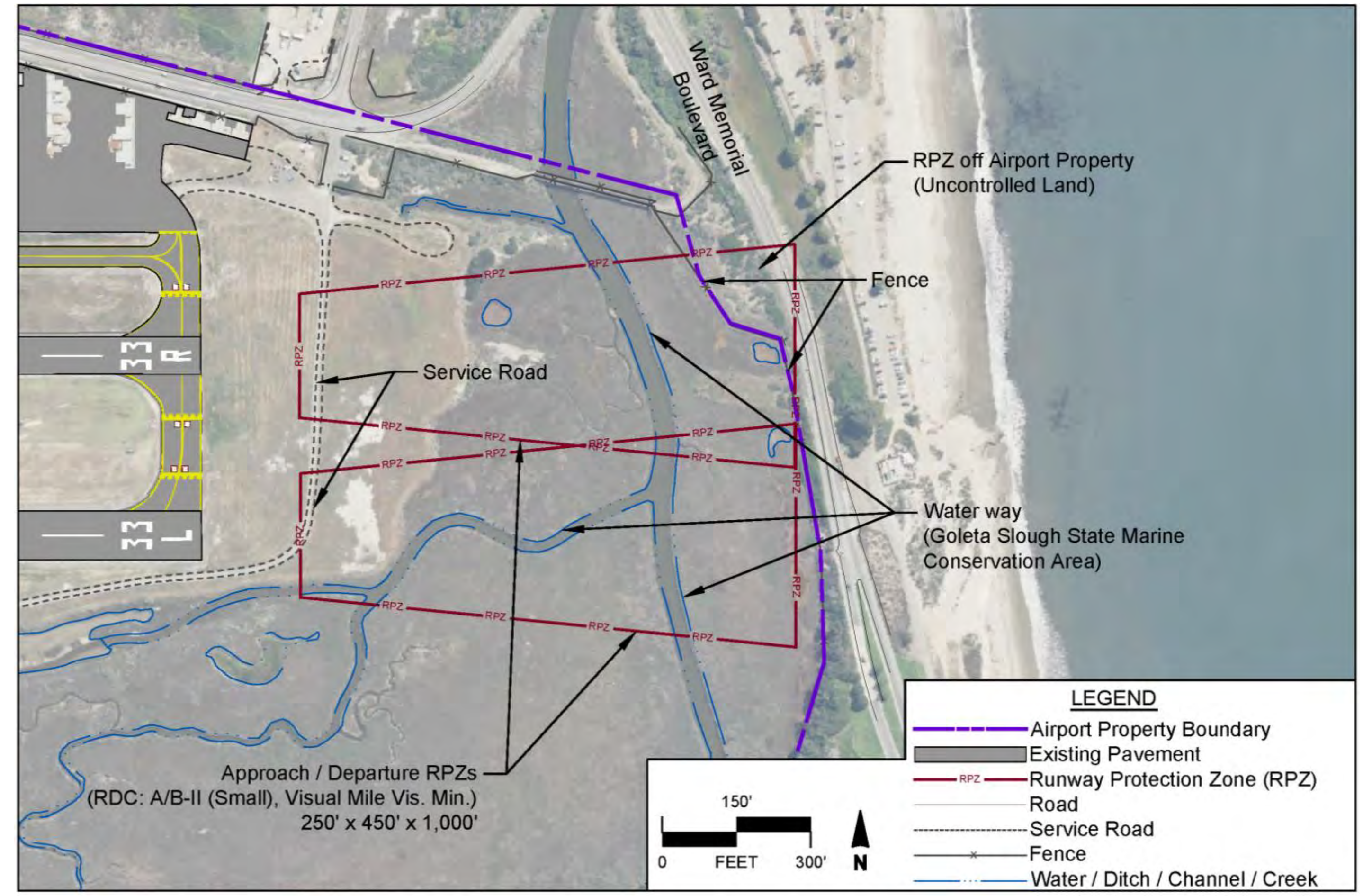


Figure 4-8: RPZ for Runway 33



Runway Design

Runway 15R/33L is 100 feet wide, 4,184 feet long, and classified as B-II (small). This classification means the runway can accommodate an aircraft with a wingspan between 49 and 79 feet, a tail height between 20 and 30 feet and an approach speed between 91 and 121 knots. The FAA design standard for a B-II runway is 75 feet wide, the runway is 25 feet wider than the minimum standard. This design classification requires a minimum shoulder width of 10 feet wide. The shoulder width on Runway 15R/33L measures 10 feet wide and meets the design standard. Runway 15R/33L, as a B-II runway is not required to have blast pads, no blast pads exist.

Runway Safety Area

The FAA requires the RSA for visual runways with a B-II (small) design classification to extend 300 feet beyond the departure end of the runway. The RSA extends 300 feet beyond the departure end, meeting this requirement. The FAA also requires the RSA to extend a minimum length of 300 feet prior to the runway threshold and have a minimum width of 150 feet. This RSA meets the minimum FAA requirements, extending 300 feet prior to the threshold and having a width of 150 feet. However, there is a service road that penetrates the RSA off the Runway 33L end.

Runway Object Free Area

The ROFA for Runway 15R/33L extends 300 feet beyond the departure end, 300 feet prior to the threshold, and has a width of 500 feet, which meets the minimum FAA requirements. However, there are features that reside within the ROFA: a service road west of Runway End 15R, a service road west of Runway End 33L, and a waterway (Goleta Slough State Marine Conservation Area) off Runway End 33L.

Runway Obstacle Free Zone

The FAA requires a runway with B-II (small) design code classification to have a ROFZ that extends 200 feet beyond the end of the runway with a width of 250 feet. Runway 15R/33L meets the design standards, but there are features that reside within the ROFZ: a waterway (Goleta Slough State Marine Conservation Area) and a service road are in the ROFZ off Runway End 33L.

Runway Protection Zones

The FAA requires that the RPZs for a B-II (small) runway with visual approaches have an inner width of 250 feet, an outer width of 450 feet, and a length of 1,000 feet. The RPZs for both ends of Runway 15R/33L meet design standards, but have objects, roads, and land uses inside the boundaries of each RPZ that are not standard. See **Figures 4-7** and **4-8** for the Runway 15R/33L RPZs.

The Runway 15R RPZ has the following items inside of the boundaries:

- Firestone Road
- Hollister Avenue
- S La Patera Lane
- Airport Service Road
- Fences
- Buildings
- Uncontrolled Land (RPZ off Airport Property)

The Runway 33L RPZ has the following items inside of the boundaries:

- Ward Memorial Boulevard
- Airport Service Road
- Waterway (Goleta Slough State Marine Conservation Area)
- Fences

Runway Separation from Centerline

The runway centerline is 125 feet from the holding position line on each runway end, which is the minimum distance for a B-II (small) runway. The runway centerline is also 413 feet from the parallel taxiway centerline (Taxiway D), and 363 feet from Runway 15L/33R centerline.

Recommendations

The following list provides recommendations for Runway 15R/33L.

- Relocate service roads out of runway protection zones or to locations that maximize mitigation.
- Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone.

4.2.4.3 Runway 15L/33R Design Standards

Runway design standards include ROFZs, RSAs, ROFAs, RPZs, and setback distances for taxiways and other airport facilities. Runway length has additional design criteria and will be assessed in section 3. Design criteria for Runway 15L/33R is shown in **Table 4-9**. **Figure 4-6** (above) shows the surfaces for Runway 15L/33R and areas requiring mitigation. **Figures 4-7** and **4-8** (above) show the RPZs for Runway 15L/33R and areas requiring mitigation.

Table 4-9: Runway 15L/33R Design Standards Compliance

Runway Design	FAA Standards	Runway 15L/33R	
	A/B-II (Small)[1]	15L	33R
Runway Width	75'	75’	
Shoulder Width	10'	10’	
Blast Pad Width	95'	N/A	
Blast Pad Length	150'	N/A	
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	300'	300'	
Length Prior to Threshold	300'	300'	
Width	150'	150'	
Runway Object Free Area (ROFA)			
Length Beyond Departure End	300'	300'	
Length Prior to Threshold	300'	300'	
Width	500'	500'	

Runway Obstacle Free Zone (ROFZ)			
Length Beyond End	200’	200’	
Width	250’	250’	
Precision Obstacle Free Zone (POFZ)			
Length	N/A	N/A	N/A
Width	N/A	N/A	N/A
Approach Runway Protection Zone (RPZ)			
Length	1,000’	1,000’	1,000’
Inner Width	250’	250’	250’
Outer Width	450’	450’	450’
Departure RPZ			
Length	1,000’	1,000’	1,000’
Inner Width	250’	250’	250’
Outer Width	450’	450’	450’
Runway Separation, Runway Centerline to:			
Holding position	125'	125’	125’
Parallel Taxiway	240'	200’	
Aircraft parking area	N/A	328’	

Notes: 1 Visibility Minimums for Runway 15L/33R are Visual
Notes: 2 Per AC 150/5300-13B, A-II (Small) and B-II (Small) share the same design matrix
Source: AC 150/5300-13B

Runway Design

Runway 15L/33R is 100 feet wide, 4,184 feet long, and classified as B-II (small). This classification means the runway can accommodate an aircraft with a wingspan between 49 and 79 feet, a tail height between 20 and 30 feet and an approach speed between 91 and 121 knots. The FAA design standard for a B-II runway is 75 feet wide, the runway is 25 feet wider than the minimum standard. This design classification requires a minimum shoulder width of 10 feet wide. The shoulder width on Runway 15L/33R measures 10 feet wide and meets the design standard. Runway 15L/33R, as a B-II runway is not required to have blast pads, no blast pads exist.

Runway Safety Area

The FAA requires the RSA for visual runways with a B-II (small) design classification to extend 300 feet beyond the departure end of the runway. The RSA extends 300 feet beyond the departure end, meeting this requirement. The FAA also requires the RSA to extend a minimum length of 300 feet prior to the runway threshold and have a minimum width of 150 feet. This RSA meets the minimum FAA requirements, extending 300 feet prior to the threshold and having a width of 150 feet. However, there is a service road that penetrates the RSA off the Runway 33R end.

Runway Object Free Area

The ROFA for Runway 15L/33R extends 300 feet beyond the departure end, 300 feet prior to the threshold, and has a width of 500 feet, which meets the minimum FAA requirements. However, there are features that reside within the ROFA: a service road east of Runway End 15L and a service road east of Runway End 33R.

Runway Obstacle Free Zone

The FAA requires a runway with B-II (small) design code classification to have a ROFZ that extends 200 feet beyond the end of the runway with a width of 250 feet. Runway 15L/33R meets the design standards, but there is a feature that resides within the ROFZ: a service road in the ROFZ off Runway End 33R.

Runway Protection Zones

The FAA requires that the RPZs for a B-II (small) runway with visual approaches have an inner width of 250 feet, an outer width of 450 feet, and a length of 1,000 feet. The RPZs for both ends of Runway 15L/33R meet design standards, but have objects, roads, and land uses inside the boundaries of each RPZ that are not standard. See **Figures 4-7** and **4-8** for the Runway 15L/33R RPZs.

The Runway 15L RPZ has the following items inside of the boundaries:

- Firestone Road
- Hollister Avenue
- S La Patera Lane
- Airport Service Road
- Fences
- Buildings
- Uncontrolled Land (RPZ off Airport Property)

The Runway 33R RPZ has the following items inside of the boundaries:

- Ward Memorial Boulevard
- Airport Service Road
- Water Way (Goleta Slough State Marine Conservation Area)
- Fences
- Uncontrolled Land (RPZ off Airport Property)

Runway Separation from Centerline

The runway centerline is 125 feet from the holding position on each runway end, which is the minimum distance for a B-II (small) runway. The centerline is also 200 feet from the parallel taxiway (Taxiway E), and 363 feet from Runway 15R/33L. Taxiway E is 40 feet closer to the runway centerline then the minimum design standard.

Recommendations

The following list provides recommendations for Runway 15L/33R.

- Relocate service roads out of runway protection zones or to locations that maximize mitigation.
- Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone.
- If Runway 15L/33R remains, Taxiway E should be relocated to meet separation standards (240')

4.2.5 Wind Coverage

Existing wind coverage is documented in **Chapter 1**. Runway 7/25 meets the minimum wind coverage requirements for runway alignment. There is no justification for runway 15L/33R or 15R/33L from a wind coverage analysis or requirements standpoint.

4.2.6 Taxiway Design Standards

AC 150/5300-13B provides taxiway design concepts and methodologies, which are described below. This section identifies taxiway system recommendations to meet expected demand and FAA standards.

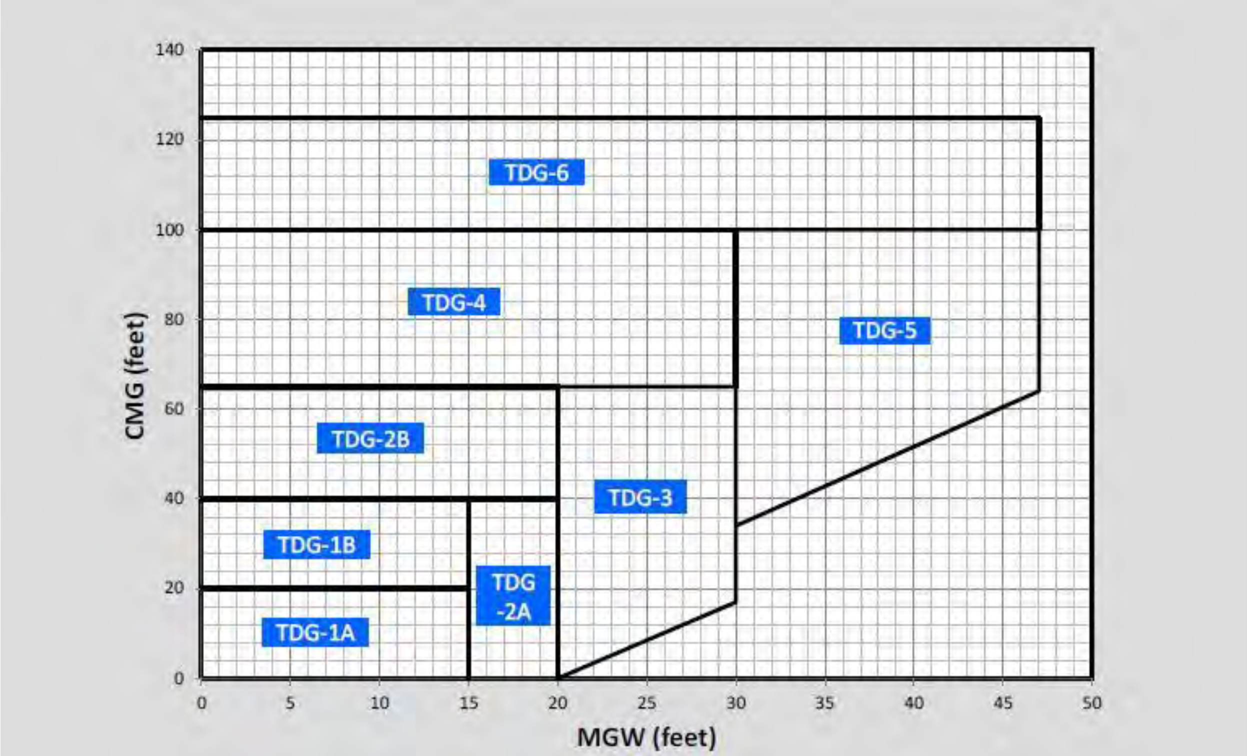
4.2.6.1 Overview of Standards

The Taxiway Design Group (TDG) criteria is defined in AC 150/5300-13B. The TDG considers the dimensions of the aircraft landing gear to determine taxiway widths and pavement fillets to be provided at taxiway intersections. The width of the main gear and wheelbase (the distance from nose gear to main gear) distinguishes the TDG classifications. The existing and future critical aircraft are both in TDG 3. TDG classifications are presented in **Figure 4-9**. TDG 3 standards are shown in **Figure 4-10**.

The existing airfield system has various TDG's as some taxiways do not serve the critical aircraft. **Table 4-10** shows the existing TDG standards for taxiways and compares them to AC 150/5300-13B TDG standards.

All taxiways, with the exceptions of Taxiways E and E3, meet or exceed TDG 3 standards. Taxiway E runs parallel to Runway 15L/33R and the terminal but does not meet the minimum runway centerline separation distance required for a A/B-II (small) runway design. Taxiway E will need upgrades to meet TDG 3 standards and will also need to be relocated to meet the minimum separation distance of 240 feet to comply with 150/5300-13B The sections of Taxiway E that do not meet the 50 foot TDG 3 standard are south of the Taxiway E/E2 intersection and north of the Taxiway E/E2 intersection as Taxiway E begins to turn towards the Terminal Apron. If relocation is not an option for Taxiway E, other options should be evaluated to rectify the nonstandard separation. Taxiway E3 connects Taxiway E to Runway 15L/33R, providing direct access from an apron to a runway. While the critical aircraft will not use Runway 15L/33R, Taxiway E3 will need to be removed or relocated to rectify the direct runway access configuration issue.

Figure 4-9: TDG Classifications



Source: AC 150/5300-13B

Figure 4-10: TDG Standards

Item	TDG							
	1A	1B	2A	2B	3	4	5	6
Taxiway/Taxilane Width [1]	25 ft (7.6 m)	25 ft (7.6 m)	35 ft (10.7 m)	35 ft (10.7 m)	50 ft (15.2 m)	50 ft (15.2 m)	75 ft (22.9 m)	75 ft (22.9 m)
Taxiway Edge Safety Margin [1]	5 ft (1.5 m)	5 ft (1.5 m)	7.5 ft (2.3 m)	7.5 ft (2.3 m)	10 ft (3 m)	10 ft (3 m)	14 ft (4.3 m)	14 ft (4.3 m)
Taxiway Shoulder Width [2]	10 ft (3 m)	10 ft (3 m)	15 ft (4.6 m)	15 ft (4.6 m)	20 ft (6.1 m)	20 ft (6.1 m)	30 ft (9.1 m)	30 ft (9.1 m)
Taxiway/Taxilane Centerline to Parallel Taxiway/Taxilane Centerline w/180 Degree Turn	See Table 4-6 and Table 4-7.							

Source: AC 150/5300-13B

Table 4-10: Existing Taxiway System Design Standards

Taxiway Name	TDG	Width	Taxiway Edge Safety Margin	Shoulder Width	Meet TDG 3 Standards?
Taxiway A	5 & 6	75 ft	14 ft	30 ft	Yes
Taxiway A1	6*	250 ft	14 ft	30 ft	Yes
Taxiway A3	6*	90 ft	14 ft	30 ft	Yes
Taxiway A4	6*	100 ft	14 ft	30 ft	Yes
Taxiway A5	6*	225 ft	14 ft	30 ft	Yes
Taxiway B	3	50 ft	10 ft	20 ft	Yes
Taxiway B1	6*	90 ft	14 ft	30 ft	Yes
Taxiway C	6*	50 – 227 ft	14 ft	30 ft	Yes
Taxiway D	3	50 - 90 ft	10 ft	20 ft	Yes
Taxiway E	2	40 – 90 ft	7.5 ft	15 ft	Varies
Taxiway E1	5	75 ft	14 ft	30 ft	Yes
Taxiway E2	3	60 ft	7.5 ft	15 ft	Varies
Taxiway E3	2	40 ft	7.5 ft	15 ft	No
Taxiway F	3	50 ft	10 ft	20 ft	Yes
Taxiway G	3	50 ft	10 ft	20 ft	Yes
Taxiway H	5	75 ft	14 ft	30 ft	Yes

Source: AC 150/5300-13B
Note *: TDG 7 was replaced with TDG 6. TDG 7 no longer exists in AC 150/5300-13B. The largest TDG is now 6.
Note: Orange cells indicates non-compliance with TDG 3 standards.

4.2.6.2 Taxiway Surfaces

The Taxiway Object Free Area (TOFA) and Taxiway Safety Area (TSA) are defined in the criteria of AC 150/5300-13B. These areas should provide separation from the taxiway centerline to an object. **Figure 4-11** displays the TOFAs, TSAs, and taxiway surface penetrations for SBA. Taxiway surface penetrations include the following:

- Apron parking inside of the TOFA/TSA on the south end of Taxiway E.
- Service Road penetrating the TOFA of Taxiway A.
- Apron service road penetrating the TOFA/TSA of Taxiway C near the intersection of Taxiway B.
- Apron service road penetrating the TOFA/TSA of Taxiway C near the intersection of Taxiway E.
- Apron parking inside of the TOFA of Taxiway C near the intersection of Taxiway F.

There are Vehicle Service Roads (VSR) in four TOFA/TSA locations. Based on FAA requirements, vehicles may operate within the TOFA provided they give right away to oncoming aircraft by either maintaining a safe distance from the aircraft or by exiting the TOFA. Any parking positions in the area where the TOFA and TSA overlap must be relocated out of the surfaces.

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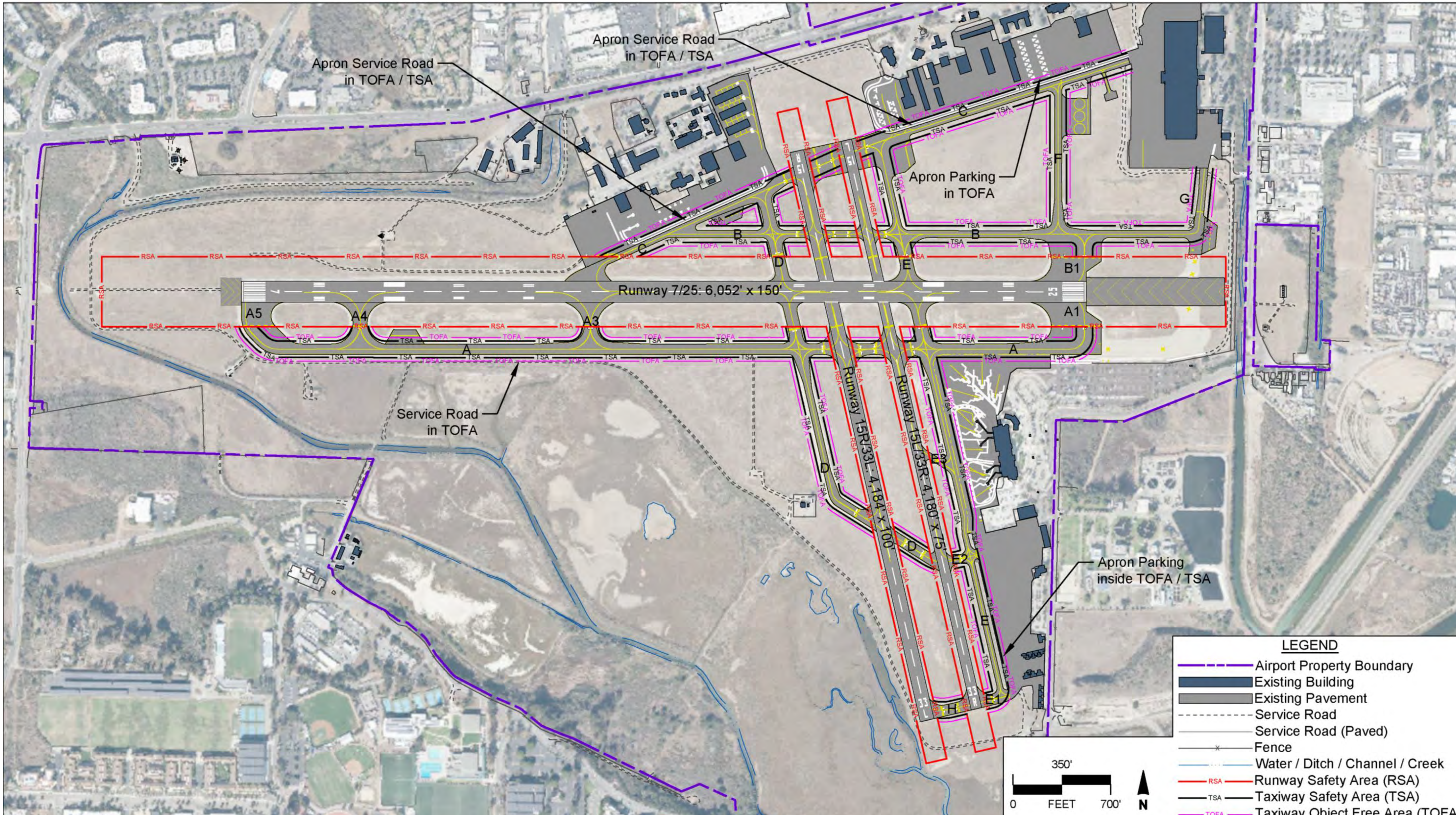
Figure 4-11: TOFAs, TSAs, and taxiway surface penetrations for SBA



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Runway Crossings

Risk of error can be reduced by limiting runway crossings, especially within the middle third of runways. FAA guidance identifies the middle third of a runway as the place where pilots are least able to maneuver to avoid collision. Solutions to this situation will be evaluated in **Chapter 4**. Middle-third runway crossings include the following:

- Intersection of Taxiways A3/C connecting to Runway 7/25.
- Taxiway A connecting to Runways 15R/33L and 15L/33R.
- Taxiway E connecting to Runway 7/25.
- Taxiway D connecting to Runway 7/25.
- Taxiway D connecting to Runway 15R/33L.

Taxiways A, E, and D have intersections with runways that are middle-third runway crossing, but these taxiways are the parallel taxiways to the runway system.

Visibility

Right-angle intersections provide the best visibility for a pilot. A right-angle turn clearly indicates the pilot is approaching a runway. The following taxiways do not have right-angle intersections:

- Taxiway A5 connecting to Runway 7/25.
- Taxiway C at intersections with Runway 7/25, 15R/33L, and 15L/33R.
- Taxiway D connecting to Runway 15R/33L.
- Taxiway D connecting between Runways 15R/33L and 15L/33R.
- Taxiway E3 connecting to Runway 15L/33R.

Taxiways A, B, E, and D have intersections with runways that are not right-angle intersections, but these taxiways are the parallel taxiways to the runway system.

Direct Access

Taxiways should not lead directly from an apron to a runway without requiring a turn. Direct access from the apron to the runway may lead to runway incursions. The design could cause confusion to a pilot that normally would be expecting a parallel taxiway but instead encounters a runway. The following taxiways provide direct access to a runway.

- Taxiway C connecting to Runway 7/25.
- Taxiway D connecting to Runway 7/25
- Taxiway F connecting to Runway 7/25
- Taxiway C connecting to Runway 15R/33L.
- Taxiway C connecting to Runway 15L/33R.
- Taxiway E3 connecting to Runway 15L/33R.
- Taxiway B connecting to Runway 15L/33R.

- Taxiway E1 connecting to Runway 15L/33R.

Recommendations

Taxiway recommendations are as follows.

All taxiways

- All taxiways will meet ADG-III taxiway standards for TOFA and Taxiway Safety Areas (TSAs) to provide clearance for commercial and jet GA aircraft.

Middle third of runway

- Intersection of Taxiways A3/C connecting to Runway 7/25 will be removed or relocated out of the middle third of the runway.
- Intersection of Taxiway A connecting to Runways 15R/33L and 15L/33R will remain as Taxiway A is the parallel taxiway to Runway 7/25.
- Intersection of Taxiway E connecting to Runway 7/25 will be removed or relocated out of the middle third of the runway.
- Intersection of Taxiway D connecting to Runway 7/25 will remain as Taxiway D is parallel to Runway 15R/33L.
- Intersection of Taxiway D connecting to Runway 15R/33L will remain as Taxiway D is parallel to Runway 15L/33R and helps to avoid environmental conditions west of Runway 15R/33L.

Visibility

- Intersection of Taxiway A5 connecting to Runway 7/25 will have geometry changed to have a right-angle turn.
- Intersection of Taxiway C connecting to Runway 7/25 will have geometry changed to have a right-angle turn. Intersection of Taxiway C connecting to Runways 15R/33L, and 15L/33R will change geometry to have right-angle turns.
- Intersection of Taxiway D connecting to Runway 15R/33L will have geometry changed to have a right-angle turn.
- Intersections of Taxiway D connecting between Runways 15R/33L and 15L/33R will have geometry changed to have right-angle turns, will be relocated, or be removed.
- Intersection of Taxiway E3 connecting to Runway 15L/33R will be relocated or removed.

Taxiway Surface Penetrations

- Aircraft parking that penetrates taxiway surfaces will be relocated to prevent aircraft from penetrating the taxiway surfaces. VSRs that penetrate TSAs will be relocated out of the TSAs. VSRs inside of TOFAs will be relocated where possible.

Direct Access

- All taxiways identified as having direct access from an apron to a runway will have direct access broken by relocating pavement, removing pavement, or adding nonmovement markings and paint .

Fillets

- All taxiways that do not meet TDG-3 fillet design will be updated to allow commercial and GA jet traffic the ability the move around the entire airfield.

Runway Centerline to Parallel Taxiway Centerline

- Taxiway E centerline to runway centerline separation will be increased to meet the minimum 240 feet separation or other means of resolving the nonstandard separation will be evaluated.

4.2.7 Pavement (Apron, Run-up Areas)

Existing pavement conditions are documented in **Chapter 1**. SBA has five run-up areas on the airfield: east of Taxiway A4, parallel to Taxiway C, at the intersection of Taxiways B and G, at the intersection of Taxiways C and E, and on Taxiway A1 at Runway End 25. The run-up areas parallel to Taxiway C, at the intersections of Taxiway B and G, and C and E do not provide enough separation for ADG 3 TOFAs.

4.2.7.1 Recommendations

The following list provides recommendations for the hold-bays.

- Relocate or redesign run-up areas that do not provide enough TOFA separation. If a run-up area will be relocated, then place the relocated run-up area where there will be no environmental impact and will be able to be accessed by aircraft.

4.2.8 Pavement Marking / Lighting / Signage

Existing runway and taxiway lighting is documented in **Chapter 1**. No deficiencies or additional improvements have been identified as necessary for lighting. Runway 7/25 has precision approach markings, and the 15/33 crosswind runways have visual approach markings. Taxiway pavement has edge markings and there are markings for Vehicle Service Roads (VSRs) on aprons. A VSR is a roadway, access lane, passageway, and/or other area designated for the movement of vehicles in the AOA. SBA has markings for aircraft parking at the terminal building and for parking on GA aprons. Hold bay areas have markings to show the boundaries around them. SBA has signage around the airfield to provide directions for pilots as they taxi.

4.2.8.1 Recommendations

The following is recommended for pavement marking, lighting, and signage.

- Relocation of any service roads, parking, hold bays, and Taxiway E will require new markings, lighting, and signage as needed to support any future relocation.

4.2.9 NAVAIDS

Existing NAVAIDS are documented in **Chapter 1**. The Airport would like to plan for installation of a Precision Approach Path Indicator (PAPI) on Runway 7.

4.2.9.1 Recommendations

The following list provides recommendations for NAVAIDS.

- Install a PAPI on the approach end of Runway 7.

4.2.10 Instrument Procedures

Existing instrument procedures are documented in **Chapter 1**. No deficiencies or additional flight procedures have been identified as necessary.

4.2.11 Communication Facilities and Equipment

The Airport is not served by any unified communication network. Voice communications are handled by a radio system with an on-site repeater for operations, maintenance, and safety personnel. Wireless communications for data (Wi-Fi) is only available in certain spots, such as administration and terminal facilities, which makes data associated with Wide Area Local Network (WLAN) only available in selected locations.

The airport's communication network is insufficient for moving about the airport (landside and airside) and recommendations include the addition of fiber optic networks that support Wi-Fi networks, and Local Access Points to bring high-speed data to handheld devices. The airport will require an additional study to define the needed infrastructure for communications and equipment associated with WLAN, Wi-Fi, and network connectivity. The airport completed the installation of fiber optic, high speed internet to the administration, security and operations facilities on January 11, 2024. However, the connection to other WLAN and Local Access Points described above remains a future communication priority.

4.2.12 Airport Traffic Control Tower (ATCT) Services

Existing ATCT conditions are documented in **Chapter 1**. FAA ATCT personnel have advised that the existing tower will likely require replacement due to its end of useful life within the 20-year planning period. A FAA-sponsored tower siting study should be conducted prior to final site selection.

FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process*, establishes the requirements for determining Airport Traffic Control Tower (ATCT) locations based on the following criteria, in descending order of emphasis:

- Impacts to instrument approach procedures (Terminal Instrument Procedures - TERPS)
- Impacts to communications, navigation, and surveillance equipment
- Visibility performance
- Comparative Safety Assessment (CSA)
- Operational requirements
- Economic considerations

An abbreviated visibility performance will be utilized for three potential siting locations and will be analyzed within the **Alternatives Development Chapter**. This baseline level of siting analysis will serve as the planning framework for the Master Plan Timeline Horizon. It is recommended that the airport work with the FAA Air Traffic Organization to pursue an Airport Traffic Control Tower (ATCT) siting study within the near term.

4.2.13 Drainage and Storm Water Facilities

Based on the airport's proximity to the ocean and its mean sea level elevation of 13.4 feet, drainage and storm water facilities are critical.

The following is a list of potential required facility upgrades to meet current demands during normal seasonal periods:

- Correct adversely sloped pipe at Outfall 26 (outfall west of Runway 7/25)
- Correct standing water in pipes at Outfalls 10 and 12
- Correct standing water in Goleta Slough around outfalls
- Improve drainage capacity in Northwest corner of Airport
- Improve drainage capacity at West GA Apron
- Pavement encroachments over Taxiway A3 and West GA Apron
- Pavement encroachments over taxiway connection at east end of primary, taxiway connection at west end of primary, taxiway east of Runway 15L/33R (northern section)

As the airport considers final recommended design and development alternatives in the next chapter, the following items were taken into consideration from a drainage and storm water perspective:

- Probable taxiway removals/reductions/replacements
- Possible crosswind runway removal(s)
- Relocation of Air Traffic Control Tower along north central area
- Reduced taxiway connection at east end of primary
- Potential additional hangars in the northwest quadrant of the Airport
- Ongoing terminal addition
- Replace south apron areas with auto parking
- Long term future additional terminal expansion southward or south and west, including apron expansions westward
- Other potential apron expansion westward
- VTOL vertiports (6 options; two of which are north of Hollister)
- Potential of fuel farms expansion within existing drive circles
- Potential relocation of admin office to 495 Fairview
- Future electric charging stations (in north FBO area)
- AARF to remain with no change

There may be synergy between planned changes for future development alternatives, such as taxiway removals and other airfield modifications and changes required to meet current drainage and stormwater demands. These will be identified and evaluated within the **Alternatives Chapter** as well as directly and independently addressed through the pending airport drainage plan. **Appendix XX** depicts existing facilities including stormwater infrastructure network facilities and drainage sub basin topography.

4.2.14 Conclusion of Airfield System Capacity

The conclusions for this section are listed in **Table 4-11** below.

Table 4-11: **Conclusion of Airfield System Capacity**

Area	Conclusion
Airfield Geometry	Possible removal of one of the crosswind runways and minor taxiway connector reconfigurations.
Critical Aircraft	The critical aircraft will change from a Boeing 737-800 to the newer Boeing 737-800 MAX model.
Airfield Demand / Capacity	SBA is currently operating at 52 percent of its annual capacity. SBA is forecasted to handle 116,887 operations in 2041. The increase in operations will result in SBA operating at 58 percent of annual capacity. No major airfield change will be required for airport capacity purposes.
Airport Design	Relocate service roads out of runway protection zones or to locations that maximize mitigation. Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone
Wind Coverage	Wind coverage analysis reveals no additional improvements required. There is no justification for the crosswind runways.
Taxiway Design	Taxiway specifications (Taxi Design Group) for SBA is TDG-3, and no change is recommended. Significant required changes to the taxiway layouts, crossings, and locations are identified. Design alternatives to address these modifications are outlined in the next chapter.
NAVAIDs	Site a future PAPI on the approach end of Runway 7
ATCT	FAA personnel have reported that the existing Airport Traffic Control Tower (ATCT) has reached the end of its useful life and should be replaced within the planning period.
Drainage and Storm Water	Drainage and stormwater facilities need considerable enhancement, design alternatives to address these modifications are outlined in the next chapter.

4.3 RUNWAY LENGTH ANALYSIS

This runway length analysis determines the length needed to meet existing and future aircraft demands at SBA. The analysis considers the amount of annual activity and aircraft design characteristics.

The assessment follows these steps:

- Identify the most demanding aircraft.
- Define applicable design guidance using AC 150/5325-4B*, Runway Length Requirements for Airport Design* (AC 5325-4B).
- Perform analysis and identify the recommended runway length.

4.3.1 Overview

The recommended runway length should be able to accommodate the takeoff and landing requirements of the design aircraft. The method for assessing runway length is determined by the aircraft category in AC 150/5325-4B, which is based on maximum takeoff weight (MTOW):

- Small aircraft (MTOW less than 12,500 pounds)
- Large aircraft (MTOW between 12,500 pounds and 60,000 pounds)
- Aircraft with MTOW greater than 60,000 pounds

Performance capabilities of individual aircraft are influenced by factors such as aircraft payload and fuel load, wind conditions, runway elevation, air temperature, and dew point. Runway length calculations are performed for each individual flight that occurs at SBA based on the specific characteristics of the flight and local airport conditions.

Aircraft performance information for small and large aircraft is determined by charts provided in AC 150/5325-4B. Aircraft with MTOW greater than 60,000 pounds have aircraft performance information provided by airport planning manuals (APMs) produced by the aircraft manufacturers.

4.3.2 Runway 7/25 Length Analysis

The Airport has expressed no desire to make modifications to the existing runway ends of Runway 7/25; however, the following analysis provides an examination of the critical aircraft and resulting length analysis.

The critical aircraft expected to use Runway 7/25 on a regular basis throughout the planning period is the 737-800. The *Boeing Airplane Characteristics for Airport Planning* manual for the 737-800 was used in this analysis. Using the average high temperature of the hottest month at SBA (75 degrees Fahrenheit) and the existing runway length of 6,052 feet results in a takeoff capability of approximately 93% of the 737-800's maximum certificated takeoff weight (MTOW). This means that for the majority of 737-800 operations at SBA, the existing Runway 7/25 length is sufficient. Airlines may, on occasion, need to make adjustments to their payloads in order to depart the airport during the hottest days for the longest haul flights.

4.3.3 Runway 15L/33R and 15R/33L Length Analysis

FAA AC 150/5325-4B specifies a different process for conducting length analysis for runways with critical aircraft with a maximum certificated takeoff weight of 12,500 pounds or less. This method calls for using a "family grouping" of aircraft and a "percent of fleet".
This method aims at providing a runway length recommendation for a variety of GA aircraft within the "family" represented by the critical aircraft. For SBA, the "100 percent of fleet" category is appropriate as the FAA defines this application as: "This type of airport is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area."

Using the "100 percent of fleet" and "family grouping" of aircraft in conjunction with the 75-degree Fahrenheit average high temperature of the hottest month results in a recommended runway length of approximately 3,500 feet for the 15L/33R and 15R/33L runways. This resulting length recommendation is 684 feet shorter than the existing 15R/33L runway and 680 feet shorter than the existing 15L/33R runway.

4.3.4 Conclusion of Runway Length Analysis

For Runway 7/25, no changes to the runway length to accommodate the design aircraft are recommended at this time.

For Runways 15L/33R and 15R/33L, no changes are required; however, there may be benefits to a future runway length reduction to help resolve the incompatible service road location near the approach end of Runway 33L.

4.4 COMMERCIAL PASSENGER FACILITIES

4.4.1 Overview

A Terminal Improvement Project (TIP) was conducted, separate from this Master Plan, to analyze and synthesis a forecast of conditions based on available information. The report is a needs assessment to determine what improvements are needed to accommodate future demand in the terminal building. Data included in the TIP project includes the following:

- 2017 Masterplan
- Existing and forecast flight schedule
- Traffic studies
- Other information that was used to create a projected passenger volume throughout the day.

Per the TIP, the current prevalent aircraft type at SBA is the A319, which is operated by American Airlines (AA) and United Airlines (UA). The regional jets were up-gauged to 75-seat aircraft to reflect the announced changes that UA is making with their regional jet fleet. The 737-700 was retained for all Southwest (WN) departures. The WN fleet was not up-gauged as SW has not been deploying the 737-800 to all secondary markets. Alaska Airlines (AS) also operates at SBA with 76-seat regional jets. Passenger load affects various aspects of the terminal complex throughout the day and is driven by the Design Day Flight Schedule (DDFS). The existing DDFS is based on the schedule from August 4, 2022. The DDFS features AA, AS, WN, and UA and features 4 main departure and arrival peaks. Using the DDFS, peak hour deplanements were calculated to be 346 passengers, and peak hour enplanements were calculated to be 474 passengers. **Table 4-12** shows the breakdown of daily departures by the airlines. UA is the majority carrier by total departures and seats, followed by WN.

Table 4-12: **Daily Departures**

Airline - Aircraft	Number of Departures	Sum of Departure Seats
AS – E75L	4	304
AA – A319	4	512
AA – CRJ9	1	76
WN – B737	6	858
UA – A319	3	384
UA – A320	1	150
UA – B738	1	166
UA – CRJ2	3	150
UA – CRJ7	1	70
UA – CRJ9	1	76
Total	**25**	**2,746**

Source: SBA TIP Memorandum

SBA's proposed plan is to add three or four new gates for the terminal. A future DDFS was developed by adding two new operations to each of the four new gates, adding a total of eight new flights across the entire day. The new flights were added under a new entrant carrier and were added using an A319 aircraft with 128 seats, which is the most used aircraft from the existing schedule. A second change was made to up-gauge all 50-seat regional aircraft in the existing schedule to 76-seat regional aircraft. The changes lead to the peak hour deplanements changing from 346 to 496 passengers, and peak hour enplanements changing from 474 to 590 passengers.

The peak hour deplanements and enplanements form the basis to determine the types, locations, and quantity of space needed at various locations in the terminal. The existing spaces in the terminal are compared with forecasted demand to identify areas that are short of space and where improvements will be needed to meet demand.

4.4.2 Evaluation for Current Demand and Forecast

The following facilities requirements analysis is based on the Corgan - July 2023 Terminal Improvement Project Preferred Concept - Basis of Design (TIP) and is summarized here for the areas listed below. The TIP report provides an evaluation of each part of the terminal building to determine if existing space is sufficient to meet forecasted demand in passenger enplanements and deplanements.

The following areas inside of the terminal building were evaluated:

- Ticket Lobby
- Concessions
- Landside Circulation
- Security Screening Checkpoint
- Airside Circulation
- Holdroom

- Restrooms
- Baggage Claim Area
- Outbound Baggage (BHS and Makeup)
- Rental Car Lobby, Office, and Counter

4.4.2.1 Gates

The TIP adds two contact gates with passenger boarding bridges and two walk-out gates for a total of four gates. The TIP uses a design aircraft – the Airbus A320, which is a narrow-body aircraft similar in size and form to the critical design aircraft specified in the **Aviation Forecast Chapter**. The two walk-out gates utilize the ground floor (level 1), while the two contact gates utilize the second floor. Both gate enhancements have corresponding expansion to terminal facilities such as holdrooms, circulation space, and concessions that are independently summarized in the sections that follow.

4.4.2.2 Ticket Lobby

The ticket lobby includes the ticketing hall, ticketing counters, and kiosks. Requirements were calculated based on peak hour originating passengers, and assumptions were made to calculate the space needed to meet existing and future demand. Data used for calculations was sourced from International Air Transport Association (IATA) ADRM 11, and the following assumptions were made:

- All full-service counters are assumed to be dedicated full-service counter positions. All passengers with a bag will use a full-service counter.
- All kiosks are common-use, and only passengers without bags will use a kiosk.

Ticket Lobby Needs Assessment

Based on anticipated needs, SBA meets demand for physical check-in desks and kiosks to accommodate forecasted demand. Approximately 700 square feet of additional queue space is needed in the ticketing hall.

4.4.2.3 Concessions

Concessions includes the landside and secure-side areas of the terminal. Concessions can be broken down further into food and beverage and retail services. The existing footprint of concession areas in the terminal is 4,630 square feet, broken down into 3,680 square feet in the secure area of the terminal and 950 square feet in the landside area of the terminal. The following assumptions were made:

- The recommended split for square footage is 80 percent for secure-side and 20 percent for landside when accounting for total concessions square footage.
- Based on guidance from IATA ADRM 11, the recommended concession distribution for retail is 30 percent and food and beverage is 70 percent.

Concessions Needs Assessment

Based on anticipated needs, SBA will need a total concession footprint of 7,200 square feet. Secure-side concessions will require a total of 5,760 square feet, which would require an addition of 2,080 square feet to existing facilities. Landside concessions will require a total of 1,440 square feet, which would require an addition of 490 square feet to existing facilities. Based on the IATA guidance listed in the assumptions, the total square footage of retail concessions inside of the terminal building should be 2,160 square feet, and food and beverage should be 5,040 square feet.

4.4.2.4 Landside Circulation

The following initial recommendations are summarized within the TIP:

- No additional improvements along Fowler or Moffett are needed.
- Additional long-term parking stalls will be needed to meet future demand. The current amount of 757 stalls will need to be increased to 1,470 stalls.
- No additional short-term stalls are needed.
- Cell-phone lot was not considered.
- The number of lanes in the landside loop roadway currently provided is sufficient to accommodate forecast demand. An additional roadway lane on the inner curbside would allow double parking during peak periods and flexibility for future growth but is not required to accommodate forecast demand through 2033.
- Inner and outer curbs for taxis, TNC, limos, shuttles, and busses are all sufficient to meet current demand.

4.4.2.5 Security Screening Checkpoint

The Security Screening Checkpoint (SSCP) represents the passenger volume sum of check-in hall output and passengers who bypass check-in and go straight to SSCP. Data used for calculations was sourced from International Air Transport Association (IATA) ADRM 11. The existing area has three lanes and a square footage of 1,800 square feet, which includes two general boarding lanes that are 1,200 square feet and one pre-check lane that is 600 square feet. Assumptions for the SSCP are:

- Lanes process at a rate of 215 passengers per hour per lane for pre-check passengers.
- Lanes process at a rate of 150 passengers per hour per lane for regular passengers.
- Passengers are broken down into 30 percent pre-check and 70 percent general boarding.
- TSA recommends a minimum of 600 square feet of queue area per lane.

Security Screening Checkpoint Needs Assessment

Based on anticipated needs, SBA will need an expansion to the SSCP to accommodate two additional processing lanes and queue space. However, due to insufficient space to add additional SSCP lanes, there is only enough room to incorporate one additional lane in the terminal. Upon discussion with SBA, a resolution was made to increase the max allowable queue time for pre-check and general boarding lanes to 5 and 15 minutes, respectively. The increase in max queue time results in a decrease of additional lanes needed to meet demand. The increase in queue time changes future demand to one additional lane, for a total square footage of 2,400 square feet for the SSCP area, an increase of 600 square feet.

4.4.2.6 Holdroom

Holdrooms are provided at each gate or group of gates, this includes seating and standing areas for passengers and check-in podiums for airline agents. Holdroom requirements are based on a design aircraft type for each gate. The existing holdroom is 7,600 square feet, with 5,500 square feet for passengers to sit and stand and 2,100 square feet for check-in podiums and airline agents.

Assumptions for the holdroom are Gates will be split between regional jets and narrowbody jets.

- 8 future gates are needed, in total to meet demand. 4 as outlined in TIP, 4 additional for project activity level 2 and 3 outlined in Table 4-14.
- Holdroom requirements are based on formulas and level-of-service guidelines in IATA ADRM 11

Holdroom Needs Assessment

Based on anticipated needs, SBA will need to expand the holdroom by an additional 7,737 square feet and add an additional four gates for airline service. Two of the future gates will be designed for the A319 with 128 seats, and the remaining two gates will be designed for the E175 with 76 seats.

4.4.2.7 Restrooms

Restrooms include the total area of restrooms in the landside and secure side of the terminal. Based on the TIP there is a total square footage of 2,200 square feet of restrooms in the terminal. The TIP does not provide a breakdown on the square footage of restrooms that are for men or women or how square footages are split between the landside or secure-side of the terminal. A summary of the square footages based on the latest terminal floor plan breaks down these areas into the following:

- Secure Side
  - Men Restrooms: 8 fixtures, 4 sinks, total area of 445 square feet
  - Women Restrooms: 11 fixtures, 6 sinks, 608 square feet
  - Total: 19 fixtures, 10 sinks, 1,053 square feet
- Landside
  - Men Restrooms: 7 fixtures, 5 sinks, 361 square feet
  - Women Restrooms: 8 fixtures, 6 sinks, 465 square feet
  - Total: 15 fixtures, 11 sinks, 826 square feet
- Terminal Totals
  - Men Restrooms: 15 fixtures, 9 sinks, 806 square feet
  - Women Restrooms: 19 fixtures, 12 sinks, 1,073 Square feet
  - Total: 34 fixtures, 21 sinks, 1,879 square feet

There is a difference of 321 square feet between the 2019 Cap Study and the latest terminal floor plan. Assumptions for future restroom demand is as follows:

- The principal demand driver for concourse restrooms is arriving passengers.

- Restroom requirements are based on the peak 20-minute period for arriving passengers and toilet fixture and sink requirements are calculated using ACRP Report 130.
- 40 percent of arriving passengers use the secure-side restrooms, and landside restroom requirements are not subject to peak surging demand.

Restroom Needs Assessment

Based on anticipated needs, SBA will need to add an additional two fixtures and one sink for male restrooms and three fixtures and two sinks for female restrooms to accommodate added operations in the future schedule. Restroom expansions for fixtures and sinks should be sized for their "catchment" areas and checked against code requirements.

4.4.2.8 Baggage Claim Area

The baggage claim area consists of bag slides with hall area for passengers to wait for bags instead of carousel devices. The baggage claim area consists of a hall area, frontage, and Baggage Service Office (BSO). The hall area is 3,800 square feet, the frontage is 84 square feet, and the BSO is 300 square feet. Assumptions for future restroom demand are as follows:

- Requirements for baggage claim were based on the number of slides needed for the number of flights in the peak period.
- Hall area requirements were based on the maximum number of people arriving in a 20-minute period.
- Data was based on IATA ADRM 11.

Baggage Claim Area Needs Assessment

Based on anticipated needs, SBA will need an additional bag slide and 1,400 square feet of claim-hall area to meet future demand. There is no anticipated need for more frontage area or BSO expansion.

4.4.2.9 Outbound Baggage (Baggage Handling Systems and Makeup)

The existing outbound baggage area includes the makeup area and bag screening area. The makeup area, where bags are sorted and arranged according to their destination before being loaded onto the aircraft, is 8,450 square feet and the bag screening area is 2,400 square feet, a total area of 10,850 square feet. Assumptions for outbound baggage is as follows:

- Formulas for baggage inspections systems were provided by the Transportation Security Administration (TSA)
- Planning guidelines and design standards used in determining future demand on the baggage handling systems (BHS) and makeup areas.
- Outbound baggage makeup requirements are based on check baggage peak 4-hour periods and are calculated using formulas from ACRP Report 25.

Outbound Baggage (BHS and Makeup) Needs Assessment

Based on anticipated needs, SBA will need an additional 3,000 square feet of makeup area. However, it is possible that the increased demand can be accommodated with the existing area and operational solutions.

4.4.2.10 Rental Car

The rental car area contains the counters, offices, and queue area for the rental car agencies – a total of 1,140 square feet. The assumption for this area is that there is infrequent peaking of customers for the rental car agencies.

Rental Car Needs Assessment

Based on anticipated needs, SBA will not need any expansion to the existing rental car area. The infrequent peaking of customers is not sufficient to warrant an expansion of the area, and the existing area is sufficient to maintain an acceptable level of service.

4.4.2.11 Terminal Planning Considerations Beyond the TIP

There is a level of uncertainty associated with long-range demand forecasting and associated planning exercises performed as part of a master plan. As a result, planning activity levels (PALs) are identified to inform the future levels of passenger activity, air cargo tonnage, and aircraft operations at which facilities become congested and expansion would be required. PALs help to disassociate projects from specific years as realized activity levels may occur earlier or later than the forecast predicts. With PALs, airport management can accelerate or decelerate projects in the capital improvement program based on how demand occurs in the future. Three PALs were selected to represent near-, mid-, and long-term planning. PAL 1 corresponds to near-term aviation demand that is expected to occur in the 5-10-year time period; this correlates to the activity levels addressed and solved for in the TIP. PAL 2 correlates to expected demand in the 10-20-year range, and PAL 3 correlates to demand that is projected to occur beyond 20 years in the future. The aviation demand associated with each planning activity level is summarized in **Table 4-13**.

Table 4-13: Aviation Demand Associated with Each Planning Activity Level

	Existing	PAL1	PAL2	PAL3
Passenger Enplanements	**342,000**	**575,000**	**725,000**	**1,100,000**
Aircraft operations	103,419	173,877	219,236	332,634
Total Commercial Aircraft Operations	22,639	38,063	47,992	72,815
Annual Passengers	684,000	1,150,000	1,450,000	2,200,000
Passenger peak hour deplanements	474	794	1000	1,518
Passenger peak hour enplanements	346	582	733	1,113
Passenger RON Spots	2	2	2	2
Peak Hour Passenger Departures	33	55	70	106

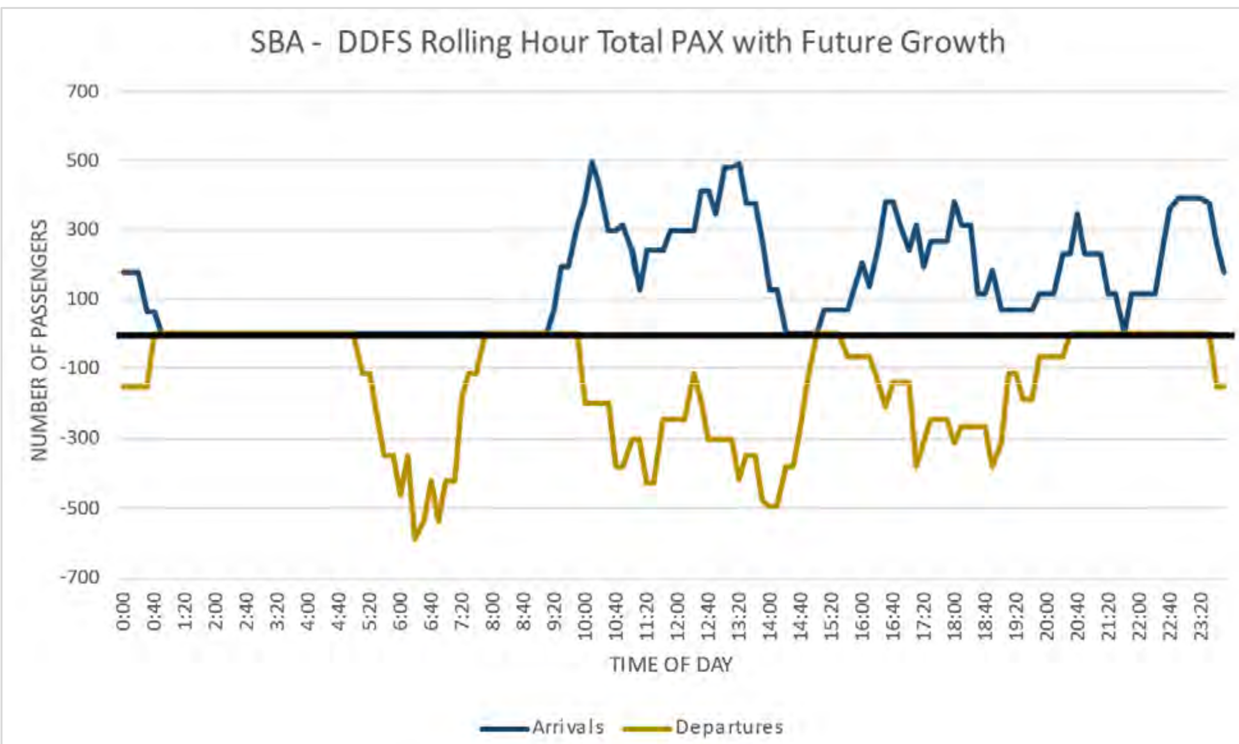
4.4.2.12 Future Flight Schedules

Detailed aircraft flight schedules provide a planning-level synopsis of future aviation activity (peak periods, time-of-day, departures and arrivals, fleet mix, etc.) and are used to generate the facility requirements contained in this chapter, especially as they relate to the passenger terminal, ground transportation, and air cargo needs.

Historical enplanement and operation records at SBA are based on data from the United States Department of Transportation (U.S. DOT) T-100 database and records provided by SBA's air traffic control tower (ATCT). The T-100 form is filled out monthly by scheduled, charter passenger, and cargo airlines. This database provides a detailed record of passenger and cargo airline activity. The data used for enplanements and scheduled commercial service is based on T-100 records as they have detailed information about operations, airlines, and aircraft type. SBA ATCT records are used to verify T-100 information and to supplement operational data not captured in the T-100 records.

For future flight schedules, the base-year 2021 ADPM schedule was grown based on forecast passengers and operations as well as interviews conducted with airlines serving the airport. The activity profiles associated with the expected passenger peak period volumes are shown in **Figure 4-12** (provided by Corgan in **Appendix XX**).

Figure 4-12: **Passenger Peak Period Volumes for Estimated Future Flight Schedules**



Source: Corgan Statistic Model

4.4.3 Summary of Requirements

Facility requirements are organized according to functional areas of the airport. As shown in **Table 4-14**, many airport facilities improvements will develop sufficient capacity to accommodate forecast activity levels throughout PAL 1. This is primarily due to the TIP recommendations as it is assumed that the airport will complete the recommended project initiatives.

However, a number of facilities will need to be modified or expanded throughout the planning period to accommodate future activity, improve Airport operational capabilities or levels of service, or meet key design standards. Notable elements contained within the Project Activity Levels Facility Requirements Summary include:

- **Airfield** – The existing airfield facilities provide sufficient capacity to accommodate baseline forecast aircraft operations through PAL 3. However, FAA personnel recommend refurbishment or replacement of the air traffic control facilities.
- **Passenger Terminal** – The existing passenger terminal requires expansion throughout the planning period to provide sufficient passenger security screening, passenger holdrooms, concessions, restrooms, and aircraft gates.
- **Ground Transportation and Landside Circulation** – The public parking lots are currently operating at high levels of occupancy throughout the year, and they are often full in peak months. While Transportation Network Companies (TNC) introduce some uncertainty regarding the relationship between passenger demand and parking demand, the airport should consider additional parking solutions as activity levels pass PAL 1.
- **Air Cargo** – Air Cargo is absent from the Project Activity Levels Facility Requirements Summary. Forecasted demand for air cargo is flat and does not necessitate cargo facility expansion. However, plans should be prepared to identify additional parking for air cargo aircraft should FedEx grow their operation or have fleet change modifications or should another integrated carrier like UPS come to the airport.
- **General Aviation** – Corporate and business aviation at the Airport is growing, and the rate of hangar occupancy associated with this industry is consistently in the 95% range. Tenants and entities routinely contact the Airport to inquire about space. Accordingly, the airport should be prepared to accommodate 142 based aircraft in the near term, 167 aircraft in the midterm, and 185 aircraft in the long term.
- **Rental Car** – Rental car support facilities appear to be capable of accommodating PAL 3 demand with only minor improvements over the planning period, as necessary.

Table 4-14: Facility Requirements - PAL

	Existing	PAL 1	PAL 2	PAL 3
Critical Aircraft	737-800	737-800 MAX	737-800 MAX	737 Max 9
Airport Reference Code	D-III	D-III	D-III	D-III
Runway Length	6062 X 150	6062 X 150	6062 X 150	6062 X 150
Passenger Terminal				
Ticket Lobby (Total square feet of counter + queue)	2200	2900	3650	5511
Ticket Counter (Total number of positions)	28	28	32	36
Kiosks (Total number of kiosks)	6	6	8	12
Landside Concessions (Total square feet)	950	1440	1820	2750
Airside Concessions (Total square feet)	3680	5760	7250	11000
Security Screening Check Point (Number of lanes)	3	3	3	5
Security Screening Check Point (Total square feet)	3840	7590	7590	12,650
Gates	4,1	6 contact 2 walk out	7,1	8
Holdroom Area	7600	20400	23800	27200
Airside Restrooms	19 fixtures, 10 sinks, 1053 square feet	22 fixtures, 11 sinks, 1210 square feet	25 fixtures, 12 sinks, 1375 square feet	29 fixtures, 14 sinks, 1595 square feet
Landside Restrooms	15 fixtures, 11 sinks, 826 square feet	17 fixtures, 12 sinks, 935 square feet	19 fixtures, 13 sinks, 1045 square feet	22 fixtures, 15 sinks, 1210 square feet
Bag Slides and Carousels	2 slides	2 slides 1 carousel	2 carousels	3 carousels
Bag Claim (Total square feet)	3841	7445	7445	9745
Outbound baggage Makeup/Baggage Handling (Total square feet)	10850	11300	14230	21500
Rental Car Counter & Office Area (Total square feet)	1140	1140	1436	2168
Rental Car Offices	4	5	6	9
Rental Car Ready/Return Spaces	151	190	239	360
General Aviation Based Aircraft	141	177	223	336
Totals				
Square Foot Sum (Total square feet)	31901	57975	67221	92524
Net Increase (Total square feet)	0	26074	9246	25303

* Denotes solution that includes a double wide pick up/drop off lane providing total capacity

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4.4.4 Conclusion of Commercial Passenger Facility

Most facilities within the passenger terminal will need to be updated, expanded, or enhanced to meet future needs. In general, the major areas of improvement are as follows:

- Short term and long-term parking facilities will need significant capacity upgrades.
- Landside circulation roadways, curbs, and waiting areas need modest upgrades for long-term capacity needs but will meet the demand in the mid-term (5-15 years).
- Gates, ticket counters/lobbies, and kiosks need considerable capacity upgrades to meet near-term demand.
- Security screening check point expansion is not required in the near-term but will require expansion to meet long-term demand. The SSCP queuing area requires significant expansion to meet short-, mid-, and long-term passenger needs.
- Rental car facilities meet current and mid-term demands but will need enhancement to meet long-term demand.
- Significant capacity building in the airside and landside concessions facilities is required to meet short-, mid-, and long-term demand.
- Baggage claim and restroom facilities both met short-term demand but will require modest enhancement to meet mid- and long-term demand.

Detailed development alternatives to meet capacity demands for the SBA Passenger Terminal are located in the TIP in **Appendix XX**. The TIP describes solutions for the short-term terminal and landside facility requirements. The Terminal Improvement Project currently underway programs some of the recommended facilities and it is anticipated that the airport will carry out these enhancements.

4.5 GENERAL AVIATION FACILITIES

General aviation facilities at Santa Barbara are struggling to meet current demand. **Figure 4-13** contains a list of typical general aviation services offered at an airport of commensurate size and capacity with similar demand. Recent reorganization of the airfield placing two Fixed Based Operators (FBO) in the north quadrant have affected the overall service offering for general aviation aircraft. The availability of fuel, hangars, ramp space, rest facilities, landside parking, and other amenities typically associated with FBOs are limited considering the sophisticated nature of the average clientele operating into and out of the airport. Discussions with one of the fixed based operators revealed a need for additional ramp parking spaces from mid-size to large turbine aircraft as well as enhanced fuel facilities to meet current fuel volume upload demands. Other facilities in need of improvement or enhancement are also requested, including client meeting areas, customer service areas, pilot lounge facilities, and administrative office spaces. Hangar space for visiting aircraft remaining overnight is also limited. This portion of service offerings for the FBO is growing as the size and complexity of the fleet mix continues to expand. Owners and operators of turbine aircraft are requesting secure storage of the aircraft overnight as opposed to leaving the aircraft tied down on the ramp. It is common to have two fixed based operators on an airport of this size. SBA has two FBOs, Atlantic and Signature. The airport is conducting a feasibility analysis to consolidate general aviation activities in the north quadrant. The Airport will release a Request for Proposals to FBOs in the near term to develop two FBO leaseholds as contemplated in the 2017 Master Plan. Hangars owned by an FBO, the airport, or a private developer may provide additional storage and services to the general aviation community. The exact location, facility size and orientation will be outlined within the alternatives chapter of this document.

Figure 4-13: Typical General Aviation Services

100 Low Lead Line Service	Catering Refrigeration	Nitrogen
Fuel System Icing Inhibitor (Prist)	Dishwashing	Oxygen
Jet A Line Service	Flight Planning	Potable Water
Volume Discount programs and contract fuel	Fuel Farm and bulk fuel handling, quality assurance and control	Sports Charter Handling
Aircraft Cleaning	GPU KVA	Taxi Service
Aircraft Detailing	GPU VDC	Tie Downs
Aircraft Lubricants	Helicopter Handling	Transient Hangar Space
Aircraft Maintenance	Hotel Booking	Transport Category Handling
Aircraft Parking	Ice	Vacuum Cart
Aircraft Parking Long Term	Laundry Service	VIP/Head of State Handling
Avionics Service	Lavatory Service	Water Service
Baggage Carts	Limousine Service	Wheelchairs
Catering	Medical/Ambulance Capabilities	Aircraft and client security

4.5.1 Hangars

General aviation requires two distinctly different hangar products: one would accommodate a small reciprocating/piston single engine or multi engine aircraft and the other, much larger hangar size would accommodate turbine aircraft ranging in operating weights above 12,500 pounds to 125,000 pounds. Typically, small general aviation hangars accommodating piston-driven aircraft are developed by a private company under a lease agreement with the airport and then marketed as such. Hangars providing coverage for larger turbine aircraft may be owned by private individuals, fixed based operators, the airport itself, or any combination thereof. Understanding the hangar business model and local marketplace is outside the current scope of this master plan; however, it is assumed that the demand for large turbine aircraft hangars is strong at the airport. During the outreach process, the general aviation community flying smaller piston aircraft was vocal about requesting updated hangars and amenities.

4.5.2 Aircraft Parking, Storage Services

Ramp and hangar parking capacity is not currently meeting demand. Additional facilities are required to meet demand for small piston engine aircraft through large turbine aircraft. As the fleet becomes more sophisticated, larger, and more costly, aircraft owners, pilots, and operators are moving away from ramp parking and tie down rental to hangars and storage arrangements that provide a higher level of environmental protection and security. Demand for exposed outdoor tie downs or shade hangars is not anticipated. Demand for temporary overnight ramp storage and hangars is expected to remain throughout the planning period. During the planning horizon, the preferred forecast anticipates a 1.37% growth in based aircraft, which equates to 142 based aircraft in the near term, 167 aircraft in the midterm, and 185 aircraft in the long term.

4.5.3 Legacy GA Support Facilities and Utilities

4.5.3.1 Historic Structures, Preservation, Challenges for Upkeep Overtime

Two types of historic structures currently exist on the airport – those protected by statute and those structures without protection simply existing in their current state. For the purposes of this chapter, there are no facility requirements of these structures except the demand to protect and repair those facilities. This means that the airport has no need currently identified need for these facilities that would require specialized enhancement or care. Some facilities, such as 521 Firestone Road and 404 Moffett Place, are not historically protected but may have future facility value and are in need of repair and updating. These structures may offer some capacity in the future for various needs but have no current planned use.

4.5.4 Emerging Technologies Such as Advanced Air Mobility, Electric VTOL, Electric Aircraft

4.5.4.1 Advanced Air Mobility General Overview

Trends revolving around Advanced Air Mobility (AAM) are creating the potential to introduce new modes of transportation for goods and people, new infrastructure such as vertiports, and new aircraft. The Federal Aviation Administration (FAA) defines AAM as a new transportation system that can help to increase access to areas that are underserved by the current aviation industry. AAM use-cases will vary depending on the diverse needs of the airport, community, and passengers. When the market matures, AAM will allow passengers access to point-to-point transportation, goods delivery, and emergency services through an integrated and connected multimodal transportation network.

4.5.4.2 Electric Aircraft Characteristics

There are several original equipment manufacturers (OEMs) that have conceptual aircraft in development and are waiting for certification. The conceptual aircraft fall into three general categories:

- **Short Take-off and Land (STOL) Aircraft:** Require a short runway for take-off and landing. Electric STOLs (eSTOLs) will have the capability to use existing taxiway and runway systems since they can operate like traditional aircraft.
- **Vertical Take-off and Land (VTOL) Aircraft:** Can take off, hover, and land vertically. Electric VTOLs (eVTOLs) will require a significant amount of energy to hover and potentially new air route corridors.
- **Conventional Take-off and Landing (CTOL) Aircraft:** Also known as horizontal takeoff and landing aircraft, conventional aircraft use fixed wings rather than rotors to take off and land and require runways. Electric CTOLs (eCTOLs) will have the capability to use existing taxiway and runway systems since they operate like traditional aircraft.

It is important to note that the majority of electric aircraft will be fully electrical or hybrid electric, but there are OEMs that have conceptual aircraft with propulsion systems comprised of petroleum and hydrogen.

4.5.4.3 AAM Use Cases at Airports

Commercial and GA airports have the potential to play major roles in the implementation and use-cases of AAM due to existing infrastructure such as air traffic control towers (ATCTs), fixed based operators (FBOs), terminals, hangars, runway systems, heliports, and parking aprons. Airports may need to identify designated areas for AAM facilities such as charging infrastructure, vertiports, and utility infrastructure. AAM has the potential to help airports obtain their sustainability and equity goals by providing another alternative for transportation using environmentally friendly modes of transportation.

4.5.4.4 Potential Benefits of AAM at Airports

Potential benefits of AAM at airports include:

- Reduction in emergency response times / natural disaster response capabilities.
- Increased range of access to various destinations (rural and urban).
- Economic opportunities.
- Increased utilization of GA infrastructure.
- Lower emissions and noise pollution to surrounding communities.

4.5.4.5 Electric Infrastructure

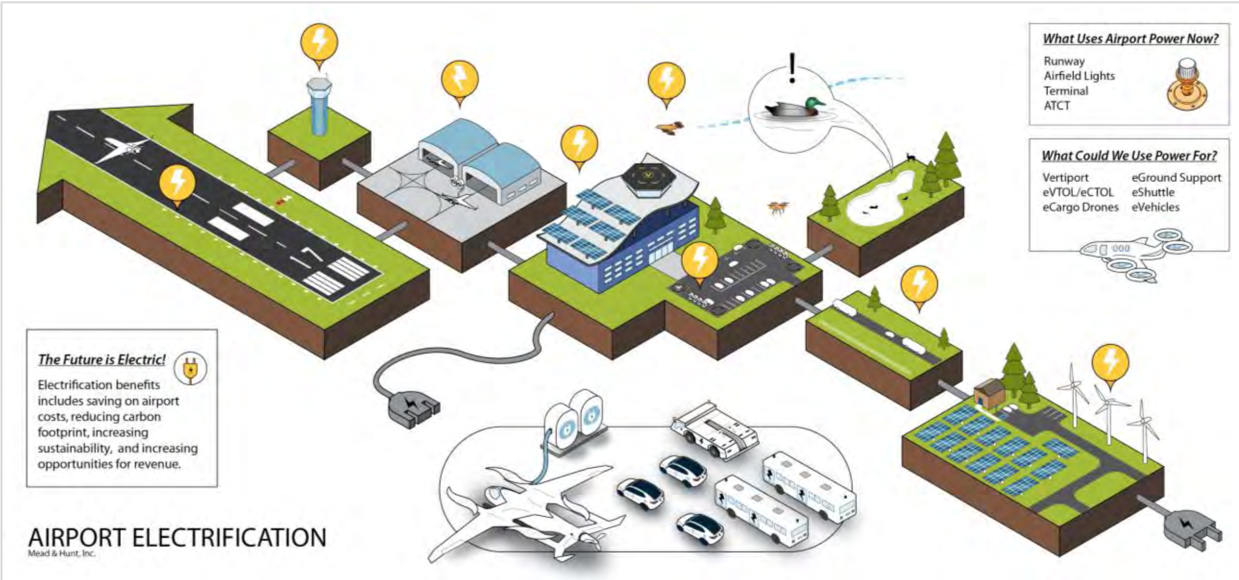
To replenish electric and hybrid-electric aircraft batteries, electric charging infrastructure will be required to support electric aircraft operations. Like their jet fuel counterparts, each aircraft, flight route, and mission will have different operating requirements and need different ground resources. Commercial aviation flies on a schedule and will need fast charging capabilities to meet short turnaround requirements. General aviation is less scheduled and charging needs will be on a more ad-hoc basis.

4.5.4.6 Fixed and Mobile Chargers

Small commuter aircraft and hybrid regional aircraft may benefit from electric power supplied to the aircraft from the gate. Gates can provide 400 hertz (Hz) power units connected to the grid or ground handlers operating mobile ground power units (GPUs) can be used for charging. Other general aviation facilities could elect to equip part of their aircraft stand with chargers. High density tie-down parking layouts could be supplied with built-in or pop-up charging stations. Airport hangars can be equipped with built-in, portable or battery pack equipped GPUs as well.

Commercial aircraft operations (commuter, light air cargo, and regional air carrier) will benefit from the installation of more powerful charging systems. A quick turn-around can be achieved by using higher-powered fast chargers.

Figure 4-14: Airport Electrification



Source: Mead & Hunt, 2022.

4.5.4.7 Implementation of Infrastructure

There are four key steps when it comes time to plan and build aircraft charging infrastructure:

1. Site Evaluation
2. Accounting for Environmental Impacts
3. Construction and Design
4. Operating AAM

Step 1 – Site Evaluation

Key considerations in the implementation of electric aircraft consist of the following:

- Proximity to electrical utility lines.
- Connectivity between the landing area and charging stations.
- Availability of facilities and services for operators and cargo.
- Sensitivity of impacted environmental resources.
- Compatibility with airspace surfaces for the charger and aircraft.

Some electric aircraft have wingspans of 50 feet or more. Setbacks and object free areas will need to be checked, and aircraft will need room to park when they are done charging.

Strategically placed chargers can boost airport revenue as operators spend money while the aircraft is charging. Siting chargers near an FBO or GA terminal are ways to provide many of the services aircraft operators may need. Installing automobile chargers in adjacent parking lots can help bring in additional airport revenue and leverage any investment in utility extension.

Step 2 – Accounting for Environmental Impacts

Construction on a federally obligated airport requires some level of environmental review. The FAA will determine its level of environmental oversight through the Section 163 process as described in the FAA Reauthorization Act of 2018. Chargers are generally unintrusive and environmental review is minimal; however, consideration should be given to extensions of utility lines to the charging site. There may be environmentally sensitive areas between where the utilities exist and where they need to be, which could lead to a more complicated project if the sensitive areas cannot be avoided.

Step 3 – Construction and Design

Building chargers follows the same principles as any other type of airport construction. FAA Form 7460-1 needs to be submitted for airspace review, a construction safety and phasing plan is needed, and notice should go out to any tenants and users that may be affected by construction activities. Once the charger is up and running, remember that FAA grant assurances apply, and revenue generated at the airport has to be reinvested in the airport.

Step 4 – Operating AAM

Going forward, open communication is important during the four steps to implementing electric aircraft charging infrastructure. The future of aviation is rapidly changing, and understanding the processes and procedures will lead to efficient electric aircraft operations alongside its implementation process.

4.5.5 Conclusion of General Aviation Facilities

The conclusions for this section are listed in **Table 4-15** below.

Table 4-15: **Conclusion of General Aviation Facilities**

Area	Conclusion
Hangars	The airport will need to construct a variety of general aviation hangar products to meet demand in the long term. Forecasts project an increase of 44 additional based aircraft within the planning period.
Legacy GA Support Facilities	The historic general aviation facilities are protected by statute and have not been considered in the facility requirement considerations of the airport.
GA Facilities	The non-historic general aviation facilities such as 521 Firestone Road and 404 Moffett Place need repair if the airport chooses to use them to meet administration, storage, or other business lease uses.
Emerging Technologies	The airport should consider planning vertiports and VTOL facilities as this technology develops. The airport will need to anticipate installation of e-charge facilities. Capacity for e-charging facilities will need to be considered on a case-by-case basis, no specific alternative for development of this technology is considered. The guidance outlined here gives the airport some framework to consider a future development process.

4.6 APRON

The commercial service apron located at the passenger terminal will require expansion to accommodate future gate expansion. In addition, overnight aircraft parking will require apron expansion and potential reconfiguration. Potential removal of the crosswind runway and changes to the parallel taxiway will be discussed within the **Alternatives Chapter**. Additional apron space and reconfiguration will be required. The airport is conducting a general aviation redevelopment study that will move current general aviation facilities into the north quadrant and likely precipitate future apron expansion needs in this area.

4.6.1 Conclusion of Apron

The conclusions for this section are listed below.

- Additional apron space and reconfiguration will be required to meet both future demand and accommodate future expansion of gate and RON spaces. As the long-term terminal expansion concepts are outside of the 20-year planning period, exact apron space needs are not provided in this Master Plan.

4.7 CARGO FACILITIES

The purpose of this section is to identify the facilities required to support air cargo operations at the airport. The movement of freight is often transported by dedicated cargo airlines, passenger airlines, freight forwarders, trucking, and custom brokers. SBA air cargo services include Empire Airlines and West Air, Inc., operating on behalf of FedEx, and Ameriflight, operating on behalf of United Parcel Service (UPS). Additional cargo is also transported on Alaska Airlines, American Airlines, and Horizon passenger flights. Air cargo operations at SBA are categorized as air taxi/commuter operations due to the aircraft being used. SBA is considered a small operation for air cargo, as the airport is within driving distance to Los Angeles and San Francisco, which have the means to operate a large portion of cargo traveling into the region. Cargo transported into SBA are often packages requiring a faster delivery time than what could be transported via ground transportation delivery services. SBA is part of a larger hub-and-spoke system servicing the region.

4.7.1 Cargo Buildings / Hangars

Primary air cargo facilities include the cargo apron, building space, and vehicle parking. Located on the eastern apron, FedEx is currently operating the only on-site cargo facility at SBA. FedEx leases approximately 50,000 square feet of the Ampersand hangar complex where primarily freight and mail are processed. Ameriflight aircraft, servicing UPS cargo, off-load on the north general aviation ramp into the UPS delivery trucks and are trucked off-site for processing.

The current air cargo facility processed approximately 1,537 tons of total cargo in 2021, which is approximately 67.7 pounds per square foot. Utilization of more than 1,000 pounds (0.5 tons) of cargo per square foot of building is considered to be in excess of the utilization ratio set forth by industry standards. SBA's current utilization rate is well below the average pound per square foot, which indicates that available cargo space is more than adequate to support the current and future need of air cargo tonnage. As indicated in the forecast, air cargo is anticipated to remain steady throughout the planning period; therefore, there is no need for additional cargo square footage.

4.7.2 Cargo Apron

The aircraft apron serves as a crucial maneuver area for loading and unloading air cargo as well as for parking aircraft. There is roughly 30,700 square yards of aircraft parking apron adjacent to the Ampersand complex, and both UPS and FedEx share the apron. FedEx primarily operated the Cessna 208 Caravan at the airport and Ameriflight (UPS) currently operates the Beechcraft 1900. FedEx has recently upgraded its regional cargo fleet in 2023 and 2024 to the Cessna 408 SkyCourier.. Configuration of the apron is underway to determine taxiing and parking options for the new model aircraft; however, no increase in air cargo apron area is warranted at this time as the demand and capacity will remain the same. **Figure 4-15** (on the next page) is an example of the potential parking and taxiing options being developed to accommodate the Cessna 408 aircraft.

Should air cargo operators alter the type of aircraft operating at SBA again, the existing apron will need to be reevaluated to accommodate the larger aircraft. According to the recent pavement condition report developed, the existing cargo apron is in satisfactory condition and, with regular maintenance, will continue to support a similar level of service.

4.7.3 Forecast

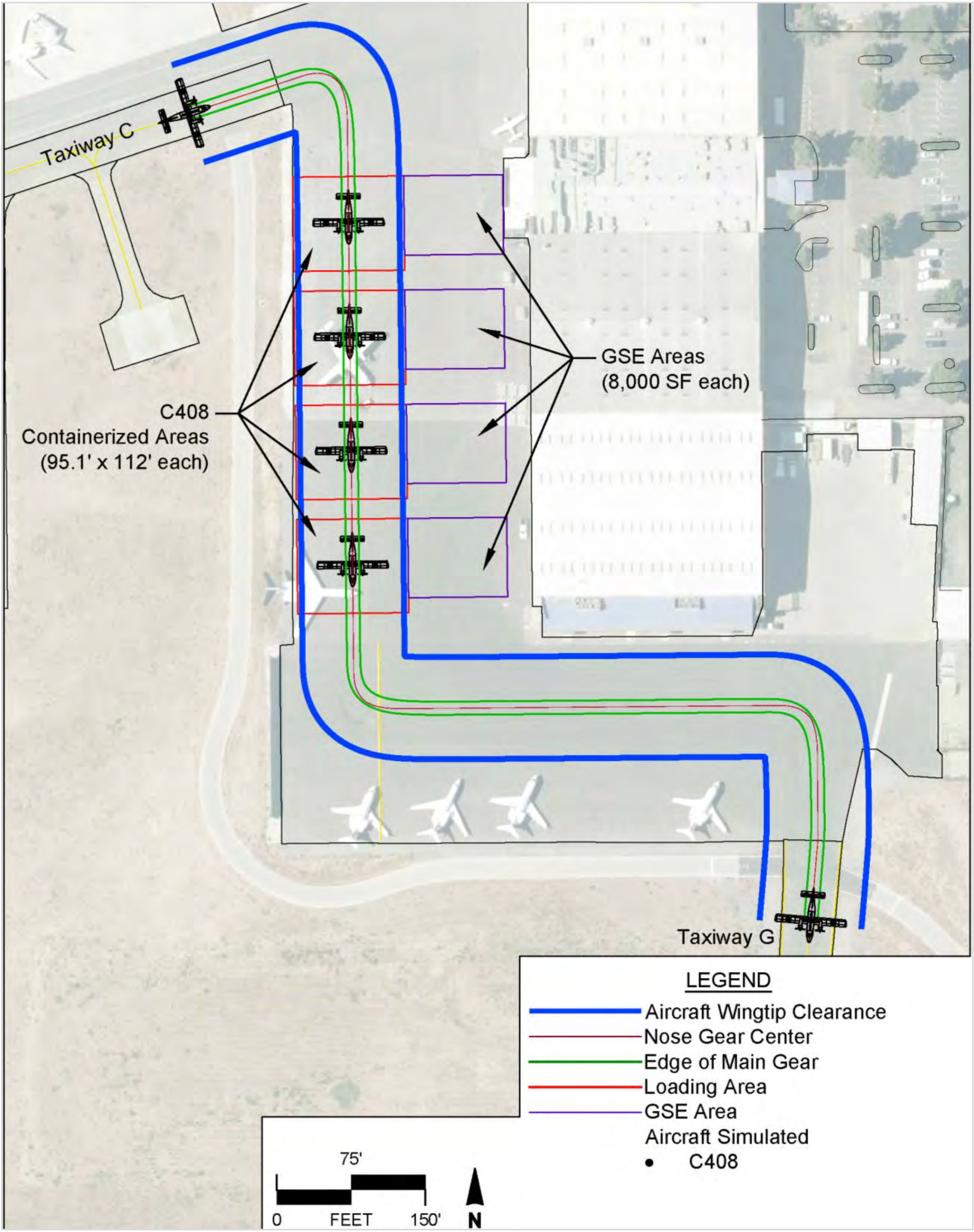
The projected air cargo activity is expected to be lower than the COVID-19 pandemic period of FY2020 and FY2021, but it will remain flat through the forecast period. Cargo volume is also projected to remain flat; however, it is anticipated that additional volume will be accommodated at the projected aircraft operation levels as not every flight utilizes the full payload capacity of the aircraft. Existing ramp space and facilities are projected to meet future demand; therefore, no significant facility upgrades for cargo are recommended.

4.7.4 Conclusion of Cargo Facilities

The conclusions for this section are listed below:

- The current facility meets near-, mid-, and long-term needs with no expected changes in demand.
- If cargo operators make changes to their aircraft fleet, the airport should consider apron enhancements.

Figure 4-15: **Example Configuration for New FedEx Cessna 408**



Source: Mead & Hunt

4.8 SUPPORT FACILITIES

4.8.1 Airport Administration

The airport is in need of additional airport administration office and facility space. The current administration building is in a prime airside facility area and is identified to be part of the FBO redevelopment leasehold RFP. The area most considered for future administration facilities is 495 Fairview Avenue at Building 245. Discussions regarding dispersed facilities for various disciplines may be supported based on the diverse facilities currently located on the airport. For example, safety and security personnel may be accommodated within the terminal, engineering and operations staff may be located either at the current building (495 South Fairview) or 404 Moffett Place, and other general administration staff may be located elsewhere.

4.8.1.1 Conclusion of Airport Administration

The conclusions for this section are listed below:

- The current airport administration facilities do not meet current needs.
- Two alternatives exist for future administration locations.

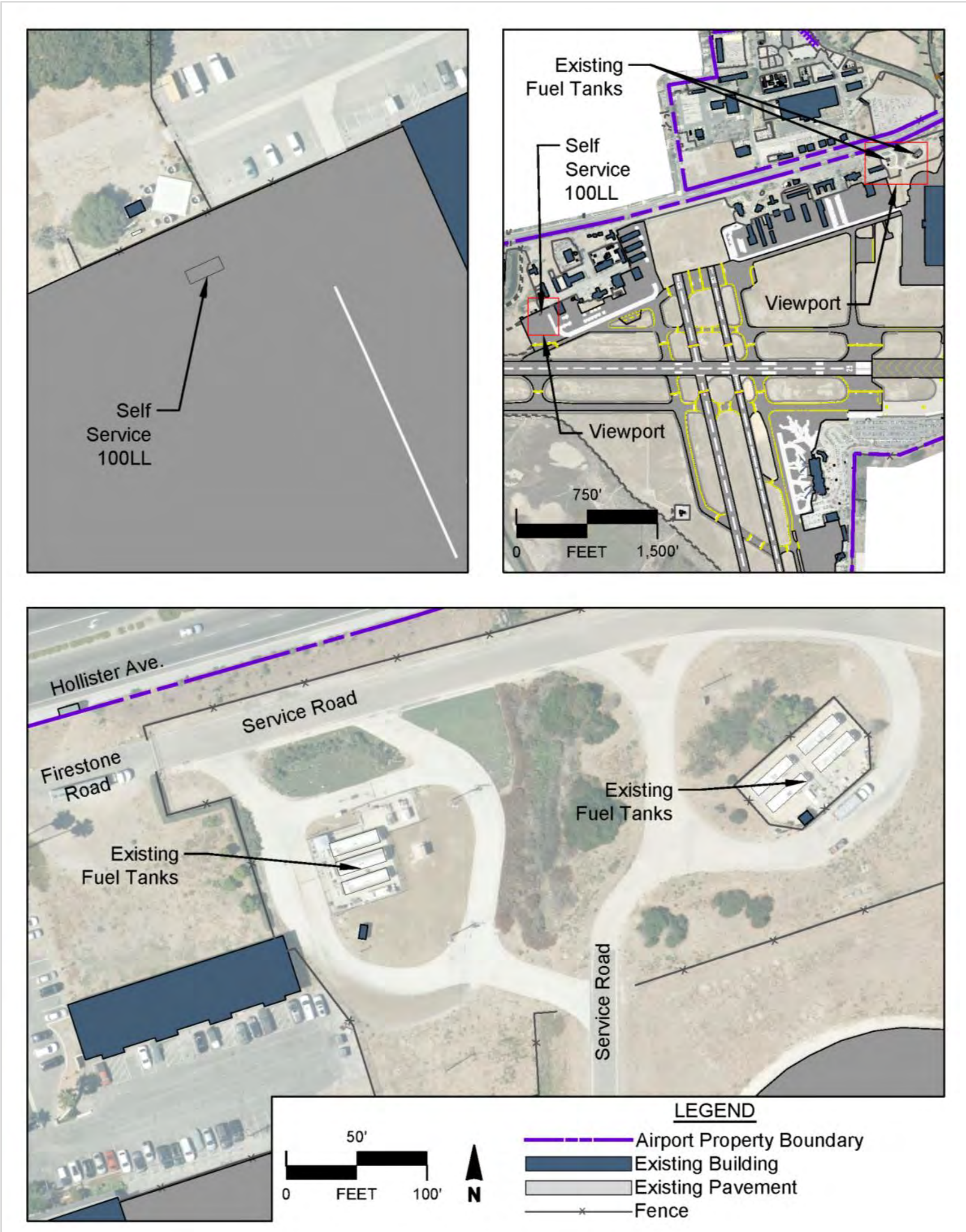
4.8.2 Fuel Storage

The fuel facilities at the airport are summarized below:

- Fuel Tank ownership – Owned by Atlantic and Signature
- Atlantic Aviation:
  - Two (2) 20,000-gallon Jet A fuel storage tanks
  - One (1) 12,000-gallon Avgas (100LL)
  - Smaller tanks for automotive fuel (MoGas) and diesel fuel
- Signature Flight Support:
  - Two (2) 12,000-gallon Jet A fuel storage tanks
  - Two (2) 10,000-gallon Jet A fuel tanks
  - One (1) 12,000-gallon 100LL self-serve station – owned and managed by MAG Aviation

The airport has identified the need for fuel storage facilities. Currently, the airport noted two separate occasions in the past five years where the airport ran out of fuel due to road conditions. When major disruptions to the Highway 101 corridor (fire, mudslides etc.) have occurred, the airport has run out of fuel and airlines had to ferry fuel in to accommodate flight schedules. During discussions with the airport, the amount of fuel on site would last the airport “a few days” before running out. Discussions with one FBO also supported the need for enhanced fuel facilities, including significant need for increase JET-A capacity based on increasing upload amounts to accommodate larger aircraft and the changing fleet mix. **Figure 4-16** shows the locations of the on-site fuel farm and 100LL self-fueling station. These sites could support inclusion of sustainable aviation fuels as well as traditional fuel.

Figure 4-16: On-Site Fuel Farm and 100LL Self-Fueling Station



Source: Mead & Hunt, Inc. 2023

4.8.2.1 Conclusion of Fuel Storge

The conclusions for this section are listed below:

- Fuel capacity does not meet current or projected demand and is subject to supply chain issues. The **Alternatives Chapter** should consider expansion of existing facilities. There is enough space in the immediate vicinity of existing fuel facilities that would allow for an expansion of double the existing fuel capacity. Further technical assessment, separate from this master plan, of the required fuel capacity which includes the projected demand from the FBO's, air service providers and based tenants will be required prior to a facility enhancement project.

4.8.3 Aircraft Rescue and Firefighting Buildings / Equipment

Code of Federal Regulations, Title 14, Chapter I, Subchapter G, Part 139 (CFR 139) prescribes rules governing the certification and operation of airports in the United States that serve either:

- Scheduled passenger-carrying operations of an air carrier operating aircraft configured for more than 9 passenger seats, and
- Unscheduled passenger-carrying operations of an air carrier operating aircraft configured for at least 31 passenger seats,

CFR 139 determines the ARFF index based on the length of the air carrier aircraft and the daily average departures of air carrier aircraft. According to CFR 139, if there are five or more average daily departures of air carrier aircraft in a single index group serving that airport, the longest index group with an average of five or more daily departures is the index required for the airport. If there are less than 5 daily departures, the next lower index from the longest index group with air carrier aircraft in it is the index required for the airport. The ARFF index associated aircraft lengths are summarized in **Table 4-16.**

Table 4-16: ARFF Airport Index

ARFF Index	Aircraft Length	Representative Aircraft
A	Less than 90 feet	Beech 1900, Brasilia EMB-120
B	at least 90 feet but <126 feet	EMB-175; Airbus A319/A320
C	at least 126 feet but <159 feet.	MD-80; 737-800 and 737-800 MAX; Airbus A321neo
D	at least 159 feet but <200 feet	B757; B767; Airbus A330
E	at least 200 feet	B747-400; B777;

Note: The ARFF Index is based on the length of transport aircraft that may operate at SBA.
Source: AC 150/52220-10E, June 2011

SBA is classified as ARFF Index B based on the aircraft that are at least 90 feet in length but less than 126 feet in length. Based on the November 23, 2020, revision to the Airport Certification Manual approved by the FAA on December 02, 2020, the longest aircraft with an average of five or more daily departures is the Bombardier CRJ-900 with a length of 119 feet. The critical aircraft is a Boeing 787-800, which would place the SBP Index in an ARFF Index C if operations exceed 5 daily departures. Currently, the airport experiences an average of less than 2 departures per day by aircraft in this category. Based on the aviation forecast, the 737-800 and 737-800 MAX will gain more operations in the future, but the 737-700 is currently more prevalent. The 737-700 aircraft length is 110 feet, which would remain in ARFF Index B.

4.8.3.1 Facility

The ARFF facility, Santa Barbara Fire Station 8, is located north of Clay Lacy Aviation and south of Firestone Rd. The facility can be accessed from Firestone Rd. The facility consists of 8,000 square feet and contains two bays.

4.8.3.2 Vehicle Class Requirements

ARFF Index B requires a Class 1 vehicle, or Class 2, Class 3, or Class 4 vehicle in lieu of Class 1. If the Class 4 vehicle has Dry Chemical/Halogenated agent, a Class 1 vehicle is not required for an Index B Airport. If the Class 4/5 vehicle does not have Dry Chemical /Halogenated agent, a Class 1 vehicle is required. SBA's existing ARFF vehicles are included in **Table 4-17**.

Table 4-17: **SBA Existing ARFF Vehicles**

Vehicle Number	ARFF 77		ARFF 79	
Type of Vehicle	Water/ Foam		Water/ Foam	
Manufacturer Name	Rosenbauer Panther		Oshkosh Striker 1500	
Manufacturer Year	2020		2003	
Agent*	**A**	**B**	**A**	**B**
Water (GAL)	1500	750 gpm	1500	750
AFFF (GAL)	210	3%	210	3%
Dry Chem #	450 lbs PPK	5 lps	450 lbs PPK	5 lps
Halotron	460 lbs	5 lps	460 lbs	5 lps

Note: Agent Legend- A = Quantity of extinguishing agent, B = Discharge rate in gal/min or lbs/sec
Source: Santa Barbra Airport – *Airport Certification Manual, Chapter 9- Aircraft Rescue & Firefighting – Index Determination (139.315)*, November 23,2020

The ARFF facility is staffed by the City of Santa Barbra Fire Department. In the event of an emergency response, both the City of Santa Barbara and the County fire departments respond.

4.8.3.3 Response Times

During a typical response, it takes one minute for fire fighters to dress and start the ARFF truck, leaving two minutes to reach the runway. The ARFF truck must maintain an average speed of 20 miles per hour to get there in two minutes.

4.8.3.4 ARFF Recommendation

The critical aircraft, the Boeing 737-800, is forecast to increase in annual operations at SBA. The airport should consider preparing to become an ARFF Index C airport when the 737-800 next generation (NG) or 737-800 maximum (MAX) reaches the five daily operations threshold. An additional study on the ARFF capacity and operational trends toward longer fuselage length aircraft should be considered to ensure the appropriate apparatus, facilities, equipment, and response times are present to meet demand.

4.8.3.5 Conclusion of ARFF Buildings / Equipment

The conclusions for this section are listed below:

- ARFF facilities meet current demand and the ARFF Index B is appropriate for the short- and mid-term period; however, the airport should undertake a study to identify timing and facilities related to upgrading the airport to ARFF Index C.

4.8.4 Airport Fencing

SBA has chain-link wildlife fencing around the airfield perimeter. Security gates provide access to Commercial and General Aviation hangars and controlled movement areas on the airfield. Existing pedestrian gates are configured with pin pads provide to provide secure airside facilities access. Vehicle gates are also configured with pin pads that provide access to the GA hangars and are used by airport staff to access the airport operations area (AOA). Perimeter fencing is used at airports primarily to secure the aircraft operational area. The physical barrier of perimeter fencing provides the following functions:

- Gives notice of the legal boundary of the outermost limits of a facility or security-sensitive area.
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary.
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV).
- Deters casual intruders from penetrating a secured area by presenting a barrier that requires an overt action to enter.
- Demonstrates the intent of an intruder by their overt action of gaining entry.
- Causes a delay to obtain access to a facility, thereby increasing the possibility of detection.
- Creates a psychological deterrent.
- Optimizes the use of security personnel while enhancing the capabilities for detection and apprehension of un- authorized individuals.
- Demonstrates a corporate concern for facility security.
- Limits inadvertent access to the air- craft operations area by wildlife.

Most of SBA's operations areas are enclosed by security fencing; however, the southwest portion of the airport, along the Goleta Slough area, is not equipped with security fencing. Security fencing in this area is necessary as airport staff have reported numerous incidents of unauthorized individuals accessing the operations area from the southwest. Alternatives for the installation of security fencing on the southwest side of the operations area will be analyzed in the following chapter. Other portions of the airport's perimeter, including the area east of the Runway 25 threshold, have inadequate fencing, which should be upgraded to FAA standards.

Conclusion of Airport Fencing

The conclusions for this section are listed below:

- Security fencing in the southwest portion of the airport is needed. Alternatives for fencing and security are developed in the next chapter.

4.8.4.1 Perimeter Service Road

Service roads are typically used to segregate vehicles from aircraft operational areas. At SBA, a perimeter service road (some portions paved and some compacted gravel) provides access to the airfield, navigational aid equipment, and landside areas for airport maintenance vehicles. The segregation of vehicle and aircraft operational areas is supported by the FAA, and it is recommended that an airport operator limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport. The airport should maintain the existing paved perimeter service road and segregated marked driving lanes on aircraft aprons through the planning period; however, runway surface protection standards should be accomplished through relocation.

Conclusion of Perimeter Access Road

The conclusions for this section are listed below:

- Relocate service roads out of runway surfaces or to locations that maximize mitigation.

4.8.5 Conclusion of Support Facilities

The conclusions for this section are listed below:

- The current airport administration facilities do not meet current needs.
- Fuel capacity does not meet current or projected demand and is subject to supply chain issues.
- ARFF facilities meet current demand and ARFF Index B is appropriate for the short- and mid-term period; however, the airport should undertake a study to identify timing and facilities related to upgrading the airport to ARFF Index C.
- Security fencing in the southwest portion of the airport is needed. Alternatives for fencing and security are developed in the next chapter.
- No structural changes to the perimeter access roads are required except the eventual relocation outlined previously.

4.9 ACCESS AND CIRCULATION

4.9.1 Introduction

Two complete analyses of access and circulation facility requirements are included in this Master Plan Update as **Appendix XX**, from Corgan which culminates in the year 2033 and focuses on the internal airport access and circulation, and **Appendix XX,** from Walker which begins analysis at year 2033 through horizon year 2041 and includes roads outside of the airport property. The findings summarized here include a comprehensive analysis of access and circulation on and off airport property.

4.9.2 Traffic Volumes - Horizon Year 2041

This analysis is based on projected activity growth at the airport as well as projected near-term growth and analysis provided by Corgan (**Appendix XX**). Enplanements at SBA are projected to increase from 342,669 in 2021 to 878,700 in 2041, an average annual growth rate of 4.8%. Based on projected 2022 enplanements of 585,395 in the Corgan analysis, there was a rapid recovery in 2022 as the travel industry rebounded from the COVID-19 pandemic. Enplanement growth is expected to be more rapid between 2022 and 2031 with lower annual growth between 2031 and 2041. The TIP prepared by Corgan projected a 2.7% annual growth in airport related traffic volumes between 2022 and 2033.

Since annual enplanement growth is projected to slow down over the latter half of the study horizon, Walker has assumed a blended growth rate of 2.0% per year over the planning horizon. Over the 19-year planning horizon this is equivalent to a 46% increase in peak hour traffic volumes, which would correspond to a roughly 46% increase in peak hour enplanements/deplanements. Traffic movements in the study area, such as through movements on Hollister Avenue, that do not carry airport traffic were assumed to grow by 1.0% per year to reflect ambient population growth and ongoing development in the Goleta area.

4.9.3 Terminal Area Roadway Capacity

ACRP report *Airport Curbside and Terminal Area Roadway Operations* provides an estimation method for the level of service (LOS) of airport terminal area access and circulation roadways. LOS calculations refer to the industry standard of estimating the level of service found in *Airport Curbside and Terminal Area Roadway Operations*. The first step in calculating LOS begins with selecting the free flow speed of the roadway. The terminal roadway is signed as 15 miles per hour. As such, using 15 miles per hour is an adequate quick estimation given the characteristics of the roadway. Service levels are shown in **Table 4-18**.

Table 4-18: **Service Levels for Airport Terminal Area Access and Circulation Roadways**

Free Flow Speed = 15 Miles Per Hour					
Criteria	Level of Service				
	A	B	C	D	E
Minimum Speed (mph)	15.0	15.0	15.0	15.0	15.0
Maximum Volume/Capacity Ratio	0.25	0.40	0.59	0.79	1.00
Maximum Services Flow Rate (vehicle/hour/lane)	310	500	740	990	1,250
Maximum Flow Rate (vehicle/hour/lane) (a)	250	400	600	800	1,010

(a) = flow rate adjusted to account for 0.95 heavy vehicle factor and 0.85 driver population factor.
Source: Airport Curbside and Terminal Area Roadway Operations Table 4.1 (NSF, 2010)

Table 4-19 summarizes the terminal area roadway level of service calculations using the quick estimation method. The existing number of lanes before and through the terminal area are currently operating at a LOS A. After 2033, LOS B is projected.

Table 4-19: **Existing and Projected Level of Service for SBA Terminal Roadway**

Scenario	Peak Hour Volume		Number of Lanes		Vehicles per Lane	LOS Flow Rate	LOS
Existing - Terminal Entrance to Passenger Loading Areas	427	/	2.0	=	214	250	A
Existing - Passenger Loading Areas to Terminal Exit	375	/	2.0	=	188	250	A
Future (2033) - Terminal Entrance to Passenger Loading Areas	574	/	2.0	=	287	400	B
Future (2033) - Passenger Loading Areas to Terminal Exit	504	/	2.0	=	252	400	B
Future (2041) - Terminal Entrance to Passenger Loading Areas	622	/	2.0	=	311	400	B
Future (2041) - Passenger Loading Areas to Terminal Exit	546	/	2.0	=	273	400	B

SBA does not need to expand terminal area roadway capacity over the planning horizon as the terminal area is projected to operate at LOS B.

The above analysis for the terminal area assumes a free flow facility; however, four uncontrolled crosswalks connect customer parking areas to the terminal and cross the terminal area roadway. The behavior of motorists and pedestrians in the crosswalk area would determine whether roadway capacity would decrease; however, even if the capacity would decrease, the resulting level of service would still likely be LOS C in front of the terminal – depending on the number of pedestrians.

4.9.4 Curbside Loading Capacity

Airport curbside operations have been evaluated using projected peak hour volumes, average dwell times, and typical space per vehicle requirements. The analysis is based on the assumption that arriving vehicles follow a Poisson distribution represented by an exponential probability function.

The curbside analysis is based on the existing volumes and dwell times contained the TIP. Curbside needs are assumed to increase linearly with the projected increase in passenger enplanements. This analysis has also assumed that the proportion of private vehicle drop-offs versus hired drop-offs remains consistent with 2022 levels. A shift to higher TNC, Taxi, and limousine use would increase curbside requirements for those functions and decrease requirements for private vehicles.

Table 4-20 summarizes the resulting curbside lane requirements for private vehicles and taxis/TNCs. The required length shown is for LOS C operations.

The curbside loading space for taxi/TNC/limo and shuttles/other is projected to remain at LOS C or better throughout the planning horizon. Passenger loading for private vehicles is projected to operate at LOS D in 2041.

Table 4-20: Future Curbside Lane Requirements

Vehicle Classification	Peak Hour Volume	Dwell Time (In Minutes)[1]	Space Required per Vehicle	Average Spaces	Required Spaces[2]	Required Length (feet)[3]	Available Length (feet)
Private Vehicle	363	3.2	25	19.43	27	675	600
Ground Transportation							
TNC(Uber/Lyft)	38	3.2	25	3.08	6	150	341
Taxi	6	1.5	25	0.22	5	125	
Limousine	3	2.4	25	0.18	1	25	
Shuttle Services	10	2.0	35	0.50	3	130	145
Hotel/Motel shuttle	1	2.0	35	0.05			
Airline crew shuttle	1	5.1	35	0.13			
Parking shuttle	4	2.0	35	0.20			
Charter Bus	-	2.0	55	0.00			
Other (airport operations, delivery, emergency)	5	1.6	25	0.20	1		

Notes:
1 = Recommended dwell times for hotel/motel shuttles, parking shuttles, and charter buses shown. Others based on observed existing dwell times. Source Corgan - July 2023 Terminal Improvement Project Preferred Concept - Basis of Design (TIP))
2 = Assumes shuttles share same curbside zone without delineation between types of shuttles
3 = LOS curbside requirements assumes 30% double parking along the private vehicle curbside during peak periods

The projection of future level of service conditions assumes that operation of the curb is utilized as efficiently as possible, meaning that monitoring of vehicle length of stay is occurring at the curb, that the entirety of the available curb is being used, that during peak periods vehicles are being directed into available curb space to allow for maximum use of the existing curb, and that when vehicles are parked too long they are told to move and/or are issued a citation to ensure maximum access and efficiency at the curb. The last item, citations, should be a matter of last resort assuming that adherence to curb policy is lacking.

4.9.5 Intersection Level of Service Analysis - Horizon Year 2041

Horizon Year 2041 weekday AM, and PM peak hour intersection analysis is shown in **Table 4-21.** Horizon Year 2041 weekday mid-day and Saturday mid-day peak hour intersection analysis is shown in **Table 4-22**.

As shown in **Table 4-21**, the study intersections are projected to continue to operate at an acceptable LOS during the weekday AM and PM peak hours for horizon year 2041 conditions.

As shown in **Table 4-22**, the study intersections are projected to continue to operate at an acceptable LOS during the weekday mid-day and Saturday mid-day peak hours for horizon year 2041 conditions with the exception of the following intersection:

- The stop-controlled eastbound left-turn movement at the Moffett Place/Terminal Exit intersection is projected to operate at LOS E during the weekday mid-day peak hour and LOS F during the Saturday mid-day peak hour.

Table 4-21: Intersection Analysis – Horizon Year 2041 Weekday AM/PM Peak Hour Conditions

Intersection			Control Type	Peak Hour	Horizon Year 2041		
					Movement	Delay[1]	LOS
1	Fairview Avenue	Hollister Avenue	Traffic Signal	Weekday AM	Intersection	31.9	C
				Weekday PM	Intersection	40.9	D
2	Terminal Entrance	James Fowler Road	Yield[2]	Weekday AM	Intersection Eastbound LT	1.8 7.9	A A
				Weekday PM	Intersection Eastbound LT	2.2 8.0	A A
3	Moffett Place	Terminal Exit	OWSC	Weekday AM	Intersection Eastbound LT Eastbound RT	3.5 13.2 9.7	A B A
				Weekday PM	Intersection Eastbound LT Eastbound RT	4.5 15.7 10.2	A C B
4	Moffett Place-Sandspit Road	SR-217 Southbound On/Off Ramps	TWSC	Weekday AM	Intersection Eastbound Lane Westbound Lane Southbound LT	5.9 11.3 10.5 7.4	A B B A
				Weekday PM	Intersection Eastbound Lane Westbound Lane Southbound LT	6.2 18.2 14.6 7.7	A C B A

Note: TWSC = Two-Way Stop-Control. OWSC = One-Way Stop-Control. RT = Right-Turn. LT = Left-Turn.
Delay shown in seconds per vehicle.
1= Overall average delay shown for One- and Two-Way Stop Controlled Intersection along with delay for stop-controlled movements. Delay shown in seconds.

Table 4-22: Intersection Analysis – Horizon year 2041 Weekday Mid-Day and Saturday Mid-Day Peak Hour Conditions

Intersection			Control Type	Peak Hour	Horizon Year 2041		
					Movement	Delay[1]	LOS
1	Fairview Avenue	Hollister Avenue	Traffic Signal	Weekday Mid-day	Intersection	37.9	D
				Saturday Mid-day	Intersection	40.6	D
2	Terminal Entrance	James Fowler Road	Yield[2]	Weekday Mid-day	Intersection Eastbound LT	2.9 8.7	A A
				Saturday Mid-day	Intersection Eastbound LT	3.0 8.8	A A
3	Moffett Place	Terminal Exit	OWSC	Weekday Mid-day	Intersection Eastbound LT Eastbound RT	10.9 **39.0** 11.7	B **E** B
				Saturday Mid-day	Intersection Eastbound LT Eastbound RT	16.5 **56.2** 12.4	C **F** B
4	Moffett Place-Sandspit Road	SR-217 Southbound On/Off Ramps	TWSC	Weekday Mid-day	Intersection Eastbound Lane Westbound Lane Southbound LT	6.4 17.7 15.1 7.7	A C C A
				Saturday Mid-day	Intersection Eastbound Lane Westbound Lane Southbound LT	6.0 13.1 14.9 7.6	A B B A

Note: See notes for **Table 4-21**.

4.9.6 Roadway Segment Level of Service Analysis - Horizon Year 2041

Table 4-23 summarizes the horizon year 2041 conditions roadway segment analysis based on the existing roadway classifications and projected airport and ambient growth in the study area.

Table 4-23: **Roadway Segment Analysis – Horizon Year 2041 Conditions**

Roadway Segment	Classification	No. of Lanes	LOS C Capacity	2041 ADT
Moffett Place between Sandspit Road and Terminal Exit	Major Collector	2	14,300	9,809
James Fowler Road between Terminal Entrance and Fairview Avenue	Minor Arterial	2	14,300	9,991
Fairview Avenue south of Hollister Avenue	Minor Arterial	2	14,300	13,688
Fairview Avenue between Hollister Avenue and US-101	Major Arterial	4	34,000	26,516

As shown in the table, the roadways around the Airport are projected to continue to operate acceptably for Horizon Year 2041 conditions.

4.9.7 Potential Circulation Issues and Recommendations

Based on the preliminary level of service analysis for horizon year 2041 conditions, the stop-controlled eastbound left-turn movement at the Moffett Place/Terminal Exit intersection is projected to operate at LOS E during the weekday mid-day peak hour and LOS F during the Saturday mid-day peak hour.

Additionally, the projected 95th percentile eastbound left-turn queue during the Saturday mid-day peak period is 9 vehicles, which equates to approximately 225 feet assuming 25-feet per vehicle. A 225-foot queue would extend almost to the exit of the existing short-term parking lot and could begin to back up the terminal roadway during the busiest days. It would also impede access between the terminal drop-off/pick-up area and the proposed Southfield/Apron parking area.

The following preliminary recommendations are intended to address potential circulation issues at the airport exit that could then back up onto the terminal roadway:

- SBA should continue to periodically collect traffic counts at the airport exit and prepare traffic signal warrants. A traffic warrant is a structured method of evaluating the need for signalization using predefined criteria. The airport should discuss potential signalization of the airport exit with the appropriate jurisdiction if/when a traffic signal satisfies traffic signal warrant requirements as defined in the California Manual on Uniform Traffic Control Devices (CA MUTCD).
- The "Southfield Project + Apron Area" parking area should be designed in such a way that vehicles parking in this area must exit onto Moffett Place as opposed to connecting back to the terminal roadway and exiting at the existing airport exit. This would reduce future volumes at the airport exit and potentially delay or eliminate the need for future signalization.

4.9.8 Conclusion of Access and Circulation

The conclusions for access are listed below:

- SBA does not need to expand terminal area roadway capacity over the planning horizon as the terminal area is projected to operate at LOS B.
- The curbside loading space for taxi/TNC/limo and shuttles/other is projected to remain at LOS A throughout the planning horizon. Passenger loading for private vehicles is projected to operate at LOS C in 2033 and LOS D in 2041.
- The projection of future level of service conditions assumes that operationally, the curb is utilized as efficiently as possible, meaning that monitoring of vehicle length of stay is occurring at the curb, that the entirety of the available curb is being used, that during peak periods vehicles are being directed into available curb space to allow for maximum use of the existing curb, and that when vehicles are parked too long they are told to move and /or are issued a citation to ensure maximum access and efficiency at the curb. The last item, citations, should be a matter of last resort assuming that adherence to curb policy is lacking.

4.10 TERMINAL PARKING NEEDS – HORIZON YEAR 2041

Total passenger enplanements at SBA are projected to increase to 732,500 by 2031 and reach up to 878,700 by 2041. The correlation between enplanements and parking capacity is not entirely linear, though in general as enplanements increase, the demand for airport parking also rises. This is because more passengers mean more vehicles, and thus, more parking spaces are required.

Airports and air carriers add passengers through new routes, more frequent service, switching to larger aircraft types, and swapping out less popular routes for more popular ones. Each of these variables may differently impact peak hour passenger arrivals and departures and the amount of parking needed to accommodate long-term and short-term customers. In addition, policy changes, such as parking rate (price) increases, can substantially impact the mode split or the percentage of customers that choose to drive and park versus arriving via transportation network (TNC) company vehicles (Lyft and Uber, taxi, shuttle) or being picked up or dropped off.

The facilities addressed in this section include long-term parking, short-term parking, economy parking, and the cell-phone waiting lots.

4.10.1 Existing Public Parking

Table 4-24 (on the next page) shows the existing public parking supply.

There are currently 1,530 public parking stalls across five automobile parking facilities. The long-term parking lot is by far the largest facility with 764 stalls. The second largest facility is the economy lot with 561 stalls. The short-term lot contains 189 stalls, and lastly the two cell-phone lots (east located near the long-term lot, and south located near the intersection of Sandspit Road and Ward Memorial Boulevard) contain 11 stalls and 5 stalls respectively.

Table 4-24: **Existing Parking Facilities and Inventory**

Existing Inventory		
Parking Facility	**Stall Count**	**% of Total**
Long-Term	764	50%
Short-Term	189	12%
Economy	561	37%
Cell Phone (East)	11	1%
Cell Phone (South)	5	0%
Total	**1,530**	**100%**

Table Source: Santa Barbara Airport, 2023.

4.10.1.1 Existing Employee Parking

Currently, airport employees are directed to park in the Economy Lot. On average, there are about 100 employees that park in the lot and, at a maximum, approximately 200 employees park there. The airport is considering plans for additional employee parking as a part of the Southfield Redevelopment Project as it progresses.

4.10.2 Existing (Baseline) Demand

Table 4-25 and **Table 4-26** provide a summary of the parking demand statistics for the short-term and long-term parking areas, organized by month. The 95th percentile column represents roughly the 2nd busiest day of each month; for the full year, the 95th percentile would exclude roughly the 12 busiest days per year. For airport planning purposes, it is generally recommended to establish a design day based on a value somewhere between the 85th and 95th percentile (or similar value). For SBA, the 95th percentile is suggested.

Table 4-25: **Parking Peak Hour Demand by Month: Short-Term Lot**

Year	Month	Avg. Peak Hour Demand	95th Percentile Peak Hour Demand	Absolute Peak Demand
2022	Aug	189	189	189
2022	Sep	184	189	189
2022	Oct	187	189	189
2022	Nov	185	189	189
2023	Dec	188	189	189
2023	Jan	-	-	-
2023	Feb	184	189	189
2023	Mar	188	189	189
2023	Apr	187	189	189
2023	May	183	189	189
2023	Jun	185	189	189
2023	Jul	184	189	189
Avg.		**186**	**189**	**189**

Table Source: Santa Barbara Airport, 2023.

Table 4-26: Parking Peak Hour Demand by Month: Long-Term Lot

Year	Month	Avg. Peak Hour Demand	95th Percentile Peak Hour Demand	Absolute Peak Demand
2022	Aug	753	764	764
2022	Sep	665	738	764
2022	Oct	713	764	764
2022	Nov	724	764	764
2022	Dec	711	764	764
2023	Jan	-	-	-
2023	Feb	750	764	764
2023	Mar	721	764	764
2023	Apr	701	751	764
2023	May	714	764	764
2023	Jun	704	742	764
2023	Jul	687	737	757
Avg.		**713**	**756**	**763**

Table Source: Santa Barbara Airport, 2023.

The data indicate that both the short-term and long-term lots fill regularly during the peak hour. For instance, by examining the resulting 95th percentile of demand for both the short-term and long-term lots, the results are 189 in the short-term lot (i.e., the same as the parking supply), and the long-term lot is 756, which is eight (8) spaces shy of the long-term lot supply, 764. The following table shows the total number of days within the survey period in which the short-term lot is filled to capacity during the peak hour.

Table 4-27: Survey Days when the Short-Term Lot Filled at the Peak Hour

Year	Month	Total Survey Days	No. of Days Lot was Full at Peak Hour	% of Days Lot was Full at Peak Hour
2022	August	30	27	90%
2022	September	29	15	52%
2022	October	31	23	74%
2022	November	30	24	80%
2022	December	31	28	90%
2023	*January	-	-	-
2023	February	28	17	61%
2023	March	31	24	77%
2023	April	30	20	67%
2023	May	31	15	48%
2023	June	30	17	57%
2023	July	31	18	58%
	Total	**332**	**228**	**69%**

Note: *January data were omitted from the analysis due closure of the parking facilities from flooding and a parking lot re-striping project that impacted the data.

Table Source: Santa Barbara Airport, 2023.

Table 4-28: Survey Days when the Long-Term Lot Filled at the Peak Hour

Year	Month	Total Survey Days	No. of Days Lot was Full at Peak Hour	% of Days Lot was Full at Peak Hour
2022	August	30	19	63%
2022	September	29	2	7%
2022	October	31	10	32%
2022	November	30	9	30%
2022	December	31	6	19%
2023	*January	-	-	-
2023	February	28	17	61%
2023	March	31	10	32%
2023	April	30	2	7%
2023	May	31	5	16%
2023	June	30	2	7%
2023	July	31	0	0%
	Total	**332**	**82**	**25%**

Note: *January data were omitted from the analysis due closure of the parking facilities from flooding and a parking lot re-striping project that impacted the data.

Table Source: Santa Barbara Airport, 2023.

As shown in **Table 4-27**, of the 332 days in the survey period (August 2, 2022 – July 31, 2023), the short-term lot filled to capacity just over two-thirds (69%) of the time during the peak hour. This means that on most days, the short-term lot filled to capacity, with August and December being particularly busy months.

As shown in **Table 4-28**, of the 332 days in the survey period (August 2, 2022 – July 31, 2023), the long-term lot filled to capacity a quarter (25%) of the time during the peak hour.

Additionally, per airport staff, the period around the 2022 Thanksgiving holiday nearly resulted in the economy lot reaching full capacity due to the short-term and long-term lots being full. The airport had to encourage customers to find alternative ways to reach the airport.

4.10.3 Projected Future Parking Need (2041)

Table 4-29 provides a projection of short-term, long-term, and economy parking needs based on projected peak month enplanements through 2041.

Table 4-29: Projected Unadjusted Future Parking Demand

Year	Peak Month Enplanements	Proj. Design Day Short-Term Demand	Proj. Design Day Long-Term Demand	Proj. Design Day Economy Demand
2022/2023	60,046	206	824	429
2031	70,245	241	965	501
2041	84,266	289	1,157	601

Note: *Peak month enplanements are based on 2022 monthly enplanement shares derived from the SBA Airport Committee's Director's Reports.

Table Source: Walker Consultants, 2023

4.10.3.1 Projected Parking Needs and Surplus/Deficit

Tables **4-30** through **4-33** show the breakdown between short-term, long-term, economy, and the system-wide parking needs.

Table 4-30: Projected Short-Term Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	206	7%	222	189	(33)
2031	241	7%	259	189	(70)
2041	289	7%	311	189	(122)

Table Source: Walker Consultants, 2023

Table 4-31: Projected Long-Term Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	824	7%	886	764	(122)
2031	965	7%	1,038	764	(274)
2041	1157	7%	1,244	764	(480)

Table Source: Walker Consultants, 2023

Table 4-32: Projected Economy Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	429	7%	461	561	100
2031	501	7%	539	561	22
2041	601	7%	646	561	(85)

Table Source: Walker Consultants, 2023

Table 4-33: Projected System-Wide Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	1459	7%	1,569	1,514	(55)
2031	1707	7%	1,835	1,514	(321)
2041	2047	7%	2,201	1,514	(687)

Table Source: Walker Consultants, 2023

4.10.4 Conclusion of Terminal Parking Needs

Based on the effective supply factor adjustment, which accounts for the inevitable unavailability of some parking spaces in a parking system, as well as the need for a reasonable cushion of parking supply in other situations, SBA has a deficit of approximately 33 parking stalls in the short-term lot and 122 in the long-term lot. However, the economy lot is projected to have a surplus of 100 stalls.

By 2031, the short-term lot is projected to have a deficit of 70 stalls, long-term lot a deficit of 274 stalls, and economy lot a surplus of 22 stalls. Looking at it parking-system-wide, there is a projected deficit of 321 spaces by 2031.

Lastly, by 2041, the short-term lot deficit is projected to increase to 122 stalls, the long-term lot deficit to 480 stalls, and the economy lot to a deficit of 85 stalls. System-wide, the SBA public parking deficit is projected to be 687 stalls. This means that the airport will need to add 687 (total deficit) parking stalls to meet 2041 projected demand based on the assumptions used. However, if the Southfield Redevelopment Project adds 608 spaces to the long-term parking supply, and the rest of the supply (including economy lot) remains, then the projected 2041 deficit would only be 79 spaces (2,201 – 2,122 = 79 spaces).

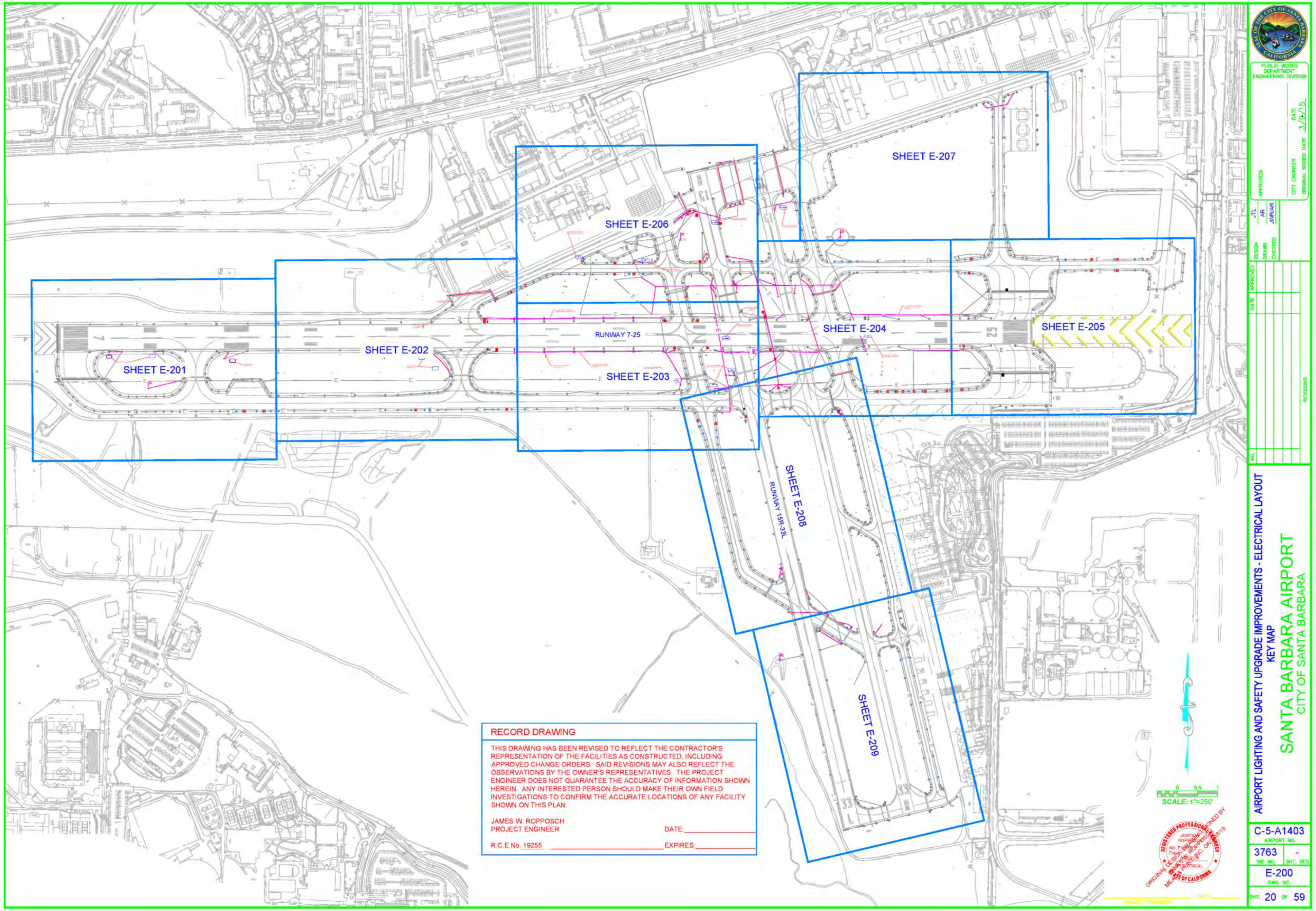
The concept of pricing plays a pivotal role in efficiently allocating the limited parking resources available. Short-term or premium parking spaces should be located in convenient and highly sought-after areas relative to longer-term parking as a best practice. Ultimately, the amount of parking to provide in short-term and long-term areas should be a function of price, which in turn allows the airport the flexibility to manage demand and the size of its parking facilities

4.11 UTILITIES AND ELECTRICAL NEEDS

The airport has sufficient utility infrastructure to meet current demands (for auto, GSE, Airport, etc.). Capacity needed for future project activity levels may be accommodated when the airport triggers development outlined in the TIP. Existing infrastructure near the AERO Hangar and the ATCT (old citrus plant) provide adequate transmission of electrical supply. On-field power distribution currently meets needs. Additional facilities needs for power will be handled as a condition within each development project, such as the terminal building expansion. The airport completed the final fiber optic high speed internet connection deployment on January 11, 2024. Bringing access to the airport administrative services, security and operations facilities.

Figure 4-17 is a guide to the airfield electrical system for a given area located within the Utilities Block Book (included in this report as **Appendix XX)**.

Figure 4-17: Electrical Utility Guide Map



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4.11.1 Conclusion of Utilities and Electrical Needs

The conclusions for this section are listed below:

- The airport has sufficient utility infrastructure to meet current demands.
- Additional facilities need for power will be handled as a condition within each development project.

4.12 NON – AERONAUTICAL PROPERTIES

The airport's non-aeronautical properties encompass approximately 104 acres located north of Hollister Ave. There are 40 separate legal parcels within this planning area with a mix of four different zone designations: A-C (Airport Commercial), A-C-R (Airport Commercial Recreation), A-I-1 (Airport Industrial 1), and A-I-2 (Airport Industrial 2). Combined, these zone designations allow for a broad mix of both commercial, industrial, and recreational uses; however, based on a combination of windshield surveys and review of aerial photography, there are 19 parcels that appear to be vacant or underdeveloped (underdeveloped parcels include those that are currently used for parking and/or storage) (Google Earth Pro 2023). There are also several parcels that are currently occupied by non-conforming uses (e.g., open storage yards located south of Francis Botello Road).

Given the City's expressed goals of maintaining economic self-sufficiency and maximizing revenue from tenant leases for the Airport Industrial Area, the wide range of uses allowed under the existing zone designations could be maximized through a turnover in tenants for more profitable uses and new leases. As such, the current distribution of land use and zoning designations (as amended in 2017 in the Santa Barbara Airport Industrial Area Specific Plan) is appropriate to allow redevelopment of this area and no changes to these designations are necessary to increase revenues from leases and thus maintain economic vitality (City of Santa Barbara 2017). In addition, the roadway network and infrastructure network are well-maintained and adequate to support future development throughout the area. Finally, the existing parcel sizes are adequate to support all potential future uses allowed under the existing zone designations and no subdivision of individual parcels is recommended.

4.12.1 Conclusion of Non-aeronautical Properties

The conclusions for this section are listed below:

- The current distribution of land use and zoning designations (as amended in 2017 in the Santa Barbara Airport Industrial Area Specific Plan) is appropriate to allow redevelopment of this area.
- Parcel size and infrastructure are adequate to support the uses allowed by zoning.
- Specific impacts related to traffic outlined within Santa Barbara Airport Industrial Area Specific Plan and other documents related to the City of Goleta are outside the scope of this study but should be carefully considered as development opportunities are evaluated.

4.13 SUMMARY

The conclusions for this chapter are listed in **Table 4-34** below.

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Table 4-34: Chapter 4 Summary of Findings

Section	Area	Finding
2 Airfield System Capacity	**Airfield Geometry**	No significant airfield system geometry changes recommended except the possible removal of one of the crosswind runways.
	Critical Aircraft	The critical aircraft will change from a 737-800, to the newer Boeing 737-800 MAX model.
	Airfield Demand / Capacity	SBA is currently operating at 52 percent of its annual capacity. SBA is forecasted to handle 116,887 operations in 2041. The increase in operations will result in SBA operating at 58 percent of annual capacity. No major airfield change will be required for airport capacity purposes.
	Airport Design	Relocate service roads out of runway surfaces or to locations that maximize mitigation. Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone
	Wind Coverage	Wind coverage analysis reveals no additional improvements required. There is no justification for the crosswind runways.
	Taxiway Design	Taxiway specifications (Taxi Design Group) for SBA is a TDG 3 and no change is recommended. Significant required changes to the taxiway layouts, crossings, and locations are identified. Design alternatives to address these modifications are outlined in Chapter 5.
	NAVAIDs	Future installation of a PAPI on the approach end of Runway 7.
	ATCT	It is recommended that an update to the Airport Traffic Control Tower (ATCT), or replacement be considered and studied.
	Drainage and Storm Water	Drainage and stormwater facilities need considerable enhancement, design alternatives to address these modifications are outlined in chapter 5 and addressed through other comprehensive studies currently underway such as the Sea Level Rise Adaptation Plan and Vulnerability Assessment.
3 Runway Length Analysis	**Runway Length**	No changes to the runway length to accommodate the design aircraft are recommended at this time.

4 Commercial Passenger Facilities	**Parking / Roads**	An additional 122 short term, 480 long-term, and 85 economy parking spots will need to be added to meet the ultimate need in the long term. Landside circulation roadways, curbs, and waiting areas need modest upgrades for long term capacity needs but will meet the demand in mid-term 5-15 years.
	Terminal	Short term terminal capacity will be meet by the improvements outlined in the TIP. To meet ultimate long-term demand the airport requires 8 Gates, 36 ticket counters, 5511 square feet of lobby space, and 12 kiosks. Security screening check point expansion is not required in the near term but will require 3 additional lanes to meet long term demand. The SSCP queuing area requires significant expansion, ultimately up to 12,650 square feet to meet long-term passenger needs. Baggage claim requires 9745 square feet of total space to meet ultimate demand. Restroom facilities met short term demand but will require a 35% increase to meet long-term demand.
	Car Rental / Concessions Facilities	Rental car facilities meet current demands but will need to nearly double to meet long term demand with 2168 total square feet of office and counter space in 9 offices. The landside requires 2750 and the airside requires 11,000 total square feet of concessions space to meet long-term demand.
5 General Aviation Facilities	**Hangars**	The airport will need to construct a variety of general aviation hangar products to meet demand in the long term. Anticipated demand is to accommodate an additional 44 future based aircraft.
	Legacy GA Support Facilities	The historic general aviation facilities are protected by statute and have not been considered in the facility requirement considerations of the airport.
	GA Facilities	The non-historic general aviation facilities such as 521 Firestone Road and 404 Moffett Place need repair if the airport chooses to use them to meet administration, storage, or other business lease uses.
	Emerging Technologies	Airport should consider planning construction of vertiports to serve VTOLs as this technology develops. The airport will need to anticipate installation of e-charge facilities. Capacity for e-charging facilities will need to be considered on a case-by-case basis, no specific alternative for development of this technology is considered. The guidance outlined here gives the airport some framework to consider a future development process.
6 Apron	**Commercial Service Apron**	Additional apron space and reconfiguration will be required to meet both future demand and accommodate future expansion of gate and two RON positions.

7 Cargo Facilities	**Buildings / Hangars**	The current facility meets near, mid and long term needs with no expected changes in demand.
	Apron	If cargo operators, make changes to their aircraft fleet the airport should consider apron enhancements.
8 Support Facilities	**Airport Administration**	The current airport administration facilities do not meet current needs. Two alternatives exist for future administration locations, the Southfield redevelopment area and the other is along Moffet place near the exiting terminal place.
	Fuel Storage	Existing fuel capacity has limitations during times of high usage or distribution disruptions. Recommend doubling existing capacity.
	ARFF	ARFF facilities meet current demand and the ARFF Index B is appropriate for the short term, however the airport should undertake study work to identify timing and facilities required to upgrade the airport to ARFF Index C.
	Fencing	Security fencing in the southwest portion of the Airport is needed. Alternatives for fencing and security are developed in the next chapter.
	Perimeter Access Road	Relocate service roads out of runway surfaces or to locations that maximize mitigation.
9 Access and Circulation	**Terminal Area Roadway Curbside Loading**	SBA should continue to periodically collect traffic counts at the airport to understand demand however the terminal area roadway capacity over the planning horizon is sufficient. The curbside loading space for taxi/TNC/limo and shuttles is projected to meet demand over the planning horizon, however protocols must be placed to ensure the existing roadway elements are optimized, waiting times are reduced, and space is used most efficiently.
10 Terminal Parking Needs 2041	**Projected Future Parking Needs**	The Phase 2 Southfield Redevelopment Project could add 608 spaces to the long-term parking supply, reducing the projected 2041 deficit to 79 spaces.
11 Utilities and Electrical Needs	**Airfield Landside and Airside**	The airport has sufficient utility infrastructure to meet current demands. Additional facilities need for power will be handled as a condition within each development project.
12 Non – Aeronautical Properties	**Primarily north of Hollister Avenue**	The intended use of the nonaeronautical properties north of Hollister have appropriate zoning, access, utilities, and infrastructure for potential development however the cumulative impacts related to the City of Goleta must be specifically evaluated

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