4.0 FACILITY REQUIREMENTS

The facility requirements assesses both the aviation and non-aviation components of the New Smyrna Beach Municipal Airport (EVB) including the runways and taxiways, aircraft storage facilities, supporting infrastructure (e.g., roadways and parking), the adjoining industrial park, and undeveloped properties. EVB is a key focus area for economic development within the City of New Smyrna Beach. The airport provides opportunities for both aviation and non-aviation development that is beneficial for creating jobs in Volusia County—one of the world's busiest locations for aviation training activity. These are important considerations of the facility requirements, in addition to meeting Federal Aviation Administration (FAA) design standards as identified in FAA Advisory Circular (AC) 150/5300-13A, Airport Design, and other appropriate guiding documents. The facilities that would be needed to meet the FAA-approved forecasts of aviation demand are also identified in this chapter. The goal was to identify improvements that would be needed over the course of the 20-year planning period that extends from 2015 to 2035.

An analysis of the following airport components is presented herein:

- City of New Smyrna Beach Vision Statement
- Identification of Critical Aircraft
- Runway Utilization and Wind Coverage Analysis
- Airfield Capacity
- Airfield Design Standards Analysis
- Runway Length Analysis
- Runway Strength Analysis
- Taxiway and Taxilane System
- Airfield Lighting, Markings, Signage, and Navigational Aids
- Transient Apron and Based Aircraft Storage
- Airport Support Facilities
- Land Acquisition Requirements
- Airport Security Analysis
- Summary

4.1 City of New Smyrna Beach Vision Statement

In December 2009, the city commission adopted the vision statement below for the City of New Smyrna Beach. Although the vision statement is for the city as a whole, the specific elements are applicable to the goals and objectives for EVB. The airport is viewed as a key area for both aviation and non-aviation growth opportunities within the city and county. The airport and the city's economic development department work together to actively market EVB for such opportunities, and through the development of this master plan update, will have an updated plan that identifies areas where targeted development projects could occur at EVB and/or where the redevelopment of existing facilities may be beneficial. Many airports have the benefit of being able to utilize multiple funding mechanisms for new project development, particularly those in the State of Florida where the Florida Department of Transportation (FDOT) Aviation and Spaceports Office commonly provides financial assistance to airports at higher levels than DOTs in other

states (and for a wider variety of projects). Therefore, the City of New Smyrna Beach should continue to embrace the elements of the vision statement below as it applies to EVB.

Vision Statement for City of New Smyrna Beach (adopted December 2009)

We will build an attractive City that offers exceptional opportunities for her citizens and lifestyles that embrace an enhanced quality of life.

Our walking-friendly City with her beautiful waterways will engender diverse recreational and economic opportunities for people of all ages.

Job opportunities will abound throughout our industrial centers and downtown areas. Beautifully landscaped corridors with attractive signage will refine our City with a well-maintained road system and a transportation network, including train and air transportation.

Our City will boast of sustainable business corridors and office parks. We will possess a hospital district and be a hub for educational enhancement through our schools and colleges.

Through our diligence our City will grow and be a place in which people want to live. Our partnerships with educational institutions, governmental entities, community and cultural groups will further be a testament to being responsive to citizens' needs and proactive in making our vision a reality.

4.2 Identification of Critical Aircraft

Draft AC 150/5000-TBD, Critical Aircraft and Regular Use Determination, "provides guidance on the use of critical aircraft in the conduct of facility planning studies for federally obligated airports" and also defines the term regular use. Although the AC is in draft format, it references FAA Order 5100.38D, Airport Improvement Program Handbook, which defines eligibility and justification requirements for airport projects. The AC defines the critical aircraft as "the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 operations, excluding touch-and-go operations. An operation is either a takeoff or landing." The existing critical aircraft must be identified based on documented aeronautical activity, typically for the most recent 12-month period that is available. The future critical aircraft is based on an FAA-approved forecast and any change to the existing critical aircraft must be supported by a credible forecast.

The previous master plan update identified the Beechcraft 1900 as the existing and future critical aircraft for all three runways at EVB, which is a twin-engine turboprop that has capacity for 19 passengers and two crew members. Although EVB experienced several hundred operations by turboprops with similar specifications as the Beechcraft 1900 in 2015, there were very few operations by a Beechcraft 1900. The forecasts of aviation demand show the number of both turboprop and jet operations exceeding 500 by 2016 (524 turboprop operations and 556 jet operations in 2016). FAA airfield design criteria (e.g., required separations and safety area dimensions) is determined based on the approach speed and wingspan of the identified critical aircraft. As shown in **Table 4-1**, each runway is assigned a Runway Design Code (RDC) that is a function of the critical aircraft's Aircraft Approach Category (AAC) or approach speed in knots and Airplane Design Group (ADG) or wingspan in feet.

Based on a review of recent activity data for EVB, the most appropriate existing and future critical aircraft was determined to be a medium-sized corporate jet with an RDC of B-II. The Cessna Citation 560XL falls into that category, commonly operates at EVB, and was therefore selected as the existing and future critical aircraft for this planning effort (refer to aircraft characteristics in Table 4-1). Later sections of this master plan update consider the characteristics of the Cessna Citation 560XL and an RDC of B-II to determine requirements for facilities at EVB. Although this is considered the overall critical aircraft for all three runways, some facilities at EVB should be evaluated in accordance with a different 'design aircraft' that best represents the specific requirements of the facility.

Table 4-1
Runway Design Code (RDC) and Critical Aircraft

Aircraft Approach Category (AAC)		Airplane Design Group (ADG)		
Category	**Approach Speed (Knots)**	**Group**	**Tail Height (Feet)**	**Wingspan (Feet)**
A	<91	I	<20	<49
B	91 to <121	II	20 to <30	49 to <79
C	121 to <141	III	30 to <45	79 to <118
D	141 to <166	IV	45 to <60	118 to <171
E	>166	V	60 to <66	171 to <214
		VI	66 to <80	214 to <262

Critical Aircraft	Cessna Citation 560XL
Aircraft Type	Jet
Aircraft Approach Category/Approach Speed	B / 117 Knots
Airplane Design Group/Wingspan	II / 55.7 Feet
Runway Design Code (RDC)	RDC B-II
Tail Height	17.2 Feet
Main Gear Width	14.9 Feet
Cockpit to Main Gear	21.9 Feet
Taxiway Design Group (TDG)	TDG-2
Max Takeoff Weight (MTOW)	20,200 Pounds
Max Landing Weight (MLW)	18,700 Pounds
Max Passengers	11 Passengers + 2 Crew

Sources: FAA AC 150/5300-13A, Airport Design, and Cessna Aircraft Company.

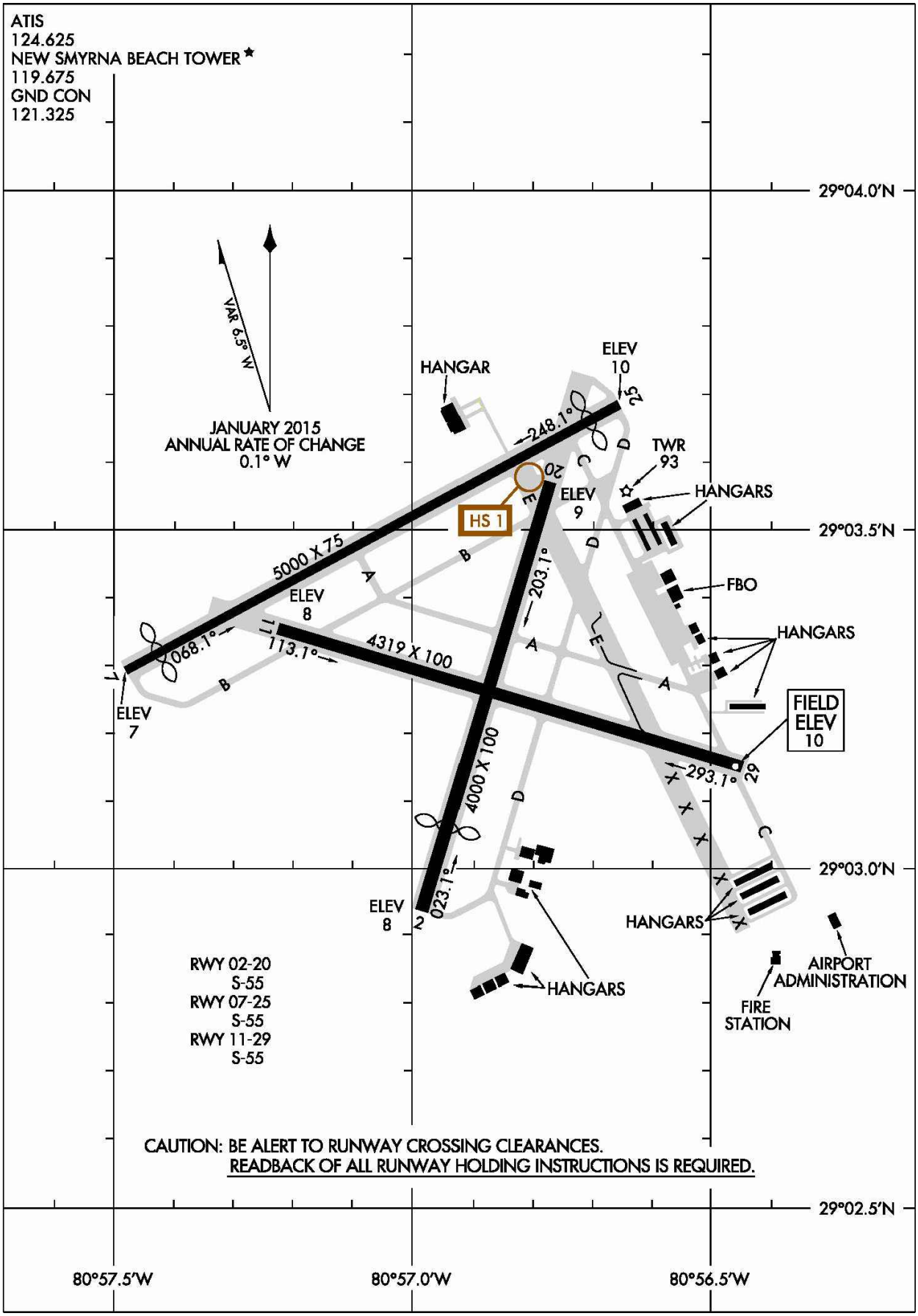
4.3 Runway Utilization and Wind Coverage Analysis

The FAA's airport diagram for EVB is presented in **Figure 4-1** to illustrate the three-runway airfield configuration in a simplified format. The airfield consists of two intersecting runways (Runways 2-20 and 11-29) and a 5,000 foot long runway (Runway 7-25) that is primarily used for training activity to the north. The previous master plan update indicated that only Runways 7-25 and 11-29 are eligible for FAA Airport Improvement Program (AIP) funds, which means the cost to maintain Runway 2-20 must be fully covered by the city, FDOT, and/or other sources. The purpose of this analysis is to illustrate the critical need to maintain all three runways.

Due to factors such as the high volume of training activity at EVB, the complex airfield configuration, and seasonal/daily wind variations, the three runways typically remain active at all times and each serves a very specific function for maintaining efficient traffic flows. Personnel from the Airport Traffic Control Tower (ATCT) provide the capability for all three runways to remain active at all times. Prior to the completion of the ATCT in 2004, pilots had to operate in more of a 'see and avoid' manner while also relying on radio transmittals from pilots and Daytona Approach/Departure Control. Today, personnel from the ATCT allow the three-runway airfield configuration to work as efficiently as it can with today's technologies, much like the FAA has employed Next Generation Air Transportation System (NextGen) technologies to improve access and efficiency at the nation's busiest airports. At EVB, ATCT personnel work with the aviation training universities and academies to limit the number of aircraft that are conducting touch-and-go's at any given time and often have to turn away aircraft when the pattern is full (e.g., typically five aircraft can operate in a pattern). ATCT personnel make a complex airfield configuration work at EVB, but highly depend on the availability of all three runways to do so.

During discussions as part of this planning process, personnel from the ATCT explained the general traffic flows at EVB. Although the winds in Florida have the tendency to change on a seasonal/daily basis and subsequently alter traffic patterns, the general flow of the airfield can be summarized by the following three observations:

1. Runway 7-25 is the training runway. Runway 7 operations follow a left-hand traffic pattern and Runway 25 operations follow a right-hand traffic pattern.
2. Runway 2-20 is primarily used for itinerant traffic arriving from/departing to the east. Runway 20 is the least utilized runway end at EVB.
3. Runway 11-29 is primarily used for itinerant traffic arriving from/departing to the west.



Y:\Planning\EVB - New Smyrna Beach Municipal Airport\Master Plan Update\Drawings\Report Figures\Fig_4-1_(EVB)_FAA Airport Diagram.dwg January 29 2016-06:46

Figure 4-1 FAA Airport Diagram

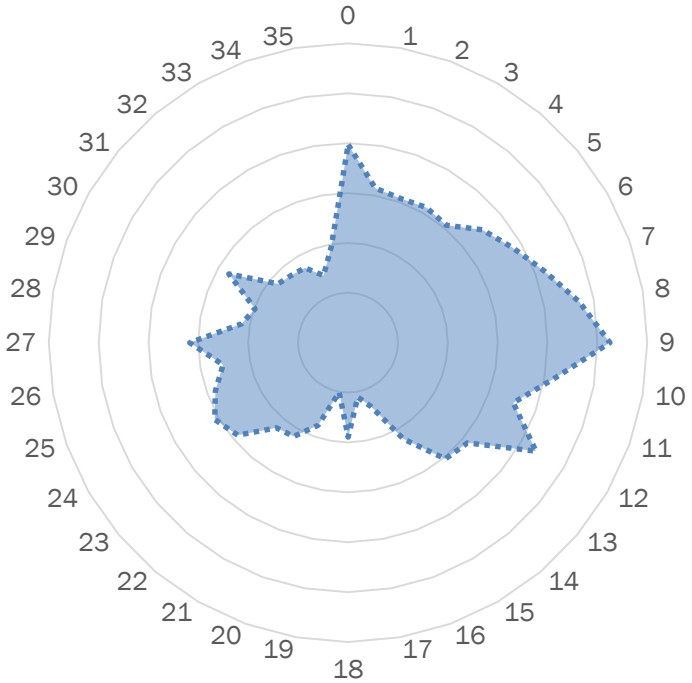
The general traffic pattern and runway configuration suggests that EVB has two separate runway environments—one for local or training activity and one for itinerant activity. The next section of this chapter illustrates that both runway environments are needed to provide adequate capacity levels both currently and in the future at EVB, combined with the assistance of ATCT personnel to manage the aircraft traffic flows. Both runway environments are also needed for wind coverage. Historical wind records from the on-site Automated Weather Observing System (AWOS) were reviewed to determine the percentage of time that adequate wind coverage is provided by the airfield. According to FAA AC 150/5300-13A, Airport Design, a crosswind runway is recommended when the primary runway orientation provides less than 95.0 percent wind coverage. For runways that serve small aircraft with gross weights less than 12,500 pounds and an RDC of A-I or B-I, the allowable crosswind component is 10.5 knots. For runways that serve large aircraft with gross weights of 12,500 pounds or more and an RDC of A-II or B-II, the allowable crosswind component is 13 knots. Consequently, as the weight and approach speed of an aircraft increases, the aircraft has the ability to operate in higher crosswind speeds. The wind coverage analysis for EVB is presented in **Table 4-2** for All Weather, Instrument Flight Rules (IFR), and Visual Flight Rules (VFR) conditions, with the wind coverage percentages less than 95.00 percent highlighted. **Figure 4-2** illustrates the percentage of time all wind observations were coming from each direction (averaged during the period from 2006 to 2016), with each circle representing a one percent interval. If Runway 2-20 was no longer operational, the remaining two-runway configuration would not provide adequate crosswind coverage for the critical aircraft during IFR conditions and would also not provide adequate crosswind coverage for small aircraft activity.

Table 4-2
EVB Wind Coverage Analysis (2006-2016)

Runway	True Heading	All Weather		IFR		VFR	
		10.5 knots	13 knots	10.5 knots	13 knots	10.5 knots	13 knots
7-25	61.60 / 241.61	88.58%	94.18%	81.65%	89.70%	88.88%	94.38%
2-20	16.60 / 196.61	88.20%	93.78%	90.28%	94.17%	88.08%	93.75%
11-29	106.62 / 286.62	88.67%	93.56%	79.63%	87.12%	89.11%	93.87%
Three Runway	Combined	99.46%	99.88%	98.80%	99.66%	99.49%	99.89%
7-25 / 11-29	Combined	94.63%	97.66%	86.97%	93.55%	94.99%	97.85%
7-25 / 2-20	Combined	94.70%	98.16%	95.03%	97.94%	94.66%	98.17%
2-20 / 11-29	Combined	98.80%	99.71%	98.80%	99.71%	98.87%	99.75%
Conditions		Ceiling = All Visibility = All 53,129 Observations		Ceiling < 1,000' ≥ 200' Visibility < 3 Miles ≥ ½-Mile 2,874 Observations		Ceiling ≥ 1,000' Visibility ≥ 3 Miles 50,168 Observations	

Source: Station 722361, New Smyrna Beach, Florida, 2006-2016.
Highlighted values are less than 95.00%.

Figure 4-2
All Weather Wind Direction Analysis (2006-2016)



Source: Station 722361, New Smyrna Beach, Florida, 2006-2016.
Note: This graph illustrates the percentage of time all wind observations were coming from each direction from 2006 to 2016. The circles are shown in 1% intervals.

No single runway at EVB provides 95.00 percent or more coverage for the 10.5 knot and 13 knot crosswind components. Although the RDC for Runway 7-25 is B-II, 100,000 or more small aircraft operations may occur on that runway each year (or aircraft with a 10.5 knot crosswind component). Runway 7-25 provides 88.88 percent coverage under the 10.5 knot crosswind component, which means that a crosswind runway is recommended for the training activity at EVB. Furthermore, no combination of Runway 7-25 and any other runway provides completely adequate crosswind coverage for both the small training aircraft and larger corporate aircraft, while the combination of all three runways provides adequate crosswind coverage for all aircraft that regularly operate at EVB. Although the combination of Runways 2-20 and 11-29 provides adequate crosswind coverage for All Weather, IFR, and VFR conditions, that two-runway configuration would not allow the airfield to maintain acceptable levels of capacity both currently and during the planning period, as discussed in the following section.

4.4 Airfield Capacity

The FAA defines airfield capacity as an estimate of aircraft that can be processed through the airfield system during a specific period with acceptable levels of delay. This section evaluates whether the existing airfield configuration of EVB is capable of accommodating forecast levels of demand during the planning period. Estimates of airfield capacity were developed in accordance with the methods presented in FAA AC 150/5060-5, Airport Capacity and Delay (Capacity AC). This methodology does not account for every possible situation at an airport, but rather the most common situations observed at U.S. airports when the Capacity AC was adopted. The Capacity AC provides a methodology for determining the hourly capacity, Annual Service Volume (ASV), and aircraft delay, which are defined below. Each of these factors was calculated for existing conditions and for the last year of the planning period at EVB. The results are used for planning purposes to determine if airfield improvements are needed.

- **Hourly Airfield Capacity –** An airport's hourly airfield capacity represents the maximum number of aircraft that can be accommodated under conditions of continuous demand during a one-hour period. Using peak hour forecasts, the hourly airfield capacity is determined for both VFR and IFR activity.
- **Annual Service Volume (ASV) –** The ASV estimates the annual number of operations that the airfield configuration should be capable of handling with minimal delays. The ASV accounts for peaking characteristics in its calculation of 12-month demand as well as periods of low-volume activity.
- **Delay –** The average anticipated delay is based on a ratio of forecast demand to the calculated ASV. According to the Capacity AC, "as demand approaches capacity, individual aircraft delay is increased. Successive hourly demands exceeding the hourly capacity result in unacceptable delays."

FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems, states that Chapter 2 of the Capacity AC (Capacity and Delay Calculations for Long-Range Planning) should be used for most airports. The Capacity AC does not identify capacity thresholds for an airfield configuration such as EVB's. This is because airports with three runways typically have at least two parallel runways, which allows for simultaneous use of the parallel runways. Although the airfield configuration at EVB does not allow the airport to maximize capacity in accordance with the recommendations in the Capacity AC, personnel from the ATCT have organized a way for the aircraft traffic to efficiently operate on the three runways, but the presence of the three runways is needed for them to continue to handle the activity. Because the Capacity AC does not address a configuration such as EVB's, this analysis focused on illustrating what the impacts would be if EVB had a two runway configuration. It was assumed that a minimum of two runways would be needed because no single runway provides adequate crosswind coverage. As shown in **Figure 4-3**, three airfield configurations were reviewed as it pertains to the capacity assessment for EVB. The first one is an intersecting runway configuration, which would apply to EVB if Runways 2-20 and 11-29 were the only two runways available. The other two represent non-intersecting runway configurations that have different hourly capacities and ASVs depending upon the direction of traffic. FAA Order 5100.38D, Airport Improvement Program Handbook, identifies the following policy regarding the justification of runways.

FAA Policy on Secondary, Crosswind, and Additional Runways (FAA Order 5100.38D)

Per FAA policy, the ADO [FAA Airports District Office) can only fund a single runway at an airport unless the ADO has made a specific determination that an additional runway is justified. The requirements, justification and eligibility for runways are listed in Table 3-7 [see below].

Before planning a project on a runway, the ADO must determine the type of runway (primary, secondary, or additional).

A runway that is not a primary runway, a secondary runway, or a crosswind runway is considered to be an additional runway. It is not unusual for a two-runway airport to have a primary runway and an additional runway, and no secondary or crosswind runway. That is because the ADO can only designate a runway as a secondary or crosswind runway if it meets the specific operating and justification parameters in Table 3-7.

Additional runways are not eligible. Any development such as marking, lighting, or maintenance projects on an additional runway is also ineligible.

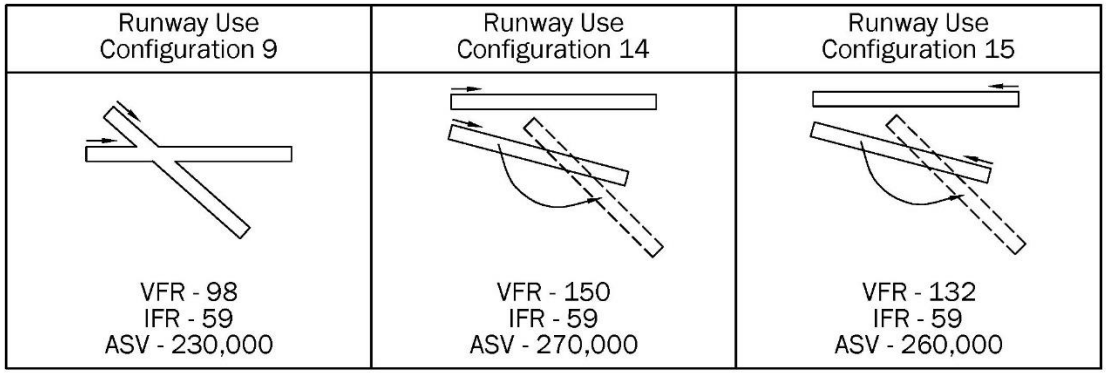
Table 3-7 Runway Types and Eligibility

For the following runway type…	Must meet all of the following criteria…	And is…
a. Primary Runway	**(1)** A single runway at an airport is eligible for development consistent with FAA design and engineering standards.	Eligible
b. Crosswind Runway	**(1)** The wind coverage on the primary runway is less than 95%.	Eligible if justified
c. Secondary Runway	**(1)** There is more than one runway at the airport. **(2)** The non-primary runway is not a crosswind runway. **(3)** Either of the following: **(a)** The primary runway is operating at 60% or more of its annual capacity, which is based on guidance developed by APP-400 as the threshold for considering when to plan a new runway, or **(b)** APP-400 has made a specific determination that the runway is required for operation of the airfield.	Eligible if justified.
d. Additional Runway	**(1)** There is more than one runway on the airport. **(2)** The ADO has determined that the nonprimary runway does not meet the requirements to be designated a crosswind runway. **(3)** The ADO has determined that the nonprimary runway does not meet the requirements to be designated a secondary runway.	Ineligible.

EVB has a need for all three runways for crosswind purposes because only the combination of the three runways provides adequate coverage. Although it is difficult to assign a primary and secondary runway, the analysis in **Table 4-3** should illustrate that a secondary runway is needed because the number of annual operations at EVB currently exceeds 60 percent or more of the ASV of any of the two-runway airfield configurations, which is the threshold for when a new runway should be planned. Depending upon the traffic flows, the number of annual operations at EVB was as high 70 percent of ASV in 2015 and as low as 60 percent. By 2035, those percentages are forecast to be as high as 93 percent of ASV and as low as 79 percent. Although it would be ideal to plan for a new parallel runway to improve airfield capacity, the ability to do so may be highly infeasible at EVB. Rather, ATCT personnel have developed procedures so the existing three-runway configuration can handle the busy combination of local training and itinerant aircraft activity, but they rely on the continued operation of all three runways. Therefore, the City of New Smyrna Beach has made it a key priority to maintain all three runways at EVB because they are not only needed for crosswind purposes, but also because the number of annual operations under a two-runway configuration would exceed 60 percent of ASV and would trigger then need to plan for a new runway (which the airfield currently provides). Because Runway 2-20 is currently in fair/poor condition, the pavement should be rehabilitated in order to preserve the capability for ATCT personnel to manage the traffic flows. Furthermore, although it was not assessed as part of this master plan update, many of the airports near EVB also experience a high number of local training operations. The separation of local and itinerant traffic that is provided by the three-runway configuration at EVB helps to improve airfield capacity within the region (and crosswind coverage for both small and large aircraft), and a reduction in capabilities at EVB may produce impacts elsewhere within the region.

Other capacity-enhancing improvements are incorporated into the alternatives including by-pass taxiways at the runway ends, which basically serve the same function as holding aprons to allow aircraft to better maneuver around each other. Such improvements will help to reduce the overall delay that is experienced by aircraft maneuvering through the airfield.

Figure 4-3
Runway Use Configurations



Source: FAA AC 150/5060-5, Airport Capacity and Delay.

Table 4-3
Airfield Capacity Calculations

Configuration – Year	Annual		Hourly			
	Operations	% ASV	VFR Peak Hour	% VFR Capacity	IFR Peak Hour	% IFR Capacity
9 – 2015	161,721	70%	84	86%	26	44%
9 – 2035	213,602	93%	111	113%	34	58%
14 – 2015	161,721	60%	84	56%	26	44%
14 – 2035	213,602	79%	111	74%	34	58%
15 – 2015	161,721	62%	84	64%	26	44%
15 – 2035	213,602	82%	111	84%	34	58%

Source: Michael Baker International, Inc., 2016.

4.5 Airfield Design Standards

The runways, taxiway and aircraft parking aprons at EVB were analyzed for compliance with FAA design standards and the ability to handle existing and forecast levels of demand. The FAA defines the requirements for airfield design standards in AC 150/5300-13A, Airport Design. These include numerous safety area and separation standards that must be followed to ensure that aircraft have adequate wingtip-to-wingtip clearances, overrun protection, and obstruction-free movement areas. **Tables 4-4**, **4-5**, and **4-6** summarize the airfield design standards for existing conditions at EVB, with non-standard or non-preferential conditions identified in **red**. Although many of the airfield design standards are self-explanatory, important features such as the Runway Safety Area (RSA), Runway Object Free Area (ROFA), and Runway Protection Zone may require further definition. These important features are discussed below and illustrated in **Figure 4-4**.

- **Runway Safety Area (RSA) –** The RSA is a rectangular surface that is centered on the runway. The FAA dictates that RSAs shall be: "1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations; 2) drained by grading or storm sewers to prevent water accumulation; 3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and 4) free of objects, except for objects that need to be located in the RSA because of their function." Although the RSAs at EVB do not appear to contain any non-standard features, the RSA beyond the Runway 20 end extends over the Runway 7-25 RSA, which is often viewed as a non-preferential scenario. In such cases, the FAA may recommend that the portion of the RSA beyond the runway end be corrected so that it no longer overlaps the RSA of the other runway.

- **Runway Object Free Area (ROFA) –** The ROFA must be clear of ground objects protruding above the RSA edge elevation and is a rectangular surface that is centered on the runway. The ROFA is intended to "enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes." The ROFAs at EVB do not appear to contain any non-standard features.

- **Runway Protection Zone (RPZ) –** The RPZs extend off the airport property beyond all six runway ends at EVB. "The RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such

control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ." In 2012, the FAA issued a memorandum on Interim Guidance on Land Uses Within a Runway Protection Zone. The information in the memorandum will be used to coordinate any potential changes to the RPZs with the FAA. For the RPZs that currently extend off the airport property, some degree of control should be implemented (e.g., acquisition, easement, or zoning) in order to maintain land use compatibility within the vicinity of EVB and to allow the airport to remove obstructions beyond the runway ends. The Code of Ordinances of the City of New Smyrna Beach has RPZ regulations for EVB that prohibit specific land uses within the RPZs, although it may be necessary to revise the ordinance (Chapter 22, Article III, Section 22-96) to prohibit all types of development within the RPZs.

FAA Engineering Brief 75 (EB-75), Incorporation of Runway Incursion Prevention into Taxiway and Apron Design, provides guidance on design strategies of taxiways and aprons to help prevent runway incursions (the FAA defines a runway incursion as any unauthorized intrusion onto a runway, regardless of whether or not an aircraft presents a potential conflict). According to EB-75, "these design strategies are only recommendations. They are not a set of standards that must be followed whenever possible. Airfield design is often a process that must balance safety, efficiency, capacity, and other factors. There will be cases where the strict application of these recommendations is unjustified and unwise. Instead, use the recommendations as a checklist to insure the runway incursion aspects of any design proposal are properly considered." Many of these recommendations have also been incorporated into FAA AC 150/5300-13A, Airport Design.

- Limit the number of aircraft crossing an active runway
    - The preference is for aircraft to cross in the last third of the runway whenever possible, since within the middle third of the runway the arriving/departing aircraft is usually on the ground and traveling at a high rate of speed
- Optimize pilots' recognition of entry to the runway (increase situational awareness) through design of taxiway layout, for example:
    - Use a right angle for taxiway-runway intersections (except for high speed exits)
    - Limit the number of taxiways intersecting in one spot
    - Avoid wide expanses of pavement at runway entry
- Insure the taxiway layouts take operational requirements and realities into account to:
    - Safely and efficiently manage departure queues
    - Avoid using runways as taxiways
    - Use taxiway strategies to reduce the number of active runway crossings
    - Correct runway incursion "hot spots"

EB-75 presents several additional design recommendations for preventing runway incursions. The complex airfield configuration at EVB has several areas where improvements can be conducted to improve situational awareness for pilots and are incorporated into the study recommendations. As previously illustrated in Figure 4-1, the FAA has identified the intersection of Runway 20, Taxiway B, and Taxiway E as a hot spot at EVB. Opportunities to simplify that intersection as well as other features of the airfield are examined in later sections of this master plan update.

Table 4-4
Evaluation of Existing Airfield Design Standards (Runway 2-20)

Design Standard	Required Dimension	Runway 2 Evaluation	Runway 20 Evaluation
Runway Design Code (RDC)	B-II		
RW Approach Visibility Minimums	Varies by End	1-Mile	Visual
Runway (RW) Width	75 Feet	100 Feet	
RW Safety Area (RSA) Width	150 Feet	**Runway 20 End RSA Overlaps Runway 25 RSA**	
RSA Length Beyond RW End	300 Feet		
RW Object Free Area (ROFA) Width	500 Feet	Meets Standard	
ROFA Length Beyond RW End	300 Feet		
RW Obstacle Free Zone (ROFZ) Width	400 Feet	Meets Standard	
ROFZ Length Beyond RW End	200 Feet		
RW Protection Zone (RPZ) Inner Width	500 Feet	500 Feet	500 Feet
RPZ Outer Width	700 Feet	700 Feet	700 Feet
RPZ Length	1,000 Feet	1,000 Feet	1,000 Feet
RPZ Notes	N/A	**RPZs Extend Off Airport**	
RW Blast Pad Width	95 Feet	Meets Standard	
RW Blast Pad Length	150 Feet		
RW Shoulder Width	10 Feet	Meets Standard	
Taxiway (TW) Width (TDG-2)	35 Feet	Meets Standard	
TW Safety Area (TSA) Width	79 Feet	Meets Standard	
TW Object Free Area (TOFA) Width	131 Feet	Meets Standard	
Taxilane (TL) Object Free Area Width	115 Feet	Meets Standard	
TW Shoulder Width (TDG-2)	10 Feet	Meets Standard	
RW Centerline to Parallel TW Centerline	240 Feet	Meets Standard	
RW Centerline to Holdline	200 Feet	Meets Standard	
RW Centerline to Aircraft Parking Area	250 Feet	Meets Standard	
TW Centerline to Parallel TW/TL Centerline	105 Feet	Meets Standard	
TW Centerline to Fixed or Movable Object	65.5 Feet	Meets Standard	
TL Centerline to TL Centerline	97 Feet	Meets Standard	
TL Centerline to Fixed or Movable Object	57.5 Feet	Meets Standard	
RW Surface Gradient and Line of Sight	Maximum 2.0% Grade	Meets Standard	
Source: Michael Baker International, Inc., 2016.			

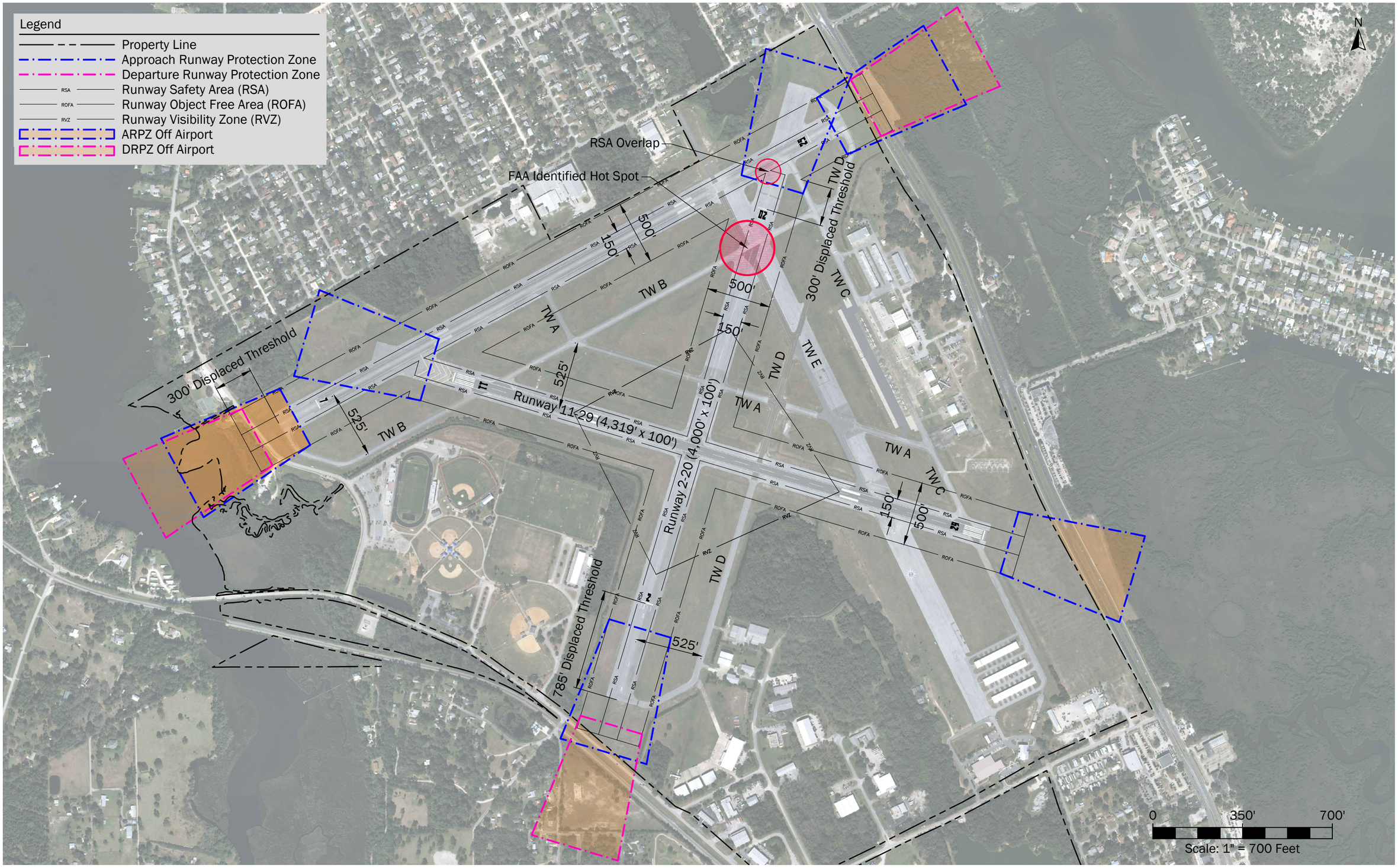
Table 4-5
Evaluation of Existing Airfield Design Standards (Runway 7-25)

Design Standard	Required Dimension	Runway 7 Evaluation	Runway 25 Evaluation
Runway Design Code (RDC)	B-II		
RW Approach Visibility Minimums	Varies by End	1- Mile	1- Mile
Runway (RW) Width	75 Feet	75 Feet	
RW Safety Area (RSA) Width	150 Feet	**Runway 20 End RSA Overlaps Runway 25 RSA**	
RSA Length Beyond RW End	300 Feet		
RW Object Free Area (ROFA) Width	500 Feet	Meets Standard	
ROFA Length Beyond RW End	300 Feet		
RW Obstacle Free Zone (ROFZ) Width	400 Feet	Meets Standard	
ROFZ Length Beyond RW End	200 Feet		
RW Protection Zone (RPZ) Inner Width	500 Feet	500 Feet	500 Feet
RPZ Outer Width	700 Feet	700 Feet	700 Feet
RPZ Length	1,000 Feet	1,000 Feet	1,000 Feet
RPZ Notes	N/A	**RPZs Extend Off Airport**	
RW Blast Pad Width	95 Feet	Meets Standard	
RW Blast Pad Length	150 Feet		
RW Shoulder Width	10 Feet	Meets Standard	
Taxiway (TW) Width (TDG-2)	35 Feet	Meets Standard	
TW Safety Area (TSA) Width	79 Feet	Meets Standard	
TW Object Free Area (TOFA) Width	131 Feet	Meets Standard	
Taxilane (TL) Object Free Area Width	115 Feet	Meets Standard	
TW Shoulder Width (TDG-2)	10 Feet	Meets Standard	
RW Centerline to Parallel TW Centerline	240 Feet	Meets Standard	
RW Centerline to Holdline	200 Feet	Meets Standard	
RW Centerline to Aircraft Parking Area	250 Feet	Meets Standard	
TW Centerline to Parallel TW/TL Centerline	105 Feet	Meets Standard	
TW Centerline to Fixed or Movable Object	65.5 Feet	Meets Standard	
TL Centerline to TL Centerline	97 Feet	Meets Standard	
TL Centerline to Fixed or Movable Object	57.5 Feet	Meets Standard	
RW Surface Gradient and Line of Sight	Maximum 2.0% Grade		
Source: Michael Baker International, Inc., 2016.			

Table 4-6
Evaluation of Existing Airfield Design Standards (Runway 11-29)

Design Standard	Required Dimension	Runway 11 Evaluation	Runway 29 Evaluation
Runway Design Code (RDC)	B-II		
RW Approach Visibility Minimums	Varied by End	Visual	1- Mile
Runway (RW) Width	75 Feet	100 Feet	
RW Safety Area (RSA) Width	150 Feet	Meets Standard	
RSA Length Beyond RW End	300 Feet		
RW Object Free Area (ROFA) Width	500 Feet	Meets Standard	
ROFA Length Beyond RW End	300 Feet		
RW Obstacle Free Zone (ROFZ) Width	400 Feet	Meets Standard	
ROFZ Length Beyond RW End	200 Feet		
RW Protection Zone (RPZ) Inner Width	500 Feet	500 Feet	500 Feet
RPZ Outer Width	700 Feet	700 Feet	700 Feet
RPZ Length	1,000 Feet	1,000 Feet	1,000 Feet
RPZ Notes	N/A	**RPZs Extend Off Airport**	
RW Blast Pad Width	95 Feet	Meets Standard	
RW Blast Pad Length	150 Feet		
RW Shoulder Width	10 Feet	Meets Standard	
Taxiway (TW) Width (TDG-2)	35 Feet	Meets Standard	
TW Safety Area (TSA) Width	79 Feet	Meets Standard	
TW Object Free Area (TOFA) Width	131 Feet	Meets Standard	
Taxilane (TL) Object Free Area Width	115 Feet	Meets Standard	
TW Shoulder Width (TDG-2)	10 Feet	Meets Standard	
RW Centerline to Parallel TW Centerline	240 Feet	Meets Standard	
RW Centerline to Holdline	200 Feet	Meets Standard	
RW Centerline to Aircraft Parking Area	250 Feet	Meets Standard	
TW Centerline to Parallel TW/TL Centerline	105 Feet	Meets Standard	
TW Centerline to Fixed or Movable Object	65.5 Feet	Meets Standard	
TL Centerline to TL Centerline	97 Feet	Meets Standard	
TL Centerline to Fixed or Movable Object	57.5 Feet	Meets Standard	
RW Surface Gradient and Line of Sight	Maximum 2.0% Grade		

Source: Michael Baker International, Inc., 2016.



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Michael Baker INTERNATIONAL

DRAFT

Figure 4-4 Airfield Design Standards Analysis

4.6 Runway Length Analysis

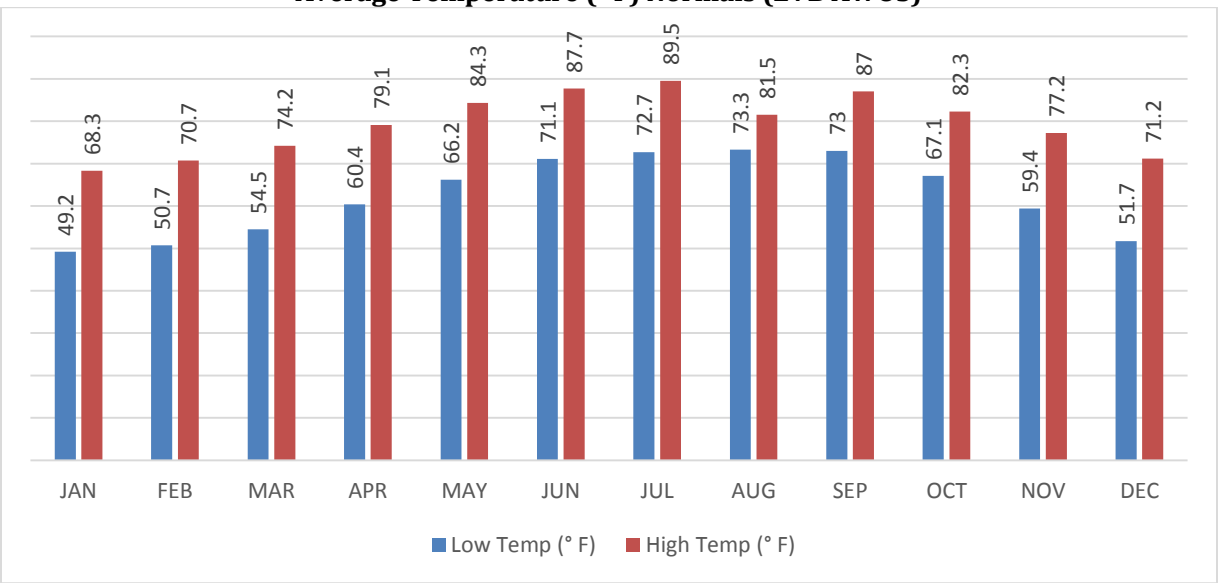
Runway length requirements were evaluated in accordance with FAA AC 150/5325-4, Runway Length Requirements for Airport Design (Runway Length AC). The Runway Length AC presents methodologies for determining runway length requirements by aircraft type. Multiple variables affect takeoff calculations including field elevation, average maximum temperature during the hottest month, runway conditions (e.g., wet runway), takeoff weight, and differences in runway end elevations. As shown in **Table 4-7** and **Figure 4-5**, the average maximum temperature during the hottest month is 89.5° Fahrenheit and occurs in July. Aircraft takeoff performance is maximized at lower elevations and colder temperatures, which means that aircraft operating at EVB benefit from the low elevation of 10.4 feet Above Mean Sea Level (AMSL) but frequently can be restricted by the warm temperatures in Florida.

Table 4-7
Average Temperature & Precipitation Normals (EVB AWOS)

Variable	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Low Temp (° F)	49.2	50.7	54.5	60.4	66.2	71.1	72.7	73.3	73	67.1	59.4	51.7
High Temp (° F)	68.3	70.7	74.2	79.1	84.3	87.7	89.5	81.5	87	82.3	77.2	71.2
Precipitation (In.)	2.80	2.85	4.05	2.52	3.08	6.50	5.91	6.48	6.54	4.28	2.36	2.39

Source: NOAA climate normals generated from the average of EVB AWOS records from 1981 to 2010.

Figure 4-5
Average Temperature (° F) Normals (EVB AWOS)



Source: NOAA climate normal generated from the average of EVB AWOS records from 1981 to 2010.

The Runway Length AC contains various methodologies for determining recommended runway lengths that are based on the type of aircraft utilizing the runway (e.g., small aircraft with less or more than 10 passenger seats, corporate aircraft weighing more than 12,500 pounds but less than 60,000 pounds, and large aircraft weighing more than 60,000 pounds and regional jets). The categories that are applicable to EVB are those for small aircraft and for corporate aircraft, whereas the heavier aircraft category is typically reserved for commercial airports. For airports with multiple runways such as EVB, the runway length requirements for each runway may vary. Specifically, the primary runway is supposed to be designed to handle the critical aircraft and the crosswind runway is supposed to be "100 percent of the recommended runway length determined for the lower crosswind capable airplanes using the primary runway." For additional primary runways intended for separating airplane classes (e.g., local versus itinerant traffic), the "recommended runway length [is determined] for the less demanding airplane design group or individual design airplane." Consequently, there are several factors that must be considered for EVB because it was previously shown that all three runways should be maintained. The following assumptions were made regarding the three runways as it pertains to the runway length requirements and the methodologies in the Runway Length AC:

- **Runway 11-29** is considered the primary runway for itinerant traffic and should be designed for the critical aircraft (the Cessna Citation 560XL). Chapter 3 of the Runway Length AC contains charts for determining runway length recommendations for aircraft in that category, which is considered a medium-sized corporate jet. At EVB's elevation and temperature, aircraft in that category require 4,700 feet for takeoff and 5,405 feet for landing when utilized at 60 percent useful load (determined based on Figure 3-1 in the Runway Length AC), with the greater length becoming the overall recommendation. As the number of jet operations is forecast to increase from 436 in 2015 to 1,088 by 2035, there may be a need to evaluate greater runway length needs, which can be as high as 7,000 feet for aircraft in that category when operating at 90 percent useful load (i.e., closer to the maximum passenger capacity and range of the aircraft). **For the initial planning phases, the city should focus on providing a length of 5,405 feet for Runway 11-29, but may select a recommended development plan that reserves for the potential to provide additional length and flexibility.**

- **Runway 2-20** is considered the crosswind runway for itinerant traffic and should be designed for the lower crosswind capable airplanes using the primary runway, which would consist of small aircraft weighing less than 12,500 pounds. Chapter 2 of the Runway Length AC contains charts for those types of aircraft. Specifically, Figure 2-2 in the Runway Length AC contains the chart for small airplanes having 10 or more passenger seats, which includes many turboprops that frequently operate at EVB such as the Beechcraft King Air C90. **For those aircraft under EVB conditions, a runway length of 4,200 feet is recommended.** That is the next lower runway length recommendation compared to the primary runway and should be considered to the extent practicable for Runway 2-20.

- **Runway 7-25** is technically considered an additional primary runway for the local training activity, at least how it applies to the methodologies in the Runway Length AC. The runway length requirement for Runway 7-25 was thus evaluated "for the less demanding airplane design group or individual design airplane," which was determined to be a turboprop

weighing more than 12,500 pounds such as the Beechcraft King Air 350i. Those types of aircraft also frequently operate at EVB, are consistent with the critical aircraft that was identified in the previous master plan, and are representative of the design characteristics of Runway 7-25. Those aircraft also represent a less demanding airplane in order to comply with the methodologies in the Runway Length AC for determining length requirements for additional primary runways. The same chart that was utilized for determining the length recommendation for Runway 11-29 was used for this evaluation, but the landing requirement was not adjusted for wet conditions to comply with the Runway Length AC. **This results in a recommended runway length of 4,700 feet for Runway 7-25.** Although this is shorter than the current 5,000 foot length of Runway 7-25, both ends of the runway have displaced thresholds that reduce the available runway length for landings.

4.7 Runway Strength Analysis

One of the most important features of airfield pavement is its ability to withstand repeated use by the most weight-demanding aircraft operating at the airport. The current weight bearing capacity for all three runways is 55,000 pounds for aircraft with a single-wheel configuration. All three runways are constructed of asphalt. Runways 11-29 and 7-25 are in good condition and Runway 2-20 is in fair/poor condition. The current strength of the runways is sufficient to accommodate the demands of the critical aircraft throughout the planning period. The actual pavement strength requirements will be evaluated on a project-by-project basis as rehabilitation becomes necessary and is determined during the design phase through a review of recent and anticipated aircraft activity.

4.8 Taxiway and Taxilane System

Taxiways provide airfield and terminal access and enhance the operational capacity of the airport by minimizing runway occupancy. An effective taxiway system provides for the orderly movement of aircraft and enhances operational efficiency and safety by reducing the potential for congestion, runway crossings, and pilot confusion. The existing taxiway system at EVB consists of full-length parallel taxiways for all three runways with multiple connector taxilanes. The system of taxiways and taxilanes at EVB provides access to the runways, aircraft parking areas, and hangars.

All taxiways require a designated width of Taxiway Safety Area (TSA) and Taxiway Object Free Area (TOFA) centered on the taxiway centerline. The standards are based on the critical aircraft, which was previously identified as the Cessna Citation 560XL that falls into the Taxiway Design Group (TDG) 2 category and requires a 35 foot taxiway width. All taxiways meet taxiway width, TSA, and TOFA requirements; however it is recommended that action be taken to limit the number of taxiways that intersect at one location such as the FAA-identified hot spot at the intersection of Runway 20, Taxiway B, and Taxiway E. The FAA recently revised the standards for taxiway fillet geometry as part of AC 150/5300-13A, Airport Design, which are the areas where taxiways turn and extra pavement is needed to meet the necessary turn radii of the critical aircraft. Recommendations for improved fillet geometry are presented as part of the alternatives analysis.

It is noted that a reconfiguration of the terminal apron was recently conducted in order to widen the apron taxilane to accommodate regular activity by aircraft with wider wingspans of up to but not including 79 feet. The project is not only being conducted for safety reasons, but also to better accommodate visiting aircraft with the wider wingspans. A reconfiguration of the apron tiedowns is also being conducted as part of the project.

4.9 Airfield Lighting, Markings, Signage, and Navigational Aids

The following sections describe the requirements for airfield lighting, markings, signage, and navigational aids at EVB.

Airfield Lighting

The airfield lighting at EVB consists of Medium Intensity Runway Lights (MIRLs) along the edges of Runways 11-29 and 7-25. Runway 2-20 should also be provided with MIRLs in order to supplement the non-precision approach procedure to Runway 2 and to allow for use of the runway at night. Most taxiways are equipped with Medium Intensity Taxiway Lights (MITLs), with the exception of Taxiway D and some short taxiway sections. Because Taxiway D is parallel to Runway 2-20, MITLs should be installed in order to permit night activity on that runway.

Airfield Markings

Pavement markings are designed according to the FAA AC 150/5340-1L, Standards for Airport Markings. Many markings at the airport should be refreshed in order to meet current standards, better delineate taxiways, and/or because they are faded. There are only two runway ends with markings that are consistent with the approach procedures that are currently available: Runways 11 and 20. Therefore, the recommendations of this mater plan update include the correction of several runway markings at EVB in order to comply with the latest standards. The taxiways at EVB are equipped with centerline stripes and holding position markings. However, some of the holding position markings are located at varied separations from the runway centerlines and should be corrected wherever possible. Also, most taxiways at the airport do not have edge markings to depict the width of the taxiways, which can be confusing particularly in the areas where there is a wide expanse of pavement and at intersections. Based on discussions with personnel from the ATCT, markings are needed near the intersections of Taxiways B and Runways 20 and 11 to permit Land and Hold Short Operations (LAHSO).

Airfield Signage

The guidelines for airfield signage are provided in FAA AC 150/5340-18F, Standards for Airport Sign Systems. Currently, additional airfield signage is needed in some locations on the airfield and existing signage is in need of replacement or upgrade as the equipment reaches the end of its useful service life. In particular, signage is needed near the intersection of Runway 20 and Taxiways B and E—a known hot spot on the airport. A hot spot is defined as a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary. Furthermore, lighted holding position signs should be installed at the intersections of Runway 7-25 and Taxiways C, D, and E.

Navigational Aids

Navigational aids (NAVAIDs) are visual or electronic devices that provide information or position data to aircraft in flight. At EVB, the main NAVAID improvement is associated with repairing the AWOS that is currently out of service. The AWOS provides pilots and the ATCT with up-to-date weather information and is an important feature that should be maintained. No other NAVAID-related improvements were identified for EVB; however, the ability to provide non-precision instrument approaches to all runway ends is evaluated as part of the alternatives analysis.

4.10 Transient Apron and Based Aircraft Storage

Apron and hangar requirements are calculated in consideration of the airport's existing and forecast based aircraft mix, owner storage preferences, and transient aircraft parking demands. In previous years it was assumed that a certain percentage of based aircraft, mostly single and multi-engine pistons, would desire apron tiedown parking because it is the lowest cost storage option. Today, most owners want to be able to protect their aircraft from poor weather and vandalism and therefore opt for hangar storage. While this is largely the case at EVB, the flight training aircraft are parked on the terminal apron most of the time due to their frequency of use. Most of the other based aircraft are parked within hangars. The following sections describe the requirements for transient apron space and based aircraft storage during the planning period.

Transient Apron

The transient apron areas at EVB are located on the terminal apron. As mentioned earlier, the terminal apron is being reconfigured and expanded to accommodate the required taxilane widths for larger aircraft as well as to provide additional space for visiting aircraft. The project is expected to result in the loss of tiedown positions. Both FBOs also identified the need to pave grass portions that are located between paved areas of the terminal apron to provide additional space for aircraft parking and to enhance maneuverability within the area. There was also a concern that some light poles on the terminal apron are located very close to where aircraft frequently park. Therefore, some improvements may be needed to provide a free and clear environment for aircraft activity on the terminal apron. There is also a need for additional tiedown positions associated with the flight training aircraft and visiting aircraft, as well as an area where several larger corporate aircraft can be parked during peak times. Apron space requirements are frequently calculated for those times and depend upon specific taxilane width and tiedown square footage parameters. There is a lot of room for continued expansion of the existing terminal apron and opportunities for making the area more maneuverable and accessible for both transient and based aircraft are explored as part of the alternatives analysis, with a focus on providing a more defined separation between the busy local training aircraft and larger corporate aircraft.

Based Aircraft Storage

There are several different types of based aircraft storage facilities available at EVB including apron tiedowns, T-hangars, corporate hangars, and smaller bulk hangars. For this analysis, it was assumed that all forms of based aircraft storage are full at EVB. Therefore, in order to accommodate any new based aircraft, the construction of a new facility would be needed. Although some of the existing facilities and tenants at EVB may be able to accommodate additional based aircraft, they are mostly occupied and it would be preferential for new facilities

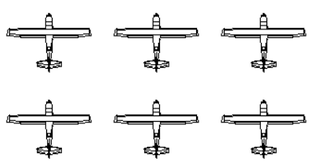
to be provided. There have also been discussions of potentially repurposing some areas for other types of development (e.g., potentially removing some or all of the T-hangars on the west side of the terminal apron and constructing larger corporate hangars). Those types of decisions are typically driven by demand and finances, but they can free up prime space that may be desirable for an existing or potential tenant. **Table 4-8** illustrates how the based aircraft storage requirements were calculated for EVB. The number of based aircraft is forecast to increase from 90 in 2015 to 121 by 2035. Those 31 additional aircraft include 24 single-engine pistons, three multi-engine pistons, one turboprop, one jet, and two helicopters. Based on common based aircraft storage practices at EVB, the 2035 requirements for based aircraft include the addition of six apron tiedown positions, 19 T-hangar bays, and 22,000 square feet of conventional hangar space. Those represent benchmarks for this planning effort, but the alternatives analysis illustrates various concepts for hangar development and apron expansion so the airport has a plan in-place to react to unforeseen demands that may arise.

Table 4-8
Based Aircraft Storage Requirements

Apron Tiedown

2035 Requirement Calculation

Aircraft	Piston	TP / Jet	Rotor
Requirement %	25%	0%	0%
2035 Requirement	6	0	0
6 Apron Tiedowns Required by 2035			

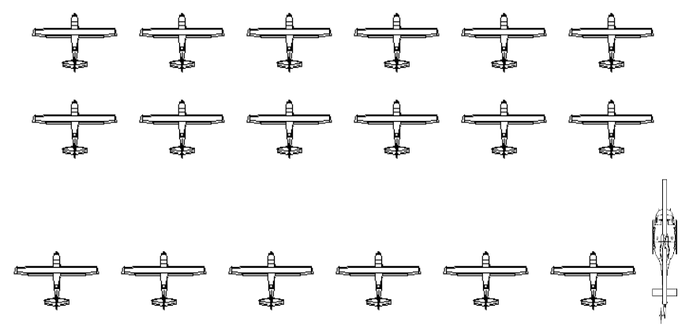


Note: The sample piston, jet, turboprop, and rotorcraft aircraft shown in this table are provided for illustration purposes only.

T-Hangar

2035 Requirement Calculation

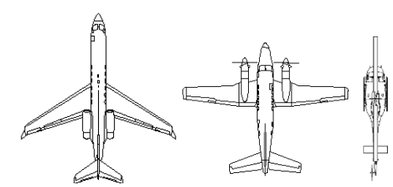
Aircraft	Piston	TP / Jet	Rotor
Requirement %	70%	0%	50%
2035 Requirement	18	0	1
19 T-Hangar Bays Required by 2035			



Conventional Hangar

2035 Requirement Calculation

Aircraft Type	Piston	TP / Jet	Rotor
Requirement %	0%	100%	50%
2035 Requirement	0	2	1
SF Requirement	2,000 SF	10,000 SF	2,000 SF
2035 Requirement	0 SF	20,000 SF	2,000 SF
22,000 SF of Conventional Hangar Space Required by 2035			



Source: Michael Baker International, Inc., 2016.

4.11 Airport Support Facilities

Support facilities are those airport features that are not necessarily specific to aircraft operations, movement, and storage, but which are vital to ensuring the efficiency, safety, and persistency of aircraft activity. For EVB, the existing support facilities consist of the FBO terminal area, airport fueling facilities, airport maintenance facility, automobile parking and access, and ATCT. A review of EVB's existing support facilities is presented in the following sections.

Fixed Base Operator (FBO)

AirGate Aviation and Epic Aviation are the two FBOs at EVB, while the airport/City of New Smyrna Beach arrange for the fuel deliveries and self-service fuel distribution. Both FBOs also have trucks to provide fuel to those aircraft that do not utilize the self-service pumps. AirGate Aviation provides most of the traditional FBO services and facilities at EVB including a terminal, maintenance, rental cars, and a variety of pilot and aircraft amenities. Epic Aviation mostly performs services for the busy aircraft training operation associated with Epic Flight Academy. Both FBOs would like to grow their business and expand their facilities at EVB. Both FBOs expressed a need for a larger terminal apron in order to better accommodate the existing based aircraft and visiting aircraft activity. The alternatives analysis will consider the expansion needs for both FBOs, particularly near their existing facilities.

Airport Fueling Facilities

As previously noted in the inventory chapter, fuel is owned and operated by the City of New Smyrna Beach. There are two aboveground 12,000 gallon storage tanks located on the northwest side of the terminal apron adjacent to Taxiway C: one for 100LL (Avgas) and the other for Jet A. Avgas is used by piston-powered aircraft and some helicopters, and although those aircraft typically require less fuel than jets, it is the most consumed fuel at EVB because of the high volume of training operations using piston-powered aircraft. Jet fuel is utilized by turboprops, jets, and also some helicopters. The pumps on the terminal apron are self-service and are available 24 hours a day by credit card. Both FBOs purchase fuel from the city and distribute fuel by truck, which is often the preferred method of fueling for corporate aircraft such as jets and turboprops.

Airport fuel storage requirements are often determined based on peak times when the most flowage occurs. At an airport such as EVB where fuel deliveries are managed by the city, it is important to make sure that adequate fuel supplies are provided for tenants and the FBO businesses that operate seven days a week. The presence of one tank for each type of fuel may not always allow for the reserves necessary during peak times, particularly at a busy airport such as EVB. The ability to arrange for fuel deliveries at any time is a key priority for aviation-oriented businesses. When the city constructed the fuel farm on the terminal apron, they planned for expansion potential. It is often difficult to obtain competitive pricing for fuel unless it is purchased in high volumes. Therefore, any challenges associated with the current fueling practices should be openly discussed between the city and airport tenants to determine when additional reserve capacity may be necessary. As the need for both 100LL and Jet A is forecast to increase during the planning period, the flexibility to install additional tanks should be maintained.

Airport Administration Building

The airport administration building is located on the terminal apron between the two FBOs and along the entrance road to EVB—Skyline Drive. Because the building occupies a prime location, there may be opportunities to repurpose the space with a facility that may provide additional lease revenue for the airport. Both the apron frontage and the location along Skyline Drive may be attractive features for a potential tenant to develop a facility such as a hangar where the airport administration building is currently located. Therefore, opportunities for potentially relocating the airport administration building should be discussed in order for the airport to better utilize the area.

Airport Traffic Control Tower (ATCT)

The ATCT was completed in 2004 and is an important feature for managing the aircraft traffic at EVB. As discussed in this chapter, the complex configuration of the airfield requires all three runways to serve specific purposes. Without the presence of ATCT personnel at EVB, the ability to manage aircraft traffic and to maintain the ability to utilize all three runways would be challenging. This is especially true considering the various non-preferential taxiway intersections that do not have right-angled turns, the excess of pavement on some taxiways, and multi-node intersections. With the high volume of annual and hourly operations at EVB, there is a justified need for an ATCT and for ATCT personnel to allow for the safe operation of aircraft activity around the airfield—ATCT personnel have emphasized the importance of having all three runways operational in order to have the capability to do that.

Airport Maintenance Facilities

The airport maintenance facility is located along Industrial Park Avenue and is used for the storage and maintenance of city-owned vehicles and equipment. Because airport maintenance facilities do not generate revenues, they are often located in remote areas that are unlikely to be attractive to a potential business. Being located near an intersection that might be prime for future business development (U.S. Route 1 and Industrial Park Avenue), the city should reserve a site on the airport property where the airport maintenance facility could be relocated to if such a business interest arises.

Airport Access and Parking

The access roadways in the vicinity of the airport are intended to provide adequate access to and from the airport and the community. EVB can be accessed via U.S. Highway 1 which is the eastern boundary of the airport. Other aviation facilities are located along Industrial Park Avenue on the south, Trumbull Bay Road on the west, and South Street on the north, as well as along roads in the Airport Industrial Park. Although further expansion of the Airport Industrial Park is desired with the associated roadway extensions, no major access improvements are planned for EVB. The recommendations of this master plan update include sufficient access and parking for new developments in order to encourage development practices that are attractive for existing and potential tenants.

Regarding parking, several improvements are needed for the facilities located along U.S. Highway 1. Various individuals park at EVB on a daily basis and include a combination of employees, visitors, based aircraft tenants, flight students, and passengers flying to/from the Bahamas with AirGate Aviation. Numerous vehicles park in grass and loose gravel areas with large depressions

which are sometimes muddy and/or slippery. The recommendations of this master plan update include paving areas where vehicles frequently park and making the areas along Skyline Drive more attractive for pedestrians. This should help boost the appearance of the airport's primary entry point and provide a safer and cleaner parking and walking environment.

4.12 Land Acquisition Requirements

The purpose of the land area requirements is to review the airport's facilities in comparison to FAA standards in order to identify additional property that may be required for inclusion into the land property envelope. The additional properties may be necessary for land use compatibility purposes, future development needs, or to obtain control over an RPZ. For EVB, the main concern is obtaining control over the RPZs via acquisition, easement, or zoning. As mentioned, the Code of Ordinances of the City of New Smyrna Beach contains RPZ regulations that prohibit certain land uses within the RPZs, but should be revised to prohibit any future development within those areas. The code also contains several additional ordinances that are intended to control and maintain compatibility between the airport and surrounding land uses that are contained in Chapter 22, Article III. Through the development of alternatives, additional need may arise for land acquisition and/or easement. Those needs will be identified in later sections of this master plan update.

4.13 Airport Security Analysis

In May 2004, the Transportation Security Administration (TSA) released Security Guidelines for General Aviation Airports. According to the TSA website, this document "constitutes a set of federally-endorsed guidelines for enhancing airport security at general aviation facilities throughout the nation. It is intended to provide general aviation airport owners, operators, and users with guidelines and recommendations that address aviation security concepts, technology, and enhancements."

To assist in defining which security methods are most appropriate for a general aviation airport, the document includes an Airport Characteristics Measurement Tool (ACMT) that is used to assess the recommended security characteristics for general aviation airports. First, each airport is assigned a certain point value that is calculated considering the airport's location, number and types of based aircraft, runway length, surface characteristics and number of and types of aircraft operations. For EVB, a point value of 40 was calculated, which means the security features shown within the 25-44 point range in **Table 4-9** are recommended. EVB has most of the recommended security features already in-place to some extent. The New Smyrna Beach Police Department is also located on the airport property, as well as Fire Station 53, which provides additional security for the airport.

Table 4-9
EVB Security Features

TSA Recommended Security Feature	Point Range / Applicable Security Feature				EVB Status
	>45	25-44	15-24	0-14	
Fencing					✓
Hangars					✓
Closed Circuit Television (CCTV)					✓
Intrusion Detection System					✓
Access Controls					✓
Lighting System					✓
Personnel ID System					✓
Vehicle ID System					✓
Challenge Procedures					✓
Law Enforcement Support					✓
Security Committee					✓
Pilot Sign-In/Out Procedures					✓
Signs					✓
Documented Security Procedures					✓
Positive Passenger/Cargo ID					✓
All Aircraft Secured					✓
Community Watch Program					✓
Contact List					✓

Source: TSA Security Guidelines for General Aviation Airports.

4.14 Summary

Table 4-10 presents a summary of the identified facility requirements. The remaining sections of this report present recommendations to satisfy these facility requirements at EVB, including a phased development program over the next 20 years.

Table 4-10
Summary of Facility Requirements

Category	Requirement
Critical Aircraft	Cessna Citation 560XL (medium-sized corporate jet)
Runway Design Code (RDC)	RDC B-II
Taxiway Design Group (TDG)	TDG-2
Runway Wind Coverage	All three runways needed for wind coverage purposes, combined with assistance from ATCT personnel
Airfield Capacity	All three runways needed for airfield capacity purposes. The number of annual and hourly operations at EVB illustrates the need for three runways.
Airfield Design Standards	The Runway 20 end RSA overlaps the Runway 25 RSA and all RPZs extend off the airport property
Runway Length	Runway 11-29 – Requirement of 5,405 feet, but additional length may be planned Runway 2-20 – 4,200 feet Runway 7-25 – 4,700 feet
Runway Strength	Maintain existing strength
Taxiway and Taxilane System	Correct hot spot, fillets, and complex intersections wherever possible
Airfield Lighting	Light Runway 2-20 and Taxiway D for night operations
Airfield Markings	Correct non-standard runway markings, improve taxiway edge and holding position markings, and add LAHSO markings
Airfield Signage	Upgrade signage at holding positions
Navigational Aids	Repair AWOS and consider non-precision approach capability for all runway ends
Transient Apron	Provide additional space for large aircraft (e.g., corporate jets) and pave grass sections for improved maneuverability.
Based Aircraft	By 2035, add six apron tiedowns, 19 T-hangar bays, and 22,000 square feet of conventional hangar space
Fixed Base Operator (FBO)	Reserve space for the FBOs expansion needs
Fueling	As necessary, provide additional tanks to allow for reserve capacity
Airport Administration Building	The current location may be better suited for another use. Consider relocating the facility to free up prime frontage on the terminal apron.
Airport Traffic Control Tower (ATCT)	ATCT personnel are critical for managing traffic flows on a complex airfield configuration
Airport Maintenance Facility	The maintenance facility is located at an intersection where commercial development may be desirable. Consider the potential to relocate the facility to a more remote area on the airport property.
Airport Access and Parking	Improve roadway access within the industrial park and pave grass and gravel parking areas to provide a safer and cleaner parking and walking environment.
Land Acquisition	Consider acquisition needs as part of the alternatives analysis
Security	As necessary, update security procedures and features