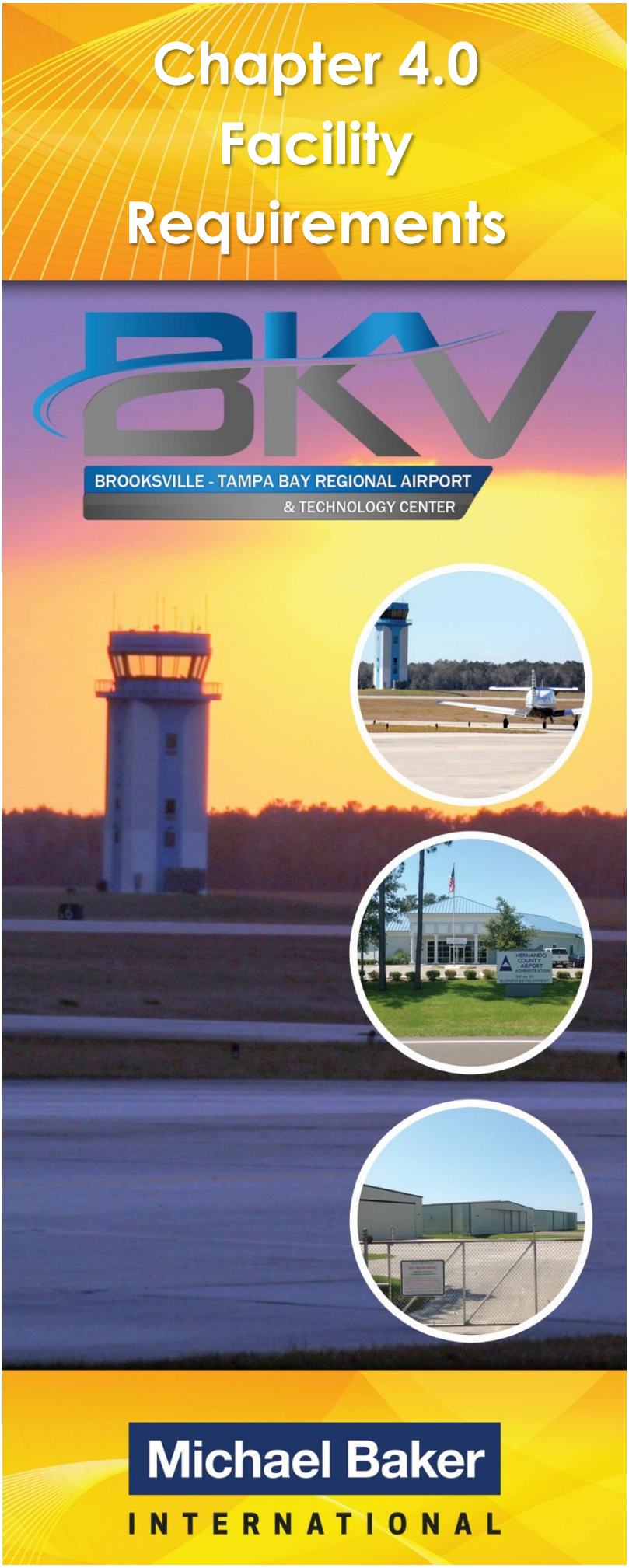
Chapter 4.0
Facility Requirements



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4.0 FACILITY REQUIREMENTS

4.1 Introduction

The facility requirements evaluation compares the current airfield and landside components of the Brooksville-Tampa Bay Regional Airport (BKV) to Federal Aviation Administration (FAA) planning guidelines and the FAA-approved forecasts of aviation demand. The goal is to identify improvements that will be needed over the course of the 20-year planning period. Later in this Master Plan Update (MPU), a recommended course of action is presented that attempts to satisfy the identified facility requirements in the most efficient manner possible. An analysis of the following airport components is presented herein:

- Airfield Capacity and Configuration
- Design Aircraft Identification
- Runway Length Analysis
- Runway Strength Analysis
- Instrument Approaches
- Airfield Design Standards
- Airfield Lighting, Markings and Signage, and Navigational Aids
- Transient Apron and Based Aircraft Storage
- Airport Support Facilities
- Land Use Considerations
- Airport Security Analysis

4.2 Airfield Capacity and Configuration

The FAA defines airport 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 BKV is capable of accommodating forecast levels of demand during the planning period. This analysis only evaluates the airfield capacity for Runway 9-27 because the FAA does not participate in funding for Runway 3-21 at this time. Runway 3-21 is not currently needed for airfield capacity or wind coverage purposes, but it does serve an important role at BKV by allowing for a separation of traffic (i.e., training vs. itinerant activity) and also allows the airport to remain operational when Runway 9-27 is closed for maintenance; it is noted, however, that the FAA does participate in funding for parallel Taxiway B that runs along the eastern side of Runway 3-21 because the taxiway provides access to many of the airport's landside facilities in that area. 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 average expected delays of the airfield system, which are defined below. Each of these factors was calculated for existing conditions and for key years during the 20-year planning period at BKV. The results are used for planning purposes to determine if airfield improvements are needed to combat unacceptable levels of delay.

- **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 Visual Flight Rule (VFR) and Instrument Flight Rule (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* (*NPIAS Order*), states that Chapter 2 of the *Capacity AC* (Capacity and Delay Calculations for Long-Range Planning) should be used for most airports, particularly where capacity is not a constraining factor. Depending upon the aircraft fleet mix and activity levels, a typical single-runway can safely accommodate up to 250,000 annual operations without incurring substantial delay. Because of the single-runway configuration of BKV and the moderate levels of existing and forecast activity, the long-range method of determining airfield capacity and delay was employed while considering the following assumptions during the 20-year planning period:

- The number of arrivals and departures are generally equal.
- There is a full-length parallel taxiway available along Runway 9-27.
- Airfield capacity calculations are maximized when there are four exit taxiways provided for arrivals on both runway ends.
- BKV will remain a general aviation airport throughout the 20-year planning period, although some non-passenger commercial activity may occur at some point in the future (e.g., cargo or maintenance).

Several airport characteristics must be considered as part the airfield capacity analysis including runway and taxiway configuration, aircraft fleet mix, runway utilization and instrumentation, weather conditions, and potential airspace constraints, many of which were previously documented as part of the inventory. Based on a review of each of these characteristics, Runway 9-27 would only need one additional exit taxiway in order for the runway to be able to accommodate its theoretical ASV of approximately 230,000 operations, hourly VFR capacity of 98 operations, and hourly IFR capacity of 59 operations. The additional exit taxiway should be located between the western end of the runway (Runway 9 end) and exit Taxiway A6. According to Table 4-9 in FAA AC 150/5300-13, *Airport Design*, an exit taxiway in that vicinity would provide accommodate the exit demands for all small twin aircraft during wet runway conditions (when landing on Runway 27) and for the majority of turboprop and jet operations at BKV during dry runway conditions. Furthermore, the *NPIAS Order* states that holding aprons or bypass taxiways should be considered at the runway ends if the runway experiences 20,000 itinerant operations or 30 peak hour operations. Because the airport currently experiences more than 20,000 itinerant operations, the provision of holding aprons or bypass taxiways at the runway ends should be considered as a component of this planning effort. **Table 4-1** presents a comparison of the theoretical ACV and hourly airfield capacity values to the forecasts of aviation demand for BKV. The average delay per operation was found to be negligible for aircraft throughout the planning period (i.e., just a few seconds of delay per operation).

Table 4-1
Forecast Airfield Capacity Levels for Runway 9-27

Capacity	ASV = 230,000		IFR Peak Hour = 59		VFR Peak Hour = 98	
Year	Annual Operations	Capacity Level	IFR Peak Hour	Capacity Level	VFR Peak Hour	Capacity Level
2013	50,103	21.78%	12	20.34%	14	14.29%
2014 F	51,124	22.23%	13	22.03%	14	14.29%
2018 F	55,448	24.11%	14	23.73%	15	15.31%
2023 F	61,440	26.71%	16	27.12%	16	16.33%
2028 F	68,167	29.64%	18	30.51%	18	18.37%
2033 F	75,731	32.93%	20	33.90%	19	19.39%

Source: Michael Baker Jr., Inc., 2014.

4.3 Design Aircraft Identification

As described in the previous chapter, the critical or design aircraft is that airplane using (or highly likely to use) the airport on a regular basis, which is defined as at least 500 annual operations. The design aircraft is used to identify the requirements for various airfield facilities such as Runway Safety Area (RSA) width and length beyond a runway end, runway width, and separations to parallel taxiways and aircraft parking areas. Each runway at BKV has a different design aircraft: the design aircraft for Runway 9-27 is a combination of aircraft that produce a Runway Design Code (RDC) of C-IV and the design aircraft for Runway 3-21 is also a combination of small turboprops and small business jets that produce an RDC of B-II. The characteristics of those aircraft are used throughout the remainder of this chapter to evaluate the airfield facility requirements for BKV.

It is also important to identify the Taxiway Design Group (TDG) for the various taxiways and taxilanes at BKV. The selection of a TDG is based on the undercarriage dimensions of the largest aircraft that operates on each respective taxiway or taxilane. Most of the taxiways that run parallel to Runway 9-27 are designed to accommodate large aircraft such as Lockheed C-130 Hercules, corporate jets, and even commercial-sized jets. As mentioned in the forecast chapter, the airport is in discussions with an interested party that is considering establishing a distribution center at BKV and utilizing Boeing 757 and 767 aircraft. Those aircraft fall into the TDG 5 category that requires 75foot wide taxiways. Therefore, TDG 5 was used herein to evaluate the taxiways parallel to Runway 9-27 and is consistent with previous planning efforts and ongoing improvements at the airport. The taxiways and taxilanes that run parallel to Runway 3-21 are mostly designed to accommodate aircraft with smaller wingspans that fall into the TDG 2 category (e.g., Beechcraft King Air 350).

4.4 Runway Length Analysis

Runway length requirements are determined 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, from small piston aircraft to large commercial jets. The variables that affect takeoff calculations include field elevation, average maximum temperature during the hottest moth, runway conditions (e.g., wet runway), takeoff weight, and differences in runway end elevation. Landing calculations are affected by field elevation and runway conditions. The following variables were pertinent to the runway length analysis for BKV:

- Field Elevation – 75.7 Feet Above Mean Sea Level (AMSL)
- Average Maximum Temperature (Hottest Month) – 91° Fahrenheit (June, July, and August)

The runway length analysis was conducted for both Runways 9-27 and 3-21 at BKV. The length requirements for each runway differ based on the specific types of aircraft that regularly operate on them. The forecast chapter indicated that the Runway Design Code (RDC) for Runway 9-27 was determined based on a range of aircraft that include the Bombardier Challenger 600 corporate jet and the Lockheed C-130 Hercules turboprop, but also indicated that there is a potential for a commercial cargo operator to relocate to BKV and to utilize Boeing 757 and 767 jets. Therefore, it is important to consider the runway length requirements for all existing aircraft types that currently operate at BKV and for those that may operate there in the future.

Table 4-2 provides the results of the runway length analysis for Runway 9-27. As shown, the length requirements for corporate jets with Maximum Takeoff Weights (MTOWs) of more than 12,500 pounds and up to 60,000 pounds are determined in accordance with charts in the *Runway Length AC*. Based on the conditions at BKV, the corporate jet runway length requirements at BKV range from as low as 4,700 feet to as high as 8,500 feet. It is noted that due to the nature of the on-demand air ambulance and aircraft repair businesses that are based at BKV, they are flying to destinations throughout the world and may operate in the higher payload range. Also, the Challenger 600 is an aircraft that is part of the "100% of Fleet" category in the *Runway Length AC*. Those aircraft often need additional runway length because of their higher MTOW and/or individual performance characteristics. The U.S. Coast Guard and Air National Guard typically use BKV to conduct C-130 training activities. Although the aircraft is generally capable of conducting takeoffs and landings on short runways, the C-130 requires 5,850 feet for takeoffs at MTOW and 3,000 feet for landings at Maximum Landing Weight (MLW) (refer to the information in Table 4-2). The Boeing 757 and 767 takeoff and landing length requirements differ based upon engine model. A sample range of takeoff and landing length requirements for the Boeing 757 and 767 are provided in Table 4-2 for MTOW and MLW conditions; however, airport staff should consult with any potential operator to determine their specific operating requirements. For the purposes of this planning effort and to be consistent with previous planning efforts for BKV, the County has selected a preferred length of 8,000 feet for Runway 9-27 to be further evaluated as part of the alternatives analysis process.

The runway length requirements for Runway 3-21 were determined primarily for non-jet aircraft with MTOWs of more than 12,500 pounds. This includes aircraft like the Beechcraft King Air 350i turboprop that has an MTOW of 15,000 pounds. However, it is noted that the FAA does not provide funding participation for Runway 3-21 at this time, and as such, the County should reevaluate the actual utilization of the runway and actual runway length needs when they are considering investing in a future rehabilitation project. According to the *Runway Length AC*, aircraft like the King Air 350i require approximately 4,700 feet of runway length for takeoffs and landings (refer to Table 4-2). That runway length was viewed as the benchmark requirement for this planning effort.

Table 4-2
BKV Runway Length Analysis

Aircraft Type	Takeoff Length	Landing Length	Conditions	Source
Runway 9-27				
Corporate Jets (75% Fleet @ 60% Useful Load)	4,700 Feet	5,405 Feet	75.7 Feet AMSL, 91° F	AC 150/5325-4B (Figure 3-1)
Corporate Jets (75% Fleet @ 90% Useful Load)	6,800 Feet	7,000 Feet	75.7 Feet AMSL, 91° F	AC 150/5325-4B (Figure 3-1)
Corporate Jets (100% Fleet @ 60% Useful Load)	5,400 Feet	5,500 Feet	75.7 Feet AMSL, 91° F	AC 150/5325-4B (Figure 3-2)
Corporate Jets (100% Fleet @ 90% Useful Load)	8,500 Feet	7,000 Feet	75.7 Feet AMSL, 91° F	AC 150/5325-4B (Figure 3-2)
Lockheed C-130 Hercules	5,850 Feet	3,000 Feet	Sea Level, 59° F, MTOW or MLW	Aircraft Specifications Book
Boeing 757-200 (RB211-535C Engines)	7,800 Feet	5,400 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-200 (RB211-535E4 Engines)	7,500 Feet	5,700 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-200 (RB211-535E4B Engines)	6,500 Feet	5,700 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-200 (PW2037 Engines)	10,000 Feet	5,900 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-200 (PW2040 Engines)	7,800 Feet	5,900 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-300 (RB211-535E4 Engines)	9,500 Feet	6,500 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-300 (RB211-535E4B Engines)	8,200 Feet	6,500 Feet (Wet)	75.7 Feet AMSL, 84° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-300 (PW2040 Engines)	10,500 Feet	6,800 Feet (Wet)	75.7 Feet AMSL, 87° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 757-300 (PW2043 Engines)	8,400 Feet	6,800 Feet (Wet)	75.7 Feet AMSL, 87° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 767-200 (JT9D-7R4D/7R4E Engines)	6,300 Feet	5,400 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 90° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 767-200 (CF6-80C2B2 Engines)	6,200 Feet	5,400 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 90° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 737-300 (CF6-80A/80A2 Engines)	9,200 Feet	5,700 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 90° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 737-300 (JT9D-7R4D/7R4E Engines)	10,700 Feet	5,700 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 86° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 737-300 (CF6-80C2B2 or PW4052 Engines)	8,110 Feet	5,700 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 90° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 767-300 Freighter CF6-80C2B7F Engines)	9,200 Feet	6,400 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 86° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Boeing 767-300 Freighter (PW4062 Engines)	8,400 Feet	6,400 Feet (Wet, Flaps 30)	75.7 Feet AMSL, 86° F, MTOW or MLW	Boeing (F.A.R. Requirements)
Runway 3-21				
Turboprop (MTOW > 12,500 Pounds)	4,700 Feet	4,700 Feet	75.7 Feet AMSL, 91° F (No Adjustment for Turbojet Factors)	AC 150/5325-4B (Figure 3-1)

Source: Michael Baker Jr., Inc., 2014.

4.5 Runway Strength Analysis

The current weight bearing capacity of Runway 9-27 is listed as 90,000 pounds for aircraft with a single-wheel gear configuration and 130,000 pounds for aircraft with a dual-wheel configuration, and 230,000 pounds for aircraft with a dual-tandem wheel configuration. Therefore, the pavement strength of Runway 9-27 is sufficient to support operations from the critical aircraft listed in Table 4-5 without sustaining any damage.

Non-jet aircraft within RDC classifications of B-II or below generally have gross maximum weights of less than 25,000 pounds. Jet aircraft within this classification, however, typically exceed 25,000 pounds, such as the Gulfstream II which has a gross weight of 36,000 pounds. Therefore, the crosswind runway should have a weight bearing capacity exceeding these criteria. Runway 3-21 currently has a weight bearing capacity of 50,000 pounds for single wheel, 75,000 pounds dual wheel and 135,000 pounds for dual tandem wheel gear aircraft. Based upon anticipated aircraft use, these pavement strengths are deemed sufficient to accommodate demand throughout the 20-year planning period.

4.6 Instrument Approaches

Currently, Runway 9 is equipped with a Category I precision instrument approach, which consists of an Instrument Landing System (ILS) augmented by a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The ILS has an Outer Marker (OM) and a Middle Marker (MM). The published visibility minimum for the ILS is ½ mile with a Decision Height (DH) of 276 feet.

During the summer of 2014, the airport completed a refurbishment of the existing Precision Approach Path Indicator (PAPI-4) lighting system to improve the approach capability for all four runway ends. For the near future, the following projects are being considered at BKV to improve the approach capability of Runway 9-27: 1) replacement of the existing ILS approach to Runway 9, and 2) replacement of the existing MALSR to address regular outages experienced with the system.

It is perceivable that the existing non-precision approaches to Runways 27 and 21 may change sometime in the future. As a result, it becomes necessary to protect the Runway Protection Zones (RPZ) and approach surfaces now in order to avoid any potential incompatible land uses or obstructions within those surfaces in the future. As alternatives are considered for the extension of Runway 9, it will be important to ensure that the future RPZs are clear of buildings and obstructions.

All four runway ends, Runways 9, 27, 3 and 21, have published non-precision approaches that utilize Global Positioning Satellite (GPS) equipment. Based upon anticipated demand, it is recommended that potential non-precision instrument approach upgrades to Runway 27 and potential helicopter only GPS approach capability to Runway 3-21 be considered in conjunction with the evaluation of airport alternatives. **Tables 4-3** and **4-4** summarize the existing and ultimate instrument approach features for Runways 9-27 and 3-21, which are utilized to establish airfield design standards and the associated long-term requirements for BKV.

Table 4-3 Existing and Ultimate Instrument Approaches – Runway 9-27				
Runway End / Approach Feature	**Runway 9**		**Runway 27**	
	Existing	**Ultimate**	**Existing**	**Ultimate**
Part 77 Approach Category	Precision	Same	Non-precision	Same
Part 77 Approach Slope	50:1	Same	34:1	Same
Instrument Approaches	GPS, ILS, LOC	Same	GPS	Same
Horizontal Minimums	½ Mile	½ Mile	1 Mile	Same
Approach Lighting	MALSR	Same	Threshold	Same
Visual Glide Slope Indicator	PAPI-4	Same	PAPI-4	Same
Runway Markings	Precision	Same	Non-precision	Same
Source: Michael Baker Jr., Inc., 2014.				

Table 4-4 Existing and Ultimate Instrument Approaches – Runway 3-21				
Runway End / Approach Feature	**Runway 3**		**Runway 21**	
	Existing	**Ultimate**	**Existing**	**Ultimate**
Part 77 Approach Category	Non-precision	Same	Non-precision	Same
Part 77 Approach Slope	34:1	Same	34:1	Same
Instrument Approaches	GPS	Same	GPS	Same
Horizontal Minimums	1 Mile	Same	1 Mile	Same
Approach Lighting	Threshold	Same	Threshold	Same
Visual Glide Slope Indicator	PAPI-4	Same	PAPI-4	Same
Runway Markings	Non-precision	Same	Non-precision	Same
Source: Michael Baker Jr., Inc., 2014.				

4.7 Airfield Design Standards

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 4-5** and **4-6** summarize the airfield design standards for existing conditions at BKV, with non-standard or non-preferential conditions identified in **red** and discussed below. Although many of the airfield design standards are self-explanatory, important features such as the Runway Safety Area (RSA) and Runway Object Free Area (ROFA) may require further definition. These important features are also discussed below and illustrated in **Figure 4-1**.

Non-Standard Airfield Design Features

The following airfield design features were found to be non-standard at BKV:

- **Runway Protection Zone (RPZ) –** The RPZ extends off the airport property beyond the end of Runway 9. "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."[1] As shown in Figure 4-1, the portion of the RPZ that extends beyond airport property encompasses approximately 9.7 acres off the end of Runway 9. Also, Aerial Way traverses through the Runway 9 RPZ. In this case, it is typically preferable for airport

[1] FAA AC 150/5300-13A, *Airport Design*.

owners to either acquire the associated property or in this case consider the purchase of an easement to restrict structure heights and land uses within the RPZ.

- **Runway Blast Pad, Runway Shoulders, and Taxiway Shoulders –** Runway blast pads provide blast erosion protection beyond runway ends. Although stabilized turf blast pads and shoulders are typically acceptable for runways that serve Airplane Design Group (ADG) II and lower aircraft, the FAA recommends paved blast pads and shoulders for ADG III and higher facilities. As a result, the ultimate recommendations include the provision of paved blast pads, runway shoulders, and taxiway shoulders for the pavements at BKV that serve ADG III and higher aircraft operations.

Important Definitions

Definitions of the following airfield design features are presented to aid in the discussions throughout the remainder of this study:

- **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."[1] Currently at BKV, the threshold of Runway 21 overlaps the Runway 27 RSA, which is considered a hazard to aircraft operations and reduces overall airport capacity. Alternatives to limit or remove the impacts associated with overlapping safety areas are considered in the alternatives chapter.

- **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."[1] The existing localizer equipment is currently located within the ROFA surface associated with Runway 9-27 and is considered incompatible. It is recommended that the opportunity to relocate the localizer be evaluated as part of the alternatives analysis.

Table 4-5
Evaluation of Existing Airfield Design Standards (Runway 9-27)

Design Standard	Required Dimension	Runway 9 Evaluation	Runway 27 Evaluation
Runway Design Code (RDC)	D-IV		
RW Approach Visibility Minimums	½ Mile (Minimum)	½ Mile	1 Mile
Runway (RW) Width	150 Feet	150 Feet	
RW Safety Area (RSA) Width	500 Feet	**Runway 21 overlaps Runway 27 RSA**	
RSA Length Beyond RW End	1,000 Feet		
RW Object Free Area (ROFA) Width	800 Feet	Meets Standards	
ROFA Length Beyond RW End	1,000 Feet		
RW Obstacle Free Zone (ROFZ) Width	400 Feet	Meets Standards	
ROFZ Length Beyond RW End	200 Feet		
Precision Obstacle Free Zone (OFZ) Width	800 Feet	Meets Standard	Not Applicable
Precision Obstacle Free Zone (OFZ) Length	200 feet	Meets Standard	Not Applicable
RW Protection Zone (RPZ) Inner Width	Varies	1,000 Feet	500 Feet
RPZ Outer Width	Varies	1,750 Feet	1,010 Feet
RPZ Length	Varies	2,500 Feet	1,700 Feet
RPZ Notes	N/A	Meets Standards	Meets Standards
RW Blast Pad Width	200 Feet	**Paved Blast Pad Recommended**	
RW Blast Pad Length	200 Feet		
RW Shoulder Width	25 Feet	**Paved Shoulders Recommended**	
Taxiway (TW) Width (TDG-5)	75 Feet	Meets Standards	
TW Safety Area (TSA) Width	171 Feet	Meets Standards	
TW Object Free Area (TOFA) Width	259 Feet	Meets Standards	
Taxilane (TL) Object Free Area Width	225 Feet	Meets Standards	
TW Shoulder Width (TDG-5)	30 Feet	**Paved Shoulders Recommended**	
RW Centerline to Parallel TW Centerline	400 Feet	Meets Standards	
RW Centerline to Holdline	250 Feet	Meets Standards	
RW Centerline to Aircraft Parking Area	500 Feet	Meets Standards	
TW Centerline to Parallel TW/TL Centerline	215 Feet	Meets Standards	
TW Centerline to Fixed or Movable Object	129.5 Feet	Meets Standards	
TL Centerline to TL Centerline	198 Feet	Meets Standards	
TL Centerline to Fixed or Movable Object	112.5 Feet	Meets Standards	
RW Surface Gradient and Line of Sight	Maximum 1.5% Grade	Meets Standards	

Source: Michael Baker Jr., Inc., 2014.

Table 4-6
Evaluation of Existing Airfield Design Standards (Runway 3-21)

Design Standard	Required Dimension	Runway 3 Evaluation	Runway 21 Evaluation
Runway Design Code (RDC)	B-II		
RW Approach Visibility Minimums	1-Mile (Minimum)	1-Mile	1-Mile
Runway (RW) Width	75 Feet	150 Feet	
RW Safety Area (RSA) Width	150 Feet	**Runway 21 overlaps Runway 27 RSA**	
RSA Length Beyond RW End	300 Feet		
RW Object Free Area (ROFA) Width	500 Feet	Meets Standards	
ROFA Length Beyond RW End	300 Feet		
RW Obstacle Free Zone (ROFZ) Width	400 Feet	Meets Standards	
ROFZ Length Beyond RW End	200 Feet		
RW Protection Zone (RPZ) Inner Width	Varies	500 Feet	500 Feet
RPZ Outer Width	Varies	700 Feet	700 Feet
RPZ Length	Varies	1,000 Feet	1,000 Feet
RPZ Notes	N/A	Meets Standards	Meets Standards
RW Blast Pad Width	95 Feet	Stabilized Turf is Acceptable	
RW Blast Pad Length	150 Feet		
RW Shoulder Width	10 Feet	Stabilized Turf is Acceptable	
Taxiway (TW) Width	35 Feet	Meets Standards	
TW Safety Area (TSA) Width	79 Feet	Meets Standards	
TW Object Free Area (TOFA) Width	131 Feet	186 Feet to FBO Apron – Meets Group III Standards.	
Taxilane (TL) Object Free Area Width	115 Feet	186 Feet to FBO Apron – Meets Group III Standards.	
TW Shoulder Width	15 Feet	Stabilized Turf is Acceptable	
RW Centerline to Parallel TW Centerline	240 Feet	Meets Standards	
RW Centerline to Holdline	200 Feet	Meets Standards	
RW Centerline to Aircraft Parking Area	250 Feet	Meets Standards	
TW Centerline to Parallel TW/TL Centerline	105 Feet	Meets Standards	
TW Centerline to Fixed or Movable Object	65.5 Feet	Meets Standards	
TL Centerline to TL Centerline	97 Feet	Meets Standards	
TL Centerline to Fixed or Movable Object	57.5 Feet	Meets Standards	
RW Surface Gradient and Line of Sight	Maximum 2.0% Grade	Meets Standards	

Source: Michael Baker Jr., Inc., 2014.

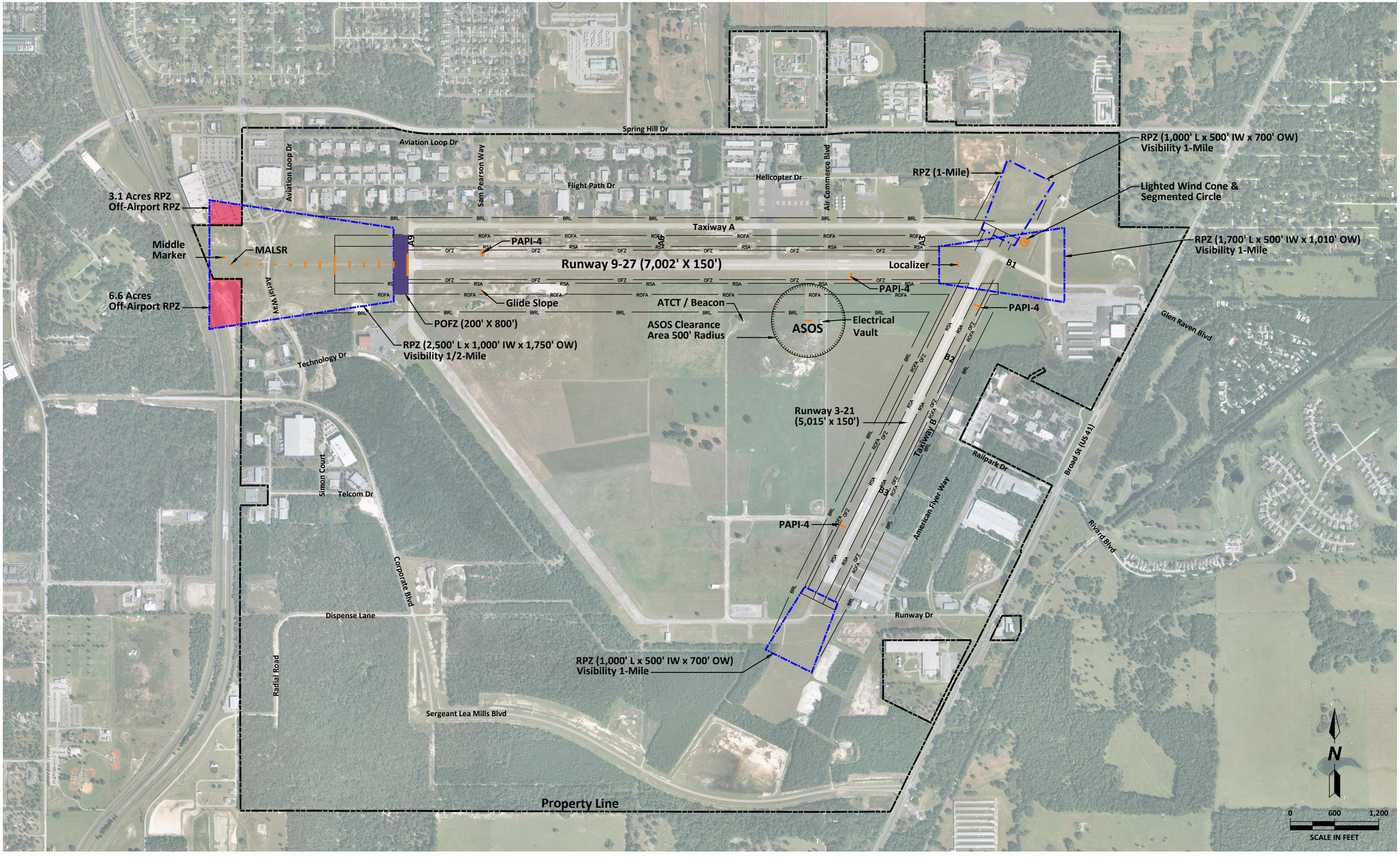

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Figure 4-1 Existing Airfield Design Standards

4.8 Taxiways

The taxiway system allows aircraft to maneuver to and from various portions of the airport. 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 BKV is depicted in Figure 4-1.

Any new taxiways, including bypass, exit, and run-up areas that are required to meet demand before the end of the planning period are also presented. It should be noted that additional taxiway improvements will likely be recommended during the alternatives analysis to provide appropriate access to new airport development.

Taxiway A

With the exception of Taxiway A6, all taxiways serving Runway 9-27 are 75 feet wide and meet or exceed RDC IV and TDG 5 design standards. As identified earlier in this chapter, one additional exit taxiway from Runway 27 is recommended. The additional exit taxiway should be located between the western end of the runway (Runway 9 end) and exit Taxiway A6. As part of a previous airfield drainage project along the north side of Runway 9-27, pipes were installed in anticipation of the future development of the exit taxiway. A new Taxiway, designated A2, is also recommended to provide access to the future Runway 27 threshold.

Taxiway B

All taxiways serving Runway 3-21 are 35 feet wide and meet or exceed RDC-II and TDG 2 design standards. In the event that Runway 3-21 is relocated in the future to accommodate the proposed extension of Runway 9-27, it is recommended that Taxiway B be extended to the southwest to maintain parallel access to the runway and adjacent facilities.

Taxiway C

Currently Taxiway C9 is the only C taxiway in the system. Taxiway C9 meets RDC IV and TDG 5 design standards. In the future, a new inboard parallel Taxiway C is needed to serve Runway 9-27 and provide access to the midfield portion of the airfield. Taxiway C should be designed to meet the RDC IV runway centerline to taxiway centerline separation standard of 400 feet and TDG 5 design standards. The western end of the proposed taxiway will need to accommodate the glideslope critical area. The placement of exit taxiways connecting to Taxiway C will be further evaluated as part of the airport alternatives analysis.

4.9 Airfield Lighting, Markings and Signage, and Navigational Aids

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

Airfield Lighting

The airfield lighting at BKV consists of the runway edge lights, threshold lights, approach lights, and taxiway edge lights. Medium Intensity Runway Lights (MIRLs) are located along the edges of Runways 9-27 and 3-21 and emit white light in all places except in the caution zone (i.e., the last 2,000 feet of the runway). "In the caution zone, yellow lights are substituted for white lights; they

emit yellow light in the direction facing the instrument approach threshold and white light in the opposite direction. […] The yellow lights indicate caution on rollout after landing."[2] The runway threshold lights emit green on the side of approaching aircraft and red on the other side. The precision ILS approach to Runway 9 is supplemented by a MALSR approach lighting system. The only lights on the ends of Runways 3, 21, and 27 are threshold lights. All taxiways and connectors are equipped with blue Medium Intensity Taxiway Lights (MITLs). However, taxiway lighting along Taxiway C9 consists of solar powered LED MITLs. Currently, there are plans to wire and illuminate these lights and provide additional LED edge lighting for the nearby Westside Maintenance Complex apron. Provisions are also being made to provide circuitry to accommodate additional mast and taxiway lights in this area. These existing and planned airfield lighting systems at BKV are consistent with the existing and planned approaches to Runways 9-27 and 3-21. However, the lighting systems experience frequent outages and are reaching the end of their useful service life. Therefore, it is recommended that the runway, taxiway and MALSR lighting systems be refurbished/replaced in the near future. Furthermore, in order to provide enhanced visibility of the runway ends during nighttime or low visibility conditions, the provision of Runway End Identifier Lights (REILs) should be considered for Runways 3, 21, and 27.

Apron Lighting

Lighting near the FBO apron and hangar areas is provided via outdoor lighting affixed to the hangars and poles. However, additional apron lighting is needed in the Westside Maintenance Complex area. In response to this need, the airport is currently conducting a design project to provide additional apron edge lighting and provisions for future mast lighting in this area.

Airfield Markings and Signage

Many of the airfield markings at BKV were recently repainted in conjunction with the joint rejuvenation project completed and therefore no issues were identified for the current runway and taxiway markings. Furthermore, each end of Runway 9-27 and Runway 3-21 is marked consistently with the available approaches and respective visibility minimums. Runway 9 is marked precision and Runways 3, 21, and 27 are marked non-precision. Although the existing markings comply with FAA AC 150/5340-1L, *Standards for Airport Markings*, in the future if the airport obtains Part 139 Certification for commercial service, all entrance taxiways with a runway holding position marking will have to be provided with enhanced taxiway centerline markings and surface painted runway holding position markings. Those markings are intended to help prevent or minimize runway incursions (i.e., the incorrect presence of an aircraft, vehicle, or person on a surface designated for takeoffs and landings) by providing greater situational/visual awareness to pilots.

Existing airfield signage at BKV is nearing the end of its useful service life, and for that reason the airport intends to conduct a design project for upgraded signage and lighting in 2015. The signage upgrades will be designed in accordance with the guidelines contained in FAA AC 150/5340-18F, *Standards for Airport Sign Systems.* New signage should also include perch deterrents to discourage wildlife activity near the airfield.

Navigational Aids

As mentioned, the main navigational aid improvements for BKV consist of replacing or correcting the MALSR associated with the precision instrument approach to Runway 9 and also adding REILs

[2] FAA AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*.

to Runways 3, 21, and 27 in order to provide enhanced visibility of the runway ends during nighttime and low visibility conditions. Furthermore, the presence of the localizer and localizer equipment building within the RSA/ROFA are considered incompatible within those surfaces, and as such, opportunities to relocate those items will be considered as part of this planning effort. No additional navigational aid improvements are recommended at this time.

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. At BKV, most based fixed-wing aircraft are parked within hangars, although there are some aircraft that do park on the paved tiedown areas. The following sections describe the requirements for transient apron space and based aircraft storage during the planning period. The aircraft storage requirements for the Florida Army National Guard (ARNG) were not evaluated as part of this planning effort because it is assumed that the ARNG evaluates their own facility needs.

Transient Apron

The transient apron areas at BKV are located at the FBO and Westside Maintenance Area facilities and include a combined total of approximately 36,000 square yards. The apron at American Aviation covers an area of approximately 45,000 square yards, of which approximately 25,000 square yards is used for transient aircraft parking. The transient apron at the Westside Maintenance Complex covers an area of approximately 11,000 square yards. In order to determine transient apron space requirements, the FAA recommends calculating the space required to park a certain percentage of aircraft on the itinerant peak day. For BKV, it was assumed that 50 percent of itinerant peak day traffic would be applied in the calculation. Transient aircraft at BKV range in size from small pistons to large corporate jets, and as such, the space requirements should consider the general mix of aircraft that are parked on the transient apron. For smaller aircraft, 300 square yards is a typical apron space requirement, while larger jets may require 1,000 or more square yards. As shown in **Table 4-7**, the transient apron requirements for BKV were calculated by assuming that two-thirds of transient aircraft need 300 square yards of space and the remaining one-third needs 1,000 square feet. Overall, the transient apron areas at BKV appear to be reaching their capacity during peak times. For that reason, American Aviation is planning on expanding their aircraft parking area to the south by removing some of the existing T-hangar and shade hangar structures. Other potential expansion opportunities will be reviewed later in this study.

Table 4-7
Transient Apron Storage Requirements

Year	ADPM	50% ADPM	300 SY Per Aircraft		1,000 SY Per Aircraft		Total SY
			66.67%	SY	33.33%	SY	
2013	173	87	58	17,300	19	19,222	36,522
2014 F	177	89	59	17,700	20	19,667	37,367
2018 F	192	96	64	19,200	21	21,333	40,533
2023 F	212	106	71	21,200	24	23,556	44,756
2028 F	236	118	79	23,600	26	26,222	49,822
2033 F	262	131	87	26,200	29	29,111	55,311

Source: Michael Baker Jr., Inc., 2014.

Based Aircraft Storage

There are several different types of based aircraft storage available at BKV including apron tiedowns, T-hangars, corporate hangars, and bulk hangar storage. Since the early 2000s, the airport has experienced strong growth in the number of based jets and pistons as well as the development of new facilities to cater to those aircraft, and as such, much of the recent development has consisted of new T-hangar and corporate hangar construction. The forecasts for BKV project continued growth for all aircraft types including pistons, turboprops, jets, and helicopters. It is anticipated that the owners of those aircraft will desire a variety of different storage options. Today, most owners prefer to store their aircraft in a hangar in order to protect the plane from harsh weather conditions and to prevent vandalism from occurring. Although most of the hangars at BKV are currently occupied, there are some available for lease and others that turnover fairly quickly when a tenant departs (e.g., T-hangars). For the purposes of this analysis and to allow for future hangar development opportunities, it was assumed that all new based aircraft would require a newly-constructed hangar facility at BKV; however, it is noted that the FBO may have the capability to accommodate some new based aircraft at their facility, and this analysis does not account for plans to demolish the Hernando County-owned T-hangars and shade hangars within the American Aviation leasehold and to construct new T-hangars adjacent to the existing T-hangars in the southeast corner of the airport. It is noted that the previous master plan recommended consolidating all T-hangars in that location on the airport property.

The results of the based aircraft storage requirements are summarized in **Table 4-8.** As shown, it was assumed that a large percent of piston aircraft would prefer T-hangar storage and all turboprops and jets would prefer conventional or corporate hangar storage. The hangar sizing requirements were determined by a selecting a square footage that could capture a range of models for each aircraft type. By 2033, it is anticipated that an additional 50 T-hangar bays will be required and an additional 137,925 square feet of conventional or corporate hangar space. That would essentially double the airport's current hangar footprint by 2033, particularly because of the strong growth that is anticipated for based jets. The remaining sections of this study include alternatives and recommendations for accommodating the anticipated hangar development demands at BKV during the planning period.

Table 4-8
Based Aircraft Storage Requirements

Year	Total Based Aircraft	SEP	MEP	Turboprop	Jet	Helicopter
2013	176	126	12	8	14	16
2014 F	179	128	12	8	15	16
2018 F	196	139	13	9	17	18
2023 F	219	153	15	10	21	20
2028 F	243	168	16	11	26	22
2033 F	271	185	18	12	32	24
Additional Aircraft (2013 vs. 2033)	95	59	6	4	18	8
2033 T-hangar Storage Requirement						
% Preferred by Aircraft Type		75.00%	60.00%	0.00%	0.00%	25.00%
Additional T-hangars Required by 2033	**50**	44	4	0	0	2
2033 Conventional / Corporate Hangar Storage Requirement						
% Preferred by Aircraft Type		25.00%	40.00%	100.00%	100.00%	75.00%
Aircraft Space Requirement		1,500 SF	2,000 SF	3,000 SF	5,000 SF	1,500 SF
Additional Space Required by 2033	**137,925 SF**	22,125 SF	4,800 SF	12,000 SF	90,000 SF	9,000 SF

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.

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 BKV, the existing support facilities consist of the FBO terminal area, Westside Maintenance Complex, airport fueling facilities, airport maintenance facility, automobile parking and access, airport traffic control tower, and U.S. Customs and Border Patrol facility. A review of BKV's existing support facilities is presented in the following sections.

Fixed Base Operator (FBO)

There is currently one FBO at BKV, American Aviation, that is located on the eastern end of Runway 9-27. The FBO provides a range of services such as fueling, maintenance, and hangar storage. As previously mentioned, American Aviation is planning on expanding their apron footprint by removing some of the Hernando County-owned T-hangars and shade hangars. That will allow them to rehabilitate existing apron pavement and provide more space for a maintenance hangar and transient aircraft parking facilities, particularly for larger corporate aircraft. The T-hangars and shade hangars that are removed will be replaced with new T-hangars that will be located in the southeast corner of the airport property. The FBO has indicated the need for additional hangar and apron facilities in the future; therefore, the alternatives analysis will identify potential opportunities for providing those types of facilities. It is important to note that the FBO determines their own facility needs based on their own individual business models and demands for services; however the following sections provide an evaluation of some of the services that the FBO provides in order to evaluate the overall long-term needs for the airport during the planning period.

Airport Fueling Facilities

American Aviation currently has two 12,000 gallon tanks, one containing Jet A and the other containing AvGas, as well as trucks to transport the fuel to aircraft. The Westside Maintenance Complex has two Jet A tanks (one 12,000 gallon and one 10,000 gallon) and one 4,000 gallon AvGas tank. Some of the corporate hangar tenants and governmental tenants also maintain their own fuel tanks that are used exclusively for their own operations. American Aviation's historical fuel sales records indicate that they typically had to refill their Jet A tank at least twice a month. As jet operations are forecast to increase at the highest rate amongst the various aircraft types during the planning period, it is anticipated that there will be a need for additional Jet A fuel tanks at BKV, particularly if larger commercial jets are introduced into the airport's fleet mix. The provision of additional Jet A fuel tanks will reduce the need for fuel deliveries and will allow the FBO to have the stock necessary to accommodate known and potentially unknown fueling demands that may arise during the planning period. The provision of Jet A tanks that maximize the amount of fuel that can be delivered is typically desirable because it reduces the overall costs for the fuel customer (e.g., 10,000 to 12,000 gallons). Therefore, evaluating the fuel needs for the FBO is more of a benefit/cost related exercise as it pertains to their individual business needs, but the potential to reserve for expansion of their respective fuel farms will be considered as a component of this planning effort. The 4,000 gallon tank at the Westside Maintenance Complex is being considered for replacement because it does not provide an adequate supply and does not allow for cost-effective refills from a larger capacity tanker truck.

Airport Maintenance Facility

The airport maintenance facility is located in the same vicinity of the airport administration building and consists of a 1,500 square foot building that is used to store and maintain equipment. The facility has exceeded its capacity and is not capable of handling the long-term maintenance needs of the airport. Airport maintenance staff is currently forced to store equipment outside exposed to the elements. In an effort to optimize the useful service life of the equipment, it will be necessary to provide a replacement or expanded airport maintenance facility during the planning period. It would also be desirable for the facility to have a fueling station capable of providing an on-site supply of both unleaded and diesel fuel for airport vehicles and equipment versus having to travel off site to the Hernando County fueling facility.

Automated Surface Observation System

Since 1992, the airport has been served by an automated surface observation system (ASOS) which is located adjacent to the electrical vault within the midfield portion of the airport. According to NWS representatives, the equipment is in good working order but is subject to frequent power outages. In the future, it is recommended that the ASOS be supported by an Uninterruptable Power Supply (UPS) to protect against power interruptions to the sensors.

Aircraft Rescue and Firefighting Building

BKV is equipped with an on-airport Aircraft Rescue and Firefighting facility (ARFF). Hernando County Fire Station #14 is located on the far eastern side of the transient apron adjacent to the American Aviation FBO with access to the airfield and US 41. Additional support is provided by the Hernando County Northwest Fire District, located 5 miles away from the airport, providing a response time of less than 10 minutes.

The level of service required is based upon the aircraft rescue and firefighting index. The index is determined by a combination of: 1) The length of air carrier aircraft expressed in groups; and 2) average daily departures of air carrier aircraft. There is no regularly scheduled air service, but the airport does occasionally receive charter aircraft service. Aircraft used by this service fall into the Index B group, which includes aircraft at least 90 feet but less than 125 feet in length. The ARFF is currently equipped with a self-contained nitrogen charged "Fire Boss" unit, having 500 pounds of dry chemical and 100 gallons of pre-mixed aqueous film forming foam (AFFF) agent. This equipment meets the Index A standard, which includes aircraft less than 90 feet in length, such as the Gulfstream IV. In the future, ARFF improvements will need to be assessed if demand for air carrier aircraft activity increases at BKV.

Automobile Access and Parking

The airport recently completed the design to realign Aerial Way and extend Technology Drive. These improvements are designed to improve the overall access to the west side of the airport and Technology Center. Access on the north side of the airport will also be evaluated as part of the airport alternatives analysis. Key stakeholders have indicated that the airport's main entrance along the north side of the airport could be better defined. Although this entrance meets existing design standards, the current configuration that straddles the gunnery backstop near the airport entrance sign can be confusing to motorists entering and leaving the airport property. This configuration also contributes to poor ingress and egress conditions at the intersection of Sam Pearson Way and Aviation Loop Drive.

Ample parking is provided adjacent to existing facilities throughout the airport and Technology Center. In the future, all parking facilities associated with new development proposed in this airport master plan update must meet applicable Florida and local code requirements.

As part of the airport's rebranding initiative, the airport is currently in the process of conducting a signage planning study. Directional signage recommendations from the study will be incorporated into the capital improvement program of this master plan update.

U.S. Customs and Border Patrol (CBP)

Due to the nature of the on-demand air service providers at BKV that conduct operations throughout the world, Hernando County is investigating the potential for providing U.S. CBP services at the airport. The initial steps include conducting a feasibility study to evaluate potential sites that would be suitable for constructing a CBP facility and having an apron that would be able to accommodate larger corporate jets. The CBP facility would be a user fee based operation in which the operators of each aircraft that use the facility must pay a fee. The final results of the feasibility study will be included in the recommendations of this planning effort.

Aircraft Wash Rack Facility

BKV currently does not have an aircraft wash rack facility for the use by based aircraft. Therefore, outdoor washing and rinsing of aircraft is strictly prohibited. In the future, it is recommended that an aircraft wash rack be provided at BKV to facilitate aircraft cleaning and to properly dispose of any soap, detergents or residue resulting from aircraft washing. The location of this proposed facility will be addressed as part of the airport alternatives analysis.

Airport Traffic Control Tower (ATCT)

The airport currently has a federally-subsidized contract ATCT that was opened in 2012. The ATCT provides ground control services at BKV 365 days a year from 7:00 a.m. to 10:00 p.m. Interviews with ATCT personnel indicated that the current control tower is sufficient to meet their needs. It is recommended that any proposed airport development should consider the visibility and sight requirements of the current ATCT.

Cargo Facility

As part of the previous airport master plan update, the possibility of accommodating a cargo operation was considered as part of the long-term planning for the airport. It was determined that the northwest portion of the midfield area would provide an ideal location for such a facility.

Since that time, the airport completed the design of a cargo apron in support of the project. This area provides direct airfield access to the primary runway via the proposed parallel Taxiway C, and roadway access to this area can be provided via the Suncoast Parkway located nearby. Also, it was determined that additional roadway access may be provided between the airport and the existing highway without impacting existing or planned airfield facilities. The cargo design project also identified locations of stormwater facilities in order to optimize this location and protect the stormwater facilities from future development. The project design locks in the stormwater/drainage requirements in accordance with August 2009 Southwest Florida Water Management District (SWFWMD) requirements. This enables the proposed cargo development to be constructed within

the 20-year horizon without changing stormwater treatment (water quality) requirements. The final design of the cargo facility will be incorporated into the master plan update.

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 BKV, the recommended developments should not require additional property acquisition during the planning period. However, Hernando County should consider obtaining easements for the sections of the Runway 9 RPZ that extend outside the airport property over the Suncoast Parkway and the adjacent shopping plaza. In addition to possible land acquisition or easements, airport staff should continue to work with the Hernando County Planning Department to ensure prevention of future incompatible land uses as it relates to the parcels that are impacting the RPZ for Runway 9. It is noted that the Hernando County Code of Ordinances contains a zoning ordinance for the airport (Appendix A, Article X). The zoning ordinance identifies clear zones that extend outward and upward from the beginning of the approach surface to the point where the surface reaches 50 feet above the ground. Within the clear zones, various uses are prohibited such as daycares, nursing homes, hotels, hospitals religious establishments, and educational facilities. The zoning ordinance also states that certain activities which may interfere with aircraft operations are prohibited (e.g., certain illumination, smoke or glare, and electronic interference). Although the zoning ordinance provides for some degree of control within the clear zones, the clear zones do not necessarily match the same size and shape of the RPZs beyond each runway end at BKV and the zoning ordinance does not preclude certain development types like an easement could.

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."[3]

The document includes a measurement tool 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 and surface characteristics, and number and types of aircraft operations. Then, the airport's point value is compared to the TSA's recommended security features in **Table 4-9** to evaluate whether additional security features may be appropriate. A point value of 42 was calculated for BKV at this time, which means that all security features shown within the "25-44 Point Range" are recommended. BKV currently has many of the security features recommended by the TSA and recently received grant funding from the FDOT to update perimeter access and control points, installation of additional

[3] http://www.tsa.gov/what_we_do/tsnm/general_aviation/security.shtm, accessed July 19, 2012.

CCTV equipment and upgrade of perimeter lighting. This effort is currently under design and is anticipated to be advertised during the spring of 2015 for construction.

Table 4-9
Analysis of BKV Security Features

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

Sources: TSA Security Guidelines for General Aviation Airports and Michael Baker Jr., Inc., 2014.

4.14 Summary of Facility Requirements

Table 4-10 presents a summary of the identified facility requirements. The order in which these improvements are listed is not meant to imply a priority or phasing of these projects. Essentially, this table includes the minimum facility requirements over the 20-year planning period based on the projected demand. The remaining sections of this report present recommendations to satisfy these facility requirements at BKV, including a phased development program over the next 20 years.

Table 4-10
Summary of Facility Requirements

Category	Requirement
Runways	• Extend Runway 9-27 to 8,000 feet by 150 feet wide (999 foot extension). • Provide 25-foot wide paved shoulders on Runway 9-27. • Construct blast pads (200 feet x 200 feet) at both ends of Runway 9-27.
Taxiways	• Provide 30-foot wide paved shoulders for taxiways serving Runway 9-27. • Extend Taxiway A to accommodate Runway 9-27 extension. • Relocate Taxiway A1 to accommodate Runway 9-27 extension. • Provide additional exit taxiway between Taxiways A6 and A9. • Provide parallel Taxiway C access with exit taxiways to accommodate Design Group IV aircraft movement to future midfield development.
NAVAIDs	• Refurbish/replace ILS and MALSR lighting systems. • Install REILS (Runways 3, 21 and 27). • Relocate existing windcone along Runway 21.
Signage	• Upgrade airfield signage (include perch deterrents). • Improve landside directional signage in accordance with recommendations contained in the airport signage plan.
Runway and Taxiway Lighting	• Refurbish/replace Runway 9-27 runway lighting system and associated taxiway lighting systems.
Runway Safety Area	• Correct Runway 21 overlap of Runway 27 RSA
Apron Area	• Construct at least 19,311 square yards of additional apron area to accommodate transient aircraft and based aircraft tie-down parking needs. • Relocate existing tie-down parking positions when Runway 9-27 is extended.
T-hangars	• Demolish dome hangars, T-hangars and shade hangars and relocate to southeast T-hangar area. • Construct an additional 50 T-hangars.
Corporate/Conventional Hangars	• Construct an additional 137,925 square feet of conventional or corporate hangar space.
Airport Support Facilities	• Construct an airport maintenance facility capable of storing and protecting airport vehicles and equipment. • Construct fueling station facility adjacent to the airport maintenance facility. • Provide an Uninterruptable Power Supply (UPS) to protect against power interruptions to the ASOS sensors. • Construct a UFA Customs Facility with apron and connecting taxiway. • Construct an aircraft wash rack facility. • Construct cargo apron and support processing facilities.
Access Improvements	• Realign Aerial Way and extend Technology Drive in order to improve the overall access to the west side of the airport and Technology Center. • Provide improved northside access from Spring Hill Drive to better define the main entrance to the airport and eliminate confusing roadway configuration. • Other access improvements to be determined based upon the selected development alternatives. • All parking facilities associated with new development proposed in this airport master plan update must meet applicable Florida and local code requirements.
Utility Infrastructure	• To be determined based upon the selected development alternatives.
Land Acquisition	• To be determined based upon the selected development alternatives.
Airport Security	• Establish personnel and vehicle ID systems. • Establish a security committee. • Establish documented security procedures. • Establish positive passenger/cargo ID system. • Establish a community watch program.
Source: Michael Baker Jr., Inc., 2014.	