ATKINS

Member of the SNC-Lavalin Group

Orlando Sanford International Airport – Master Plan Update

Working Paper #1

Sanford Airport Authority

May 2021

Notice

This document and its contents have been prepared and are intended solely as information for Sanford Airport Authority and use in relation to the Orlando Sanford International Airport Master Plan Update (AMPU).

WS Atkins, Inc. assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 83 pages including the cover.

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
Rev 1.1	Final Draft for Client QC	JDH	KK	CMH	JRC	5/19/2020
Rev 2.2	Final – Airport Revisions	JDH	KK	CMH	JRC	5/23/2021

Client signoff

Client	Sanford Airport Authority (SAA)
Project	Orlando Sanford International Airport – Master Plan Update
Job number	100063290
Client signature / date	

Contents

Tables

Figures

1. Introduction

1.1. Purpose

The purpose of this study is to provide a 20-year development program that will enhance the safety, efficiency, economy, and environmental viability of the Orlando Sanford International Airport (SFB or Airport). The program is intended to meet the development goals of the Sanford Airport Authority (SAA), strengthen the Airport's capability to facilitate demands for future aviation services, allow the Airport to more adequately fulfil its role in the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS), and create additional public value for residents in its catchment area as well as global airport users. SAA's mission is '…to operate, maintain, improve, expand and professionally manage the Orlando Sanford International Airport for the convenience and benefit of the air traveling public and economic development of the Central Florida community.', and this document is consistent with it.

The Airport Master Plan Update (AMPU) is a cooperative effort between the SAA, the Florida Department of Transportation (FDOT), and the FAA. This AMPU includes a written and graphical representation of the Airport's proposed ultimate development plans. The AMPU shall serve as the primary guide for the phased implementation of improvements necessary to meet the expected growth in aviation demand at SFB over a 20-year planning period.

In addition, this AMPU, when carried out over the ensuing years, will allow the SFB Airport to accommodate growing demands, that ultimately generate positive effect on the City of Sanford, Seminole County, and the Central Florida region. An Airport Layout Plan (ALP), which is essential to an airport's ability to qualify for and receive federal and/or state funding assistance, has been included in this Master Plan.

1.2. Goals and Visioning

The primary objectives of this master plan update includes a vision of what the Airport desires to achieve in the future. The Airport's vision is reflected in the master plan Summary Report and the Airport Layout Plan. The practical outcome of a master planning effort is a 20-year development program that will create a safe, efficient, economical, continued regulatory compliant, and environmentally acceptable airport facility to meet the development goals needed for the Airport, local community, and the region. Understanding the Airport's future goals is imperative to properly prepare and implement an airport master plan. These goals guide master planners in identifying what is important for the Airport to accomplish which therefore forms a 'road map' for the Airport to follow. Different stakeholders associated with an airport often have differing views on what the airport should become and how that should be accomplished. Understanding the key planning issues drawn from the desires of the airport stakeholders, culminates a clear and shared vision of the Airport's future to be established and mapped.

Understanding the incredibly dynamic nature of the aerospace industry, master plans are statements of intention and not guarantees of action by an airport. Results of a master plan update are based on what an airport projects to achieve in the 20-year planning period. These goals defined serve as a reference point for future decision making. When future decisions and actions are required, this document will guide decision makers in making prudent decisions based on logic and data. The goals should be subject to evaluation annually to insure they are still valid. Master plans are built on a set of assumptions based on certain economic, demographic, political, regulatory, climatic, management, and technological circumstances remaining relatively constant. Any significant change to any of these circumstances may impact how an airport addresses future development. An airport may have to modify goals; when there are clear indications that the assumptions are no longer valid, and the established development plan is no longer in the best interests of the airport's situation. The goals of the master plan should not be changed to appease political factions or populist sentiment.

The following list summarizes the Airport's desired goals and visions associated with the AMPU:

- Continue to provide an airport that is safe, reliable, and efficient.

- Conduct future development that adequately addresses aviation demand and high caliber of service to airport users, and tenants.
- Continue to meet and enhance the level of service provided to all projected airport users and develop an airport facility that will provide adequate capacity to fill the role as a commercial service airport in Florida.
- Continuously work towards environmental compatibility
- Develop the Airport and immediate vicinity to minimize negative environmental impacts to the region.
- Develop airport in a manner that supports local and regional economic goals while accommodating new opportunities and shifts in development patterns.
- Ensure adequate and convenient ground access to and from the Airport.
- Prudently manage all fiscal matters in accordance with FAA requirements and in a manner that sustains the airports competitiveness for attracting new and expanded business opportunities.

1.3. Master Planning Process

The master plan has been developed in accordance with the guidelines and standards set forth in the FAA Advisory Circulars (AC) 150/5070-6B, *Airport Master Plans* and 150/5300-13A, *Airport Design*. In addition, other ACs that will be used during analysis of specific topics include, but are not limited to, FAA AC 150/5060-5, *Airport Capacity and Delay*, and FAA Order 5050-4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Guidance from the FAA, the FDOT, and SAA have also been incorporated into the development of this AMPU. **Figure 1-1** outlines the master planning process.

Figure 1-1 – Steps in the Master Planning Process

Source: Atkins, 2020

1.4. Key Planning Issues

The key planning issues were derived from discussions with the Airport staff, sponsor representatives, and community leaders to guide the master plan effort. They have been included in the Public Participation Program

and provided review and comment by interested stakeholders and citizens. Although contained in the introduction to the master plan, the key planning issues listed below were obtained and refined throughout the planning process. They are not listed in order of importance and each holds equal significance. The FAA guidance identified above provides the framework of topic elements that must be reviewed.

Key Airfield Planning Issues

1. Determine the capacity of each runway and the airfield overall so that changes to the airfield can be identified far enough in advance to program extensions and improvements in a timely manner.
2. Determine when runway name changes will be necessary due to the change in magnetic declination so that these changes can be anticipated, and associated airfield projects programmed in advance.
3. Identify airfield geometry that no longer meets FAA standards and safety criteria so that projects can be programmed at the appropriate time to bring the affected areas into compliance.
4. Evaluate the pavement management program to determine any changes necessary to identify, catalog, and program maintenance and replacement activities in an economical and timely manner.
5. Asses the future requirements of the Airport's lighting vault.
6. Enhance the plan for compatible placement of additional or new aviation users including but not limited to aircraft manufacturing, repair, maintenance, research, design, air cargo, general and corporate aviation.
7. Determine alternatives to improve the runway and taxiway safety areas.
8. Determine how the evolution of UAV can be integrated into traditional airfield environment for use by the SAA for security, maintenance, or commercial tenant applications.
9. Assess and determine if four runways are necessary for current and future demand versus using and maintaining just three runways.

Key Terminal Planning Issues

1. Determine the appropriate scale and extent for the future expansion of the existing terminal building in the following categories:
    a. advances in passenger processing technologies;
    b. anticipated future increase in passengers;
    c. anticipated changes in baggage handling technologies;
    d. potential concession space;
    e. terminal curb space use and allocation; and
    f. improve passenger movement flow.
2. Identify the need for more international terminal capacity including addressing the Federal Government Federal Inspection Service (FIS) evolving requirements.

Key Landside Planning Issues

1. Determine future parking needs for private and commercial vehicles either through a parking garage or surface parking lots.
2. Determine the need to widen East Airport Boulevard and Marquette Avenue.
3. Widen Marquette Avenue.
4. Assess the existing aviation fuel farm delivery.
5. Replace old airport maintenance facility in new location.
6. Determine the need to construct a new General Aviation (GA) terminal building.
7. Assess ground vehicle traffic flow and determine what roadway and signalization improvements could required to meet future traffic demand, at the intersection of Marquette Avenue and Red Cleveland Boulevard and the intersection of Mellonville Avenue and Airport Boulevard.
8. Determine the need for additional aviation hangar space by type, number, and locations.
9. Determine the need for future land acquisition for expansion or compatibility purposes.

Key Sustainability/Environmental Planning Issues

1. Develop concepts for implementing and managing an airport-wide recycling program.
2. Identify projects that are eligible for VALE grants that meet specific airport needs.
3. Determine need for an aircraft ground run-up enclosure, also known as a ‘hush house,’.
4. Determine options to reduce grass mowing for reducing emissions.

2. Inventory of Existing Conditions

The development of an AMPU for the Airport requires the collection and evaluation of baseline information relating to the Airport's property, facilities, services, location, and tenants, as well as access, utilities, and environmental considerations. The collected information will be used to determine any required airport improvements or expansion that will be identified as part of the aviation activity forecast and the facility requirements analyses. The information presented in this chapter was obtained through a variety of sources including Airport site visits, interviews with Airport staff and tenants, and examination of airport records and other public documents. This chapter includes the followings sections.

- Airport Background;
- Airport Facilities; and
- Airspace Structure.

2.1. Regional Setting and Land Use Airport Background

2.1.1. Location

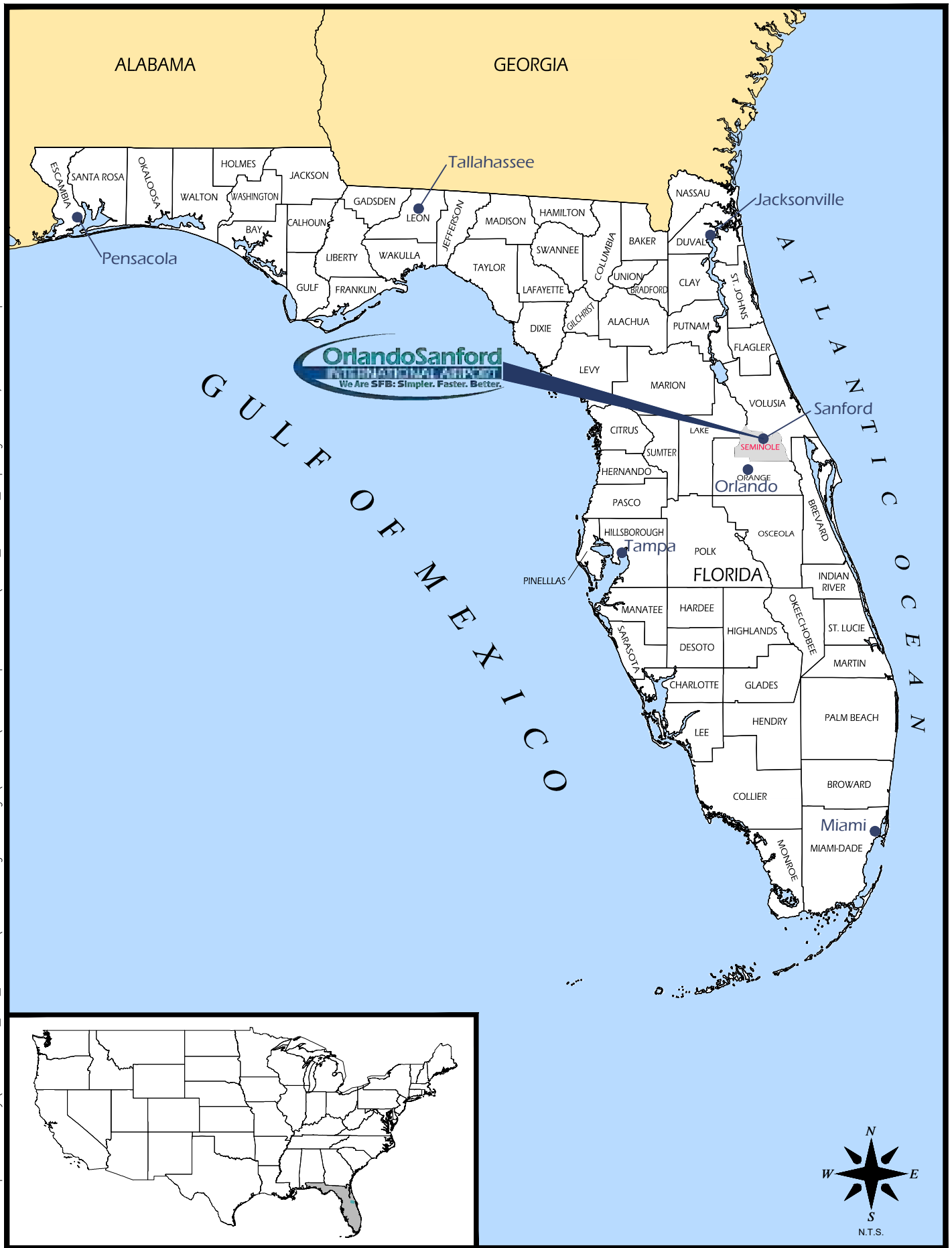
The City of Sanford is in the northern portion of Seminole County, approximately 18 miles northeast of Orlando, Florida. The Airport's property consists of approximately 2,400 acres and is in the south eastern portion of the City of Sanford. State Road 417 (SR-417), also known as the Central Florida GreeneWay, and Interstate 4 (I-4) provide major highway access to the Airport. State Highway 46 (SR-46) provides access to the Airport from the west via I-4 and from the east via I-95. The primary roadways into the Airport include: East Lake Mary Boulevard, connecting to Red Cleveland Boulevard, Airport Boulevard via Sanford Avenue, and Wylly Avenue via Sanford Avenue. **Figure 2-1** and **Figure 2-2** graphically depict the Airport's location and vicinity maps, respectively.

2.1.2. Role

The FAA's National Plan of Integrated Airport Systems (NPIAS) lists SFB as a 'Small Hub, Primary Commercial Service' airport facility. The Small Hub classification defines airports that enplane between 0.05 and 0.25 percent of total U.S. passenger enplanements**. Figure 2-3** depicts the categories of airports in the NPIAS.

According to FAA records there were over 563 airports in the Nation considered 'Commercial Service' in calendar year (CY) 2018 because they received scheduled passenger service and boarded at least 2,500 passengers (*https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy18-commercial-service-enplanements.pdf*). That represents an increase of over 60 airports from the prior year. To be considered a 'Primary Commercial Service' (PCS) airport requires that more than 10,000 passengers be boarded each year. PCS is broken up into four sub-categories; 1) 'Large Hub', 2) 'Medium Hub', 3) 'Small Hub', and 4) 'Nonhub Primary'.

Airports which enplane at least one-percent of the Nation's passenger boardings are in the 'Large Hub' category. There were 30 'Large Hub' airports listed in the FAA's latest commercial service airport rankings, published on November 7, 2018. Airports that enplane between a quarter of a percent and one-percent are in the 'Medium Hub' category. There were 31 'Medium Hub' airports listed on the FAA rankings. Airports that enplane between five-hundredths of a percent and a quarter of a percent of the Nation's passenger boardings are in the 'Small Hub' category. There were 69 'Small Hub' airports listed on the FAA rankings, and SFB was one of them. In fact, SFB is ranked 79th overall with 1,504,888 CY 2018 annual passenger enplanements.



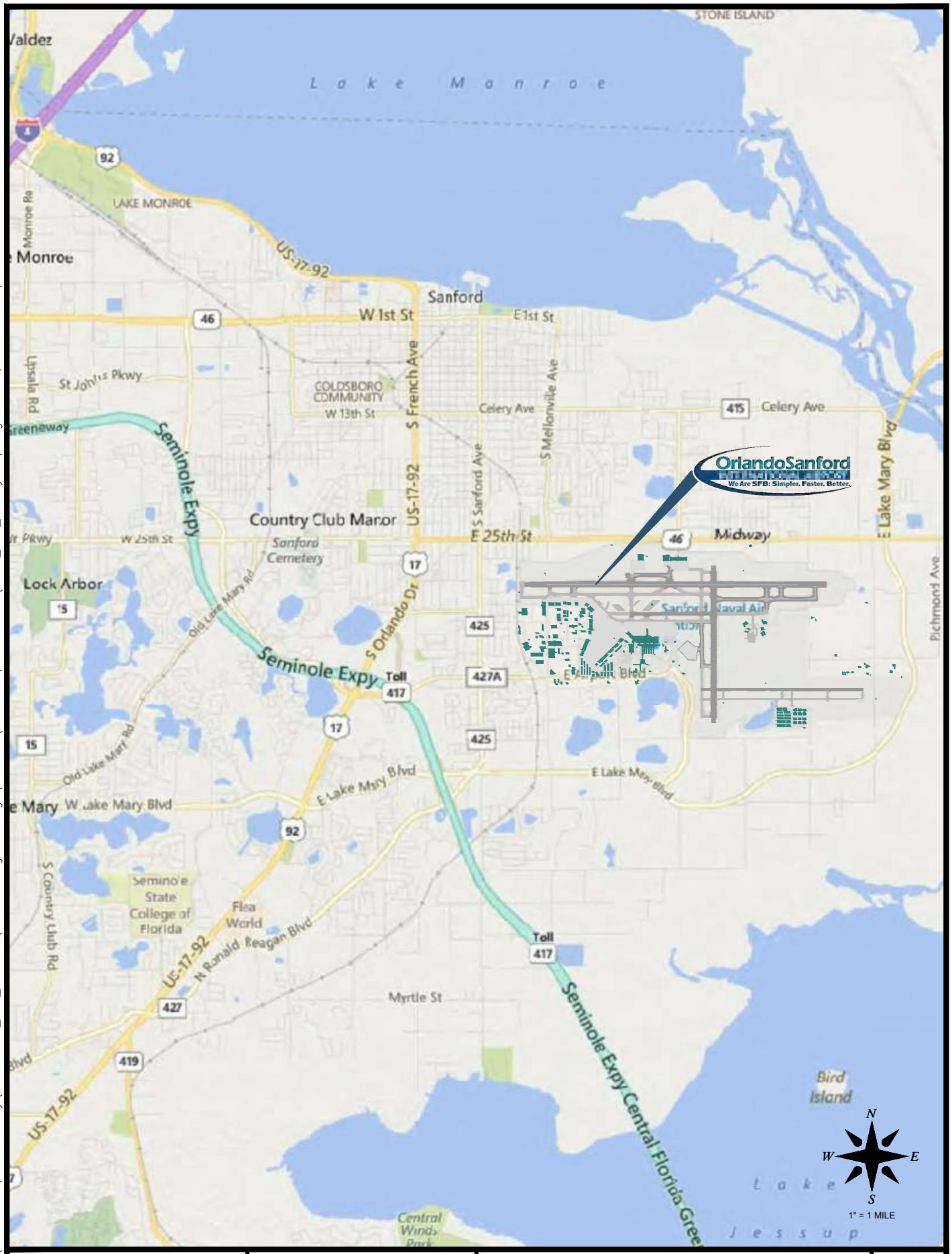
Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\2-01_Location_Map.dwg Nov25,2019 - 5:32pm

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update
Location Map

Figure 2-1



Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\2-02_SFB_Vicinity Map.dwg Nov25,2019 - 5:20pm

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

Orlando Sanford International Airport Master Plan Update
Vicinity Map

Figure 2-2

Figure 2-3 - NPIAS Airport Classifications

Airport Classifications		Hub Type: Percentage of Annual Passenger Boardings	Common Name
Commercial Service: Publicly owned airports that have *at least 2,500* passenger boardings each calendar year and receive scheduled passenger service **§47102(7)**	**Primary:** Have *more than 10,000* passenger boardings each year **§47102(16)**	**Large:** 1% or more	**Large Hub**
		Medium: At least 0.25%, but less than 1%	**Medium Hub**
		Small: At least 0.05%, but less than 0.25%	**Small Hub**
		Nonhub: More than 10,000, but less than 0.05%	**Nonhub Primary**
	Nonprimary	**Nonhub:** At least 2,500 and no more than than 10,000	**Nonprimary Commercial Service**
Nonprimary (Except Commercial Service)		Not Applicable	**Reliever §(47102(23))** **General Aviation (47102(8))**

Source: https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/categories/

2.1.3. History

2.1.3.1. 1930s and 40s

SFB began its history prior to the 1940s as an 865-acre airport equipped with two runways. The U.S. Navy felt the need for additional naval air training facilities in May 1942. On June 11, 1942, the City of Sanford deeded the Airport to the Navy, and the Airport became the Naval Air Station (NAS) of Sanford. The Navy acquired an additional 615 acres of land for the station and immediately began construction of its facilities. Some of those original facilities are still present at the Airport and were remodelled and brought up to code to be used as storage hangars or other functions. The base was commissioned on November 3, 1942 while it was still under construction. It was intended to be used to train two bomber squadrons, though just one was established.

The first unit to report to the base was operational training unit (OTU) VB2 #1 which had been formed a short time earlier in Jacksonville, FL. That unit was responsible for pilot checkout in the Lockheed PV-1 Ventura, and it operated 34 PV-1s, four Lockheed PBO Hudsons, one PV-3, and 21 Beechcraft SNBs.

Active flight operations began in 1943 at the NAS, which served as a fighter and dive-bomber training base. The base initially operated PV-1 Venturas, PBO Hudsons and SNB-2 Kansans. Peak wartime complement reached approximately 360 officers and 1,400 enlisted men with 150 officers and enlisted Women Accepted for Volunteer Emergency Service (WAVES). Late in 1943 VB2 #1 transferred to NAS Beaufort, S.C., but OUT VF #6 replaced them and began training pilots in the General Motors FM-1 Wildcat, of which there were 221 stationed at NAS Sanford by April 1944. Those FM-1 aircraft were soon replaced by their improved version FM-2 Wildcat, and by the end of the war pilots were being trained on the Grumman F6F Hellcat carrier-based aircraft. NAS Sanford trained approximately 50 percent of the Navy's World War II carrier-based bomber and fighter pilots.

The NAS was decommissioned after World War II, in 1946. The City of Sanford reacquired the land, and the facility was renamed the Sanford Regional Airport. Between 1946 and 1950, while operating under its new name, the Airport accommodated several tenants, including the New York Giants American Baseball Training Camp, a retirement home, a hospital, and a clothing company.

2.1.3.2. 1950s

The Navy reacquired the Airport and commissioned it as the Naval Auxiliary Air Station Sanford after the Korean War began in 1951. The Navy purchased an additional 164 acres, bringing the total acreage of the Airport to 1,644. Subsequently designated as a full Naval Air Station and renamed NAS Sanford, substantial upgrades followed to turn the air station into a Master Jet Base for the carrier-based Douglas A-3 Skywarrior nuclear attack aircraft of Reconnaissance Attack Wing One in June 1955. The upgrades included construction of additional new hangars, support buildings for the base, wing and squadrons, precision approach radar/ground controlled approach (PAR/GCA), non-directional beacon (NDB) and tactical air navigation (TACAN) navigational aids, a robust storage and distribution system for JP-5 jet fuel (which relied on resupply via a railroad spur into the base), a Navy Dispensary, Navy Exchange complex, base theater, two swimming pools, recreational facilities, and separate clubs for officers, chief petty officers and enlisted personnel. NAS Sanford was an important training base for fighter, attack, and reconnaissance aircraft during the Cold War era.

First arrivals of the A3D Skywarriors, the Navy's largest carrier-based bombers, began in January 1957. In addition to the Skywarrior, other associated land-based training aircraft such as the P2V-3W Neptune were assigned to the base to support A3D training.

Due to the Skywarrior's nuclear strike mission and the presence of an associated special weapons storage area at NAS Sanford, Marine Corps personnel provided both base and weapons storage area security, leading to the establishment of Marine Corps Barracks Sanford.

On February 6, 1959, NAS Sanford was dedicated as Ramey Field in honor of Lieutenant Commander Robert W. Ramey, USN, a decorated World War II pilot who lost his life in 1958 after saving his crew when he guided his crippled A-3D Skywarrior aircraft away from a residential area.

2.1.3.3. 1960s

December 1963 marked the beginning of the A3D aircrafts' replacement by the Mach 2+ North American A-5A Vigilante aircraft. This aircraft was designed as a nuclear bomber but was later converted to a reconnaissance aircraft and played a major role in the Vietnam conflict. NAS Sanford eventually became home to ten Vigilante squadrons and their families. A commemorative NAS Sanford Memorial Park, along with plaques and a retired RA-5C Vigilante aircraft on loan from the National Museum of Naval Aviation were dedicated in May 2003 and are positioned on the main entrance road within the Airport's perimeter in memory to NAS Sanford personnel who served their country during World War II, Vietnam, and the Korean and Cold Wars.

The Airport operated as a training base for fighter, attack, and reconnaissance aircraft until it was closed by Congress in June of 1968, transferring the wing and squadrons to NAS Albany, Georgia. The City of Sanford realized that closure of the base would pose an economic threat to the local economy. Therefore, the City acquired the property from the federal government in 1969 and renamed the facility Sanford Airport. The air station's recently retired Executive Officer, Commander J.S. "Red" Cleveland, USN Ret., was hired as the first Airport Manager.

2.1.3.4. 1970s

The Sanford Industrial Commission was established to promote the industrial aspects of the Airport. In 1970, the City Department of Aviation replaced the commission, and all administrative and operational control was taken over by the City. In 1971, Florida Legislature created the Sanford Airport Authority (SAA), a dependent special district, by legislative act. Since 1971, the SAA has been responsible for the operation, maintenance, and development of the Airport and its facilities, and is comprised of nine members appointed by the Sanford City Commission. The Authority elects its own chair, vice chair, secretary, and treasurer. The Airport is operated by the President/CEO, who is appointed by the Authority, and their staff of full-time employees and part-time employees.

Initially functioning as an uncontrolled airfield, the former Navy control tower was reactivated in the early 1970s as a non-Federal Aviation Administration facility, employing several retired enlisted Navy air traffic controllers who had previously served at NAS Sanford.

2.1.3.5. 1980s and 90s

During the late 1980s, growth in operations required an increase in airfield capacity and efficiency. A primary cause of this growth was the result of Comair Aviation Academy (now L3Harris Airline Academy) relocating to the Airport in 1989. This growth in operations through the years prompted several changes, including the name of the Airport. The Airport has been renamed four times since 1989. Its name has changed from the Sanford Regional Airport to Central Florida Regional Airport to Orlando Sanford Airport and finally to the Orlando Sanford International Airport in 1996. These name changes represent the Airport's business directions.

In 1991, an existing east/west taxiway was modified to establish a parallel east/west runway. In 1992, major portions of the action film Passenger 57 starring Wesley Snipes, Tom Sizemore, Bruce Payne and Elizabeth Hurley were filmed at the Airport, where it represented a small airport in Louisiana. Shortly after filming, a new, temporary control tower was constructed, and air traffic control operations were assumed by the FAA. The former Navy control tower and the large Navy hangar to which it had been attached were then demolished.

A new five-gate international passenger terminal capable of accommodating commercial jet airline service was constructed in 1996. Charter airlines catering to the British tourist demographic who had previously been utilizing Orlando International Airport were offered greatly reduced landing fees if they would use SFB. Therefore, many of those carriers relocated their operations and scheduled international and domestic passenger air service soon followed.

Between 1995 and 1999 Alamo's rental car surface lot and building were added in the current location of the parking garage. Around the same time, the Airport's first north side tenant arrived upon completion of a new 30,300 square yard aircraft parking apron and an over 10,500-square-foot FBO building flanked by two hangars in excess of 28,700 square feet each. Those facilities were constructed north of and near the current midpoint of Runway 9L-27R.

The current air traffic control tower (ATCT) was commissioned in 1996. In 1999, a new parallel runway (Runway 9R-27L) was constructed to provide greater separation between the larger jet commercial aircraft and the GA aircraft during arrival and departure operations, causing the former GA Runway 9R-27L to be renamed 9C-27C. Rounding out the decade, scheduled domestic commercial passenger service was established in 1999.

2.1.3.6. 2000s

Major airport expansions occurred in the decade starting in 2000. The existing Runway 9L instrument landing system (ILS) was complemented by the installation of an ILS on Runway 27R in late 2000. That installation enabled commercial aircraft to land directly from the east, flying over relatively less populated areas and minimizing over flights of urban areas located west of the Airport. Terminal B, a seven-gate domestic terminal expansion project was completed in 2001 to accommodate the existing and anticipated growth of domestic commercial service. That expansion included rehabilitation of the international terminal apron and a paved employee Parking Lot D which had a capacity of approximately 86 vehicles.

2005 was a busy construction year at the Airport. A portion of parallel Taxiway Alpha was constructed along with an over 28,000 square yard aircraft parking apron north of and near the midpoint of Runway 9L-27R. Taxiway Bravo (B) was extended to the approach end of Runway 27R, making it a full-length parallel taxiway. A relatively small, circular gravel aircraft rescue and firefighting (ARFF) training pit which contained a Boeing 727 was added southeast of the ARFF station. South East Ramp constructed its first twelve hangar structures (71 hangar units) south of the Runway 27L approach end (currently the midpoint of Runway 9R-27L). Approximately 200 vehicle spaces were added to the Airport's long-term Parking Lot B, and additional rental car facilities were constructed to the east of that long-term parking lot.

In 2007 the Airport added a five-level, 830 space parking garage and a paved employee parking lot capable of accommodating over 250 vehicles. The East Terminal Apron, an over 27,000 square yard commercial service

aircraft remain over-night (RON) parking apron was completed, and South East Ramp nearly doubled its hangar capacity by adding twelve new hangar structures (64 hangar units) in the same year.

Runway 9R-27L was extended in 2008 to a length of 6,647 feet, thereby allowing for operations by larger and more complex aircraft. Runway 9R was also equipped with an ILS as well as a medium intensity approach lighting system with runway alignment indicator lights (MALSR) in 2008.

2.1.3.7. 2010s

One of the Airport's most noteworthy achievements in the decade starting in 2010 occurred in 2016 when the Airport appointed its first female president, Diane Crews. Also noteworthy in that decade was when the Airport became one of the Nation's first to provide ticketed passenger screening by a private security contractor, in lieu of the Transportation Security Administration (TSA). The following paragraphs summarize the Airport's other achievements or changes in this last decade.

The ARFF aircraft training area was paved and expanded in 2010 and was connected to Taxiway Charlie (C) via a non-movement area connector between the ARFF station and the Sheriff's hangar. That area was repurposed for aircraft demolition and utilized by Avocet, an aircraft maintenance, repair, and overhaul (MRO) company. The Airport's Parking Lot C was expanded by 150 vehicle spaces for a total capacity of 345 vehicles in 2010, and a small, unmarked gravel cell lot was added off Red Cleveland Boulevard. just north of the Vigilante memorial aircraft display. That gravel cell lot grew each year until 2016 when it reached its current square shape, and it was paved with asphalt in 2018.

The Florida Department of Transportation (FDOT) embarked on an enabling project in the Airport's northwest quadrant in 2012. That project was completed in 2015, and re-routed over half a mile of State Road 46 (SR-46) onto airport property, which in turn enabled the reconstruction and widening of nearly three miles of SR-46 from Mellonville Avenue to east of Lake Mary Boulevard. The SR-46 widening project was completed in 2019, and the re-routed portion on airport property was de-coupled/closed, but can be used for future airport development.

Construction of the Airport's largest hangar (over 55,500 square feet) was completed at the beginning of 2012 and was dedicated to Avocet's aircraft MRO services. The Airport's second largest hangar was completed by the end of 2012. That hangar is 50,000 square feet, located east of the South East Ramp complex, and is connected directly to Runway 9R-27L and its parallel Taxiway Sierra (S) via connector Taxiway S4. The General Services Administration (GSA) houses an unknown number of rotorcraft in that hangar.

The Airport's primary Runway 9L-27R was extended to a length of 11,002 feet by the end of 2013, making it the third longest civil use runway in Central Florida and the seventh longest in Florida. Between 2013 and 2014, the Avocet demo pad area near the ARFF station experienced a near doubling expansion to the south, and by the start of 2014 there were nine large commercial/cargo aircraft being demoed there. That number grew to 13 by the middle of 2017, and that does not include the at least 14 Avocet aircraft stored at their hangar and apron facilities at the time. Historical aerial photos indicate that the Avocet apron housed as many as 20 mixed sized jet powered aircraft in their hangar and parking apron.

In 2014 the Airport installed a test bed of artificial turf in a 3.5-acre portion of the runway safety area (RSA) north of the Runway 18 approach end. Prior to its installation, that area had become inhabited by nearly 100 gopher tortoises in 140 burrows which presented glaring environmental, and safety violations of the RSA. The results from the yearlong study demonstrated that the artificial turf was compatible with safe airport operations, was durable to passive environmental factors, was not attractive to other hazardous species, resisted gopher tortoise burrowing activity, and did not exhibit detrimental reductions to braking during aircraft or vehicle excursions. The artificial turf also performed well during the occasional passage by operational vehicles, including those used for ARFF.

The Airport replaced each of its 12 passenger boarding bridges (PBBs) with new apron drive systems in 2015, which provide passengers with a first-class aircraft loading/unloading experience and reduced the Airport's operational and maintenance costs associated with the previous systems.

One of the Airport's turf seasonal overflow parking lots was paved in 2016 and converted to their current economy lot. During peak periods that lot overflowed into a lighted turf lot of similar size and capacity adjacent to the

northeast. However, in 2018 over half of that turf lot was overtaken by a new RON apron known as the 'Romeo Ramp' as it is connected to Taxiway Romeo (R). The 'Romeo Ramp' expansion is intended to serve as an RON pad and eventual terminal apron. That expansion included widening of Taxiway R to 75 feet with paved shoulders between Taxiways Charlie (C) and Echo (E).

Construction of the Airport's new outbound and inbound baggage facilities were completed in 2017, increasing the efficiency of baggage delivery. The design for the Airport's first major terminal expansion since Terminal B was constructed was completed in 2017.

Although not directly on airport property, it is significant to note that between 2015 and 2016 a large development adjacent to the Airport's south east property line sprouted from what used to be a citrus grove. That development is known as the Boombah Sports Complex at Seminole County, and it includes 15 fully lit baseball diamonds, a paved parking lot able to house 484 standard and 16 handicap vehicles, as well as 18 busses. Five of the baseball diamonds are marked to support standard soccer fields, and four are marked to support football fields. The complex also features a large central pavilion for groups, 25 batting cage lanes, an airport sponsored themed playground, central picnic area, ample restrooms, an administration building, and three centrally located concession/hospitality buildings.

Another significant off-airport development was completed in 2018. That is the 43,000-square-foot Allegiant Air Training Centre, which shares the Airport's property line, northwest of the Red Cleveland and Marquette intersection, and houses office space, classrooms and top-of-the-line simulators for Airbus aircraft capable of annually training 150 pilots, 500 flight attendants, and 100 mechanics .

The most significant airport improvements in this latest decade are associated with changes currently being made to the commercial passenger terminal infrastructure. When complete the terminal expansion is expected to add 36,400 square feet of enclosed, terminal space, which includes four new gates, redirected traffic flow, consolidated security screening, new baggage claim areas, and additional terminal curb frontage. The project will also add approximately 34,000 square feet of exterior space covered by canopy, and approximately 19,500 square feet of area previously inaccessible to passengers is being renovated and reallocated as passenger dwelling and screening space.

2.1.4. Management

The Airport staff is classified by functional department, and all department heads report to the President and Chief Executive Officer (CEO), who in turn reports to the Sanford Airport Authority's (SAA) nine board members. SAA currently employs 95 full-time and five part-time employees which is an increase of 15 full time employees since the previous AMPU.

The Airport benefits from a unique blend of local government and private investment resulting in a customer focused airport. The Airport is owned and operated by the SAA, which through the President & CEO, has full oversight authority and responsibility over the entire airport and airfield facilities, including the operations and management of the International & Domestic Terminal Buildings.

In 1997, TBI Management, Inc. (TBI) was contracted by the SAA to manage both the international and domestic terminals, develop additional air service under oversight by the President/CEO, and provide ground handling and cargo services. As of October 1, 2013 TBI, has operated as a subsidiary of Airports World Wide (AWW), which was acquired by VINCI Airports in the Fall of 2018. Locally, they are referred to as Orlando Sanford International, Inc. (OSI, Inc.). OSI, Inc. manage leases with airlines, concessions, and ground traffic (rental cars, buses, taxis, etc.). This unique relationship allows the cost of operating SFB to be shared between a public and private entity. SAA focuses on developing, operating, regulating, and maintaining the physical plant of the Airport, the Foreign Trade Zone, and Commerce Park. In addition, SAA maintains and encourages airside development, general aviation (GA), flight training, law enforcement, etc.

2.1.5. Meteorological Conditions

The meteorological conditions commonly experienced at an airport can play a large role in the layout and usage of the facility. Weather patterns characterized by periods of low visibility and cloud ceilings often lower the capacity of an airfield. Furthermore, wind direction and velocity to a large extent dictate runway usage. The following sections further discuss and present the Airport's meteorological data.

2.1.5.1. Weather Reporting

Automated weather reporting systems are increasingly being installed at airports. These systems consist of various sensors, a computer-generated voice subsystem, and a transmitter to broadcast local, current weather data directly to operating pilots. The Airport has the capabilities of on airfield weather reporting via an Automated Surface Observing System (ASOS). The ASOS is located and installed to the west of the lighting vault and can record the following information:

- Sky condition: Cloud height and amount up to 12,000 feet
- Visibility (To at least 10 SM)
- Basic present weather information: Type and intensity for rain, snow, and freezing rain
- Obstructions to vision: Fog, and haze
- Altimeter setting
- Dew point temperature
- Wind direction, speed, and character (gusts, squalls, etc.)
- Precipitation
- Selected significant remarks: Variable cloud height, variable visibility, etc.

In addition to the ASOS, the Airport has a segmented circle including a lighted wind-cone located between Runway 9C-27C, Taxiway B, and to the east of Taxiway Lima (L). A segmented circle is a ground-based marking identifying the traffic pattern, wind direction, and wind strength to pilots. The segmented circle includes a series of white markings arranged in a circle with traffic pattern indicators protruding from the circle to specify the direction of the traffic pattern. A lighted wind indicator, also known as a 'wind cone' or 'windsock,' is placed at the center of the segmented circle to indicate wind direction and strength. Additional supplemental wind-cones are located throughout the airfield at the following locations:

- South of Taxiway S, between connector Taxiways S4 and S5
- Southeast of the intersection between Taxiways R and S
- Northeast of the intersection between Taxiways B and B8
- East of the Runway 9L glideslope equipment shelter, on the north side of that runway

2.1.5.2. Ceiling and Visibility

FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, identifies three categories of ceiling and visibility minimums. These categories include Visual Meteorological Conditions (VMC), Instrument Meteorological Conditions (IMC), and Poor Visibility and Ceiling (PVC). Data obtained through the National Climatic Data Center (NCDC) consisting of 10 years of hourly wind observations has been used to express information at SFB in more specific terms:

- VMC conditions, defined as having a ceiling equal to or greater than 1,000 feet above ground level (AGL) and visibility equal to or greater than three statute miles, represent most atmospheric observations (over 96 percent of the time).
- IMC conditions, with a ceiling less than 1,000 feet and/or visibility less than three miles, but ceiling equal to or greater than 200 feet and visibility equal to or greater than ½ mile, occur at the Airport approximately 3.7 percent of the time.
- PVC conditions, with a ceiling less than 200 feet and/or visibility less than ½ mile, represent periods in which the Airport is unable to service air traffic and must close. Those conditions rarely occur, often for only a few short periods each year.

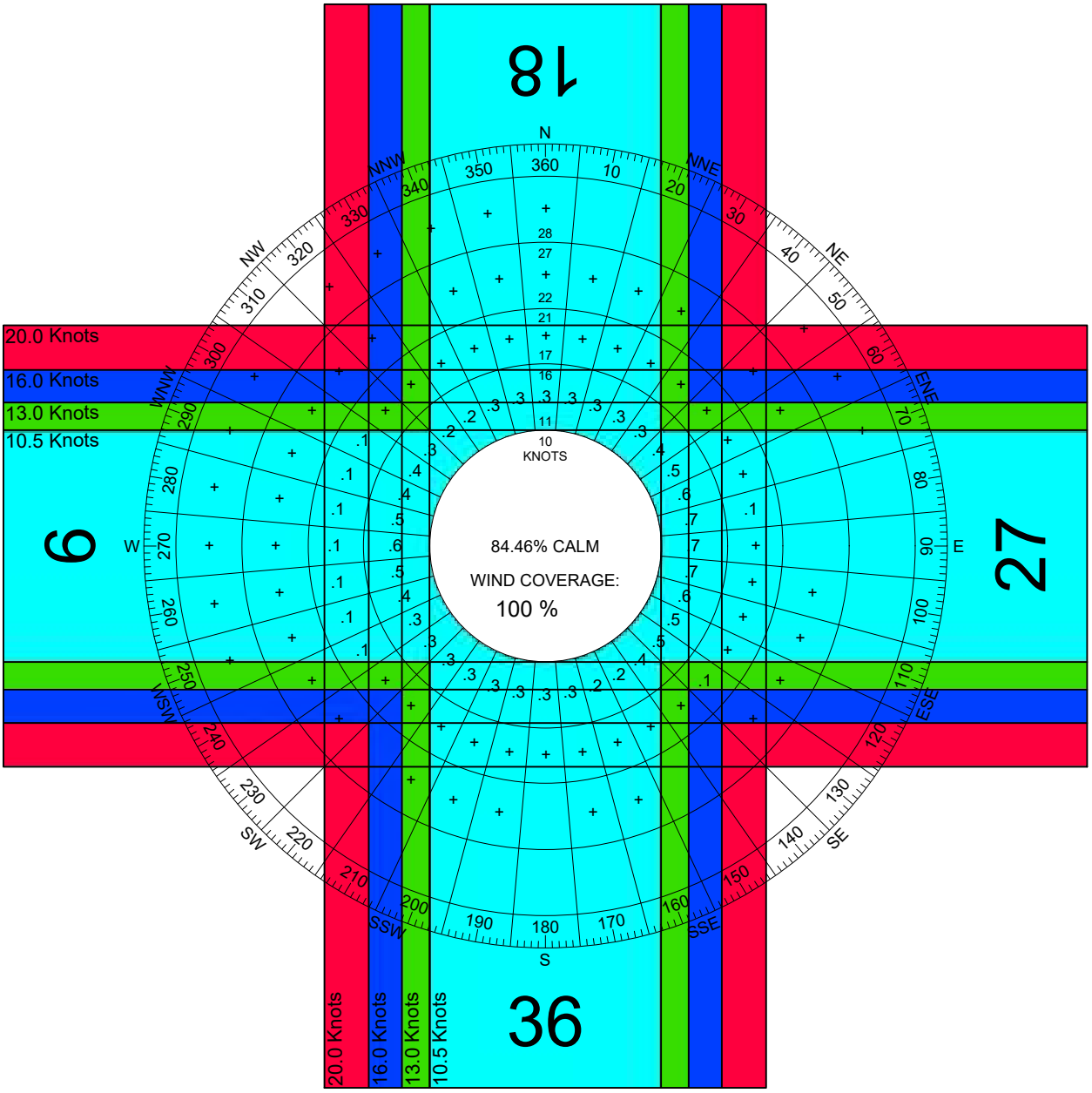
2.1.5.3. Wind Coverage

Local wind conditions at an airport play a large role in the runway usage at the field, as aircraft operate most efficiently when taking-off into the wind. Runways not oriented to take full advantage of prevailing winds are often not utilized as frequently. Aircraft can operate on a runway when the crosswind component, or wind component perpendicular to direction of travel, is not excessive. Crosswind components differ slightly depending on the size of aircraft. The appropriate crosswind components for the Airport's four runways were determined by the type of aircraft typically operating on those runways.

Figure 2-4, **Figure 2-5** and **Figure 2-6** respectively depict the Visual Flight Rules (VFR), Instrument Flight Rules (IFR), and All-Weather wind roses when considering a 20-knot crosswind component for the large commercial service runways (Runway 9L-27R and 18-36), a 13-knot crosswind for the corporate jet/GA runway (Runway 9R-

27L), and a 10.5-knot crosswind for the small GA runway (Runway 9C-27C). The FAA indicates that the desired wind coverage for an airport is at least 95 percent, meaning the maximum crosswind component is not exceeded more than five percent of the time.

The Airport's calculated wind coverage shows that the parallel east-west runways achieve greater than 95 percent wind coverage at each crosswind component when considering all weather conditions. The intersecting runway, Runway 18-36, achieves greater than 95 percent wind coverage for all crosswind components except the 10.5-knot metric used for small GA aircraft. During inclement weather conditions, characterized by IMC, both the parallel east-west runways and the Runway 18-36 achieve greater than 95 percent wind coverage for each crosswind component except the 10.5-knot metric. The combined wind coverage exceeds 95 percent for all crosswind components during VMC and IMC. However, AC 150/5320-4B, *Runway Length Requirements for Airport Design* states that



RUNWAYS 9-27 & 18-36
WIND COVERAGE

CROSS WIND COMPONENT	VFR COVERAGE
10.5 Knots	99.40%
13.0 Knots	99.89%
16.0 Knots	99.99%
20.0 Knots	100%

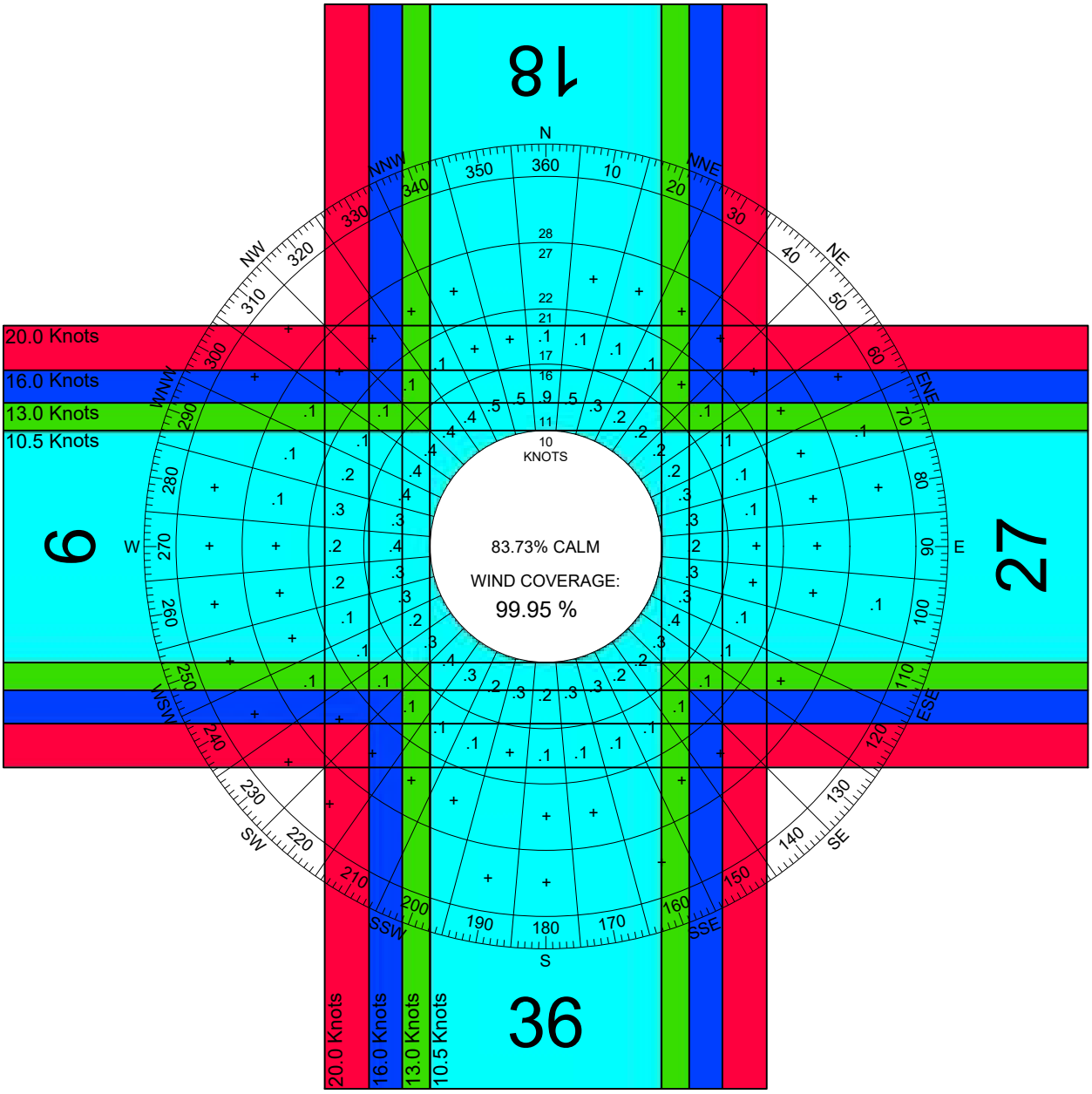
Station: Orlando Sanford International Airport, Station Number 72205
Source: National Climatic Data Center/National Oceanic and Atmospheric Administration
Period of Observation: 2009 - 2018
All Weather Observations: 106,500
VFR Weather Observations: 95,410 (89.59% of the time)
Calm Observations: 80,588 (84.46% of the VFR time periods)

OrlandoSanford INTERNATIONAL AIRPORT We Are SFB: Simpler. Faster. Better.

ATKINS Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update
VFR Weather Wind Rose

Figure 2-4



RUNWAYS 9-27 & 18-36
WIND COVERAGE

CROSS WIND COMPONENT	IFR COVERAGE
10.5 Knots	98.41%
13.0 Knots	99.43%
16.0 Knots	99.82%
20.0 Knots	99.95%

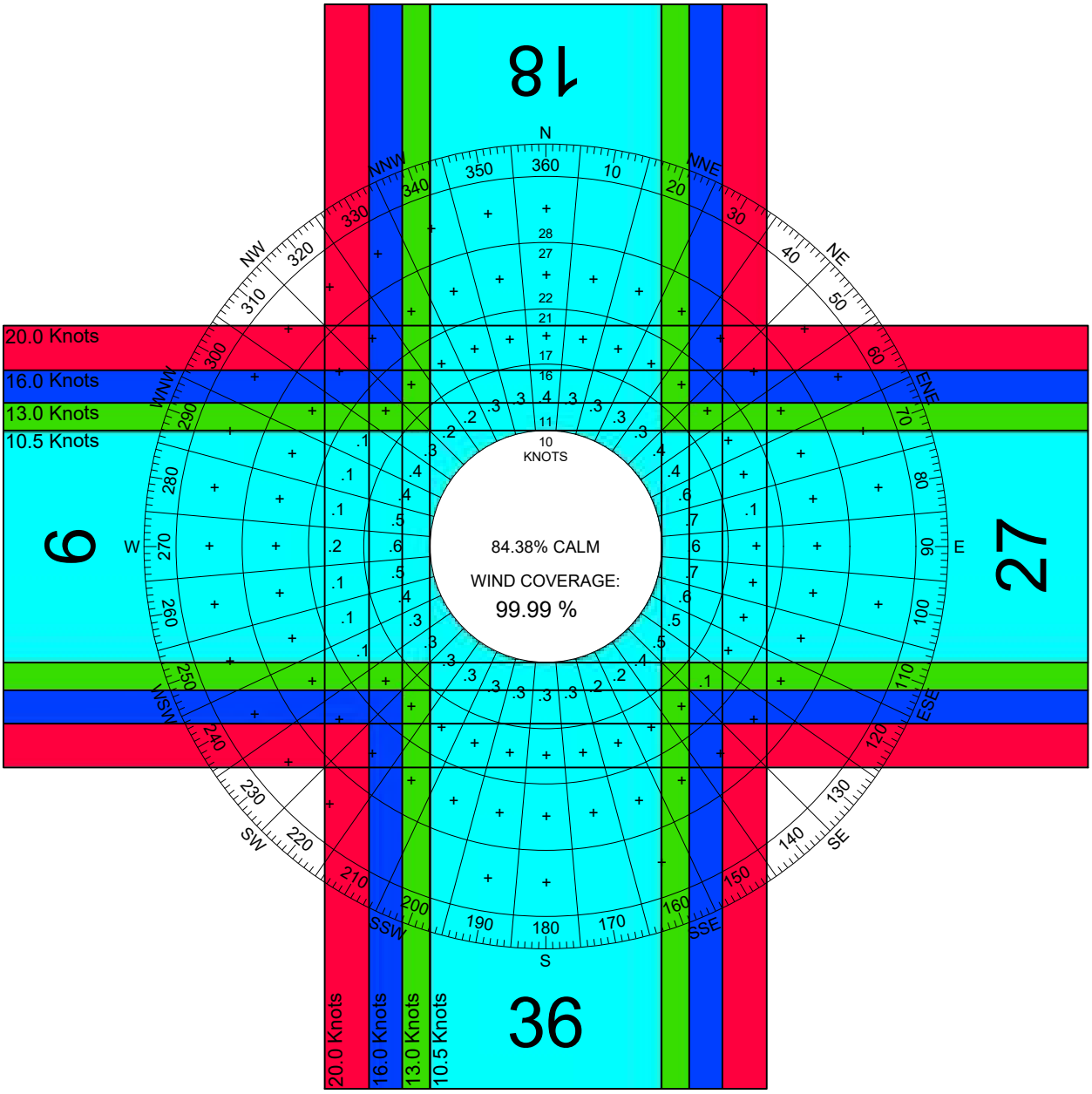
Station: Orlando Sanford International Airport, Station Number 72205
Source: National Climatic Data Center/National Oceanic and Atmospheric Administration
Period of Observation: 2009 - 2018
All Weather Observations: 106,500
IFR Weather Observations: 11,538 (10.83% of the time)
Calm Observations: 9,661 (83.73% of the IFR time periods)

OrlandoSanford INTERNATIONAL AIRPORT We Are SFB: Simpler. Faster. Better.

ATKINS Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update
IFR Weather Wind Rose

Figure 2-5



RUNWAYS 9-27 & 18-36
WIND COVERAGE

CROSS WIND COMPONENT	ALL WEATHER COVERAGE
10.5 Knots	99.29%
13.0 Knots	99.84%
16.0 Knots	99.97%
20.0 Knots	99.99%

Station: Orlando Sanford International Airport, Station Number 72205
Source: National Climatic Data Center/National Oceanic and Atmospheric Administration
Period of Observation: 2009 - 2019
All Weather Observations: 106,500
Calm Observations: 89,867 (84.38% of the time)

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update
ALL Weather Wind Rose

Figure 2-6

> "*even when the 95-percent crosswind coverage standard is achieved for the design airplane or airplane design group, cases arise where certain airplanes with lower crosswind coverage capabilities are unable to utilize the primary runway. For airplanes with lesser crosswind capabilities, a crosswind runway may be built, provided there is regular usage.*"

ATCT personnel have indicated that Runway 18-36 is utilized approximately two percent of the time, especially during winter months when winds tend to 'howl' out of the north or south. Even commercial service operators, such as Allegiant Airlines, utilize Runway 18-36 during such periods when the crosswind component is deemed to be too strong.

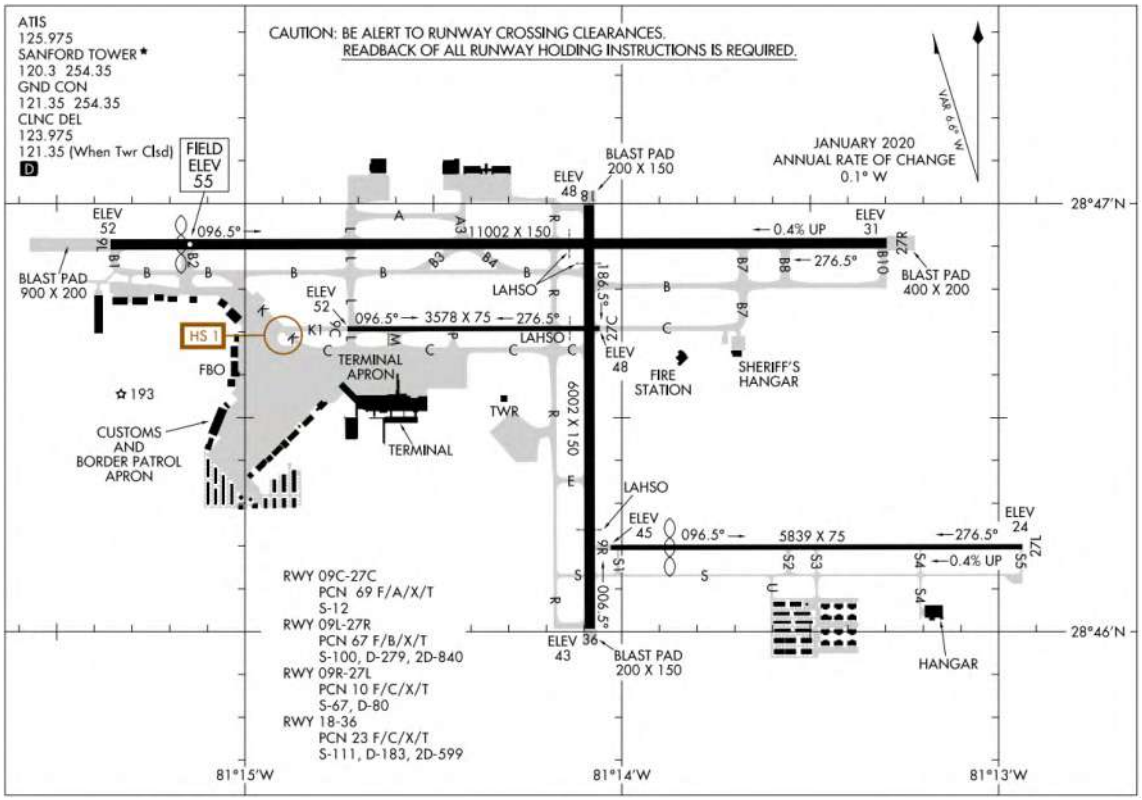
2.2. Airport Facilities

The identification of existing aviation facilities, specifically their locations and abilities to meet the Airport's daily needs are essential elements of the master planning process. As noted in the Section 2.1.3, the Airport's facilities have changed significantly in the last 20 years. With the introduction of what was then Comair Aviation Academy (currently L3Harris Airline Academy) and international charter and domestic carrier operations, the Airport has expanded from a two-runway airport to a four-runway airport to meet the needs of its tenants and users. The Airport has been certified under 14 CFR Part 139 to allow scheduled air carrier service. In addition, the Airport provides the following services: rental cars; aircraft fuel (100LL and Jet A); hangars and tie-downs; commercial aircraft MRO, major airframe and power-plant maintenance; high-pressure, bottled oxygen; avionics service; air cargo; charter flights; flight instruction; aircraft rental and sales; customs services; and foreign trade zone. The existing conditions of airside, terminal, landside, and support facilities will be discussed in the following sections.

2.2.1. Airside Facilities

Airside facilities comprise the most crucial component of the facility inventory. Runways and taxiways are not the only airside facilities to be inventoried and inspected. Lighting components, aprons, airfield signage, navigational equipment, markings, and many other facilities allow the airfield to function efficiently. The following sub-sections present information collected on all key airside facilities. **Figure 2-7** depicts an overview of the Airport's existing airside facilities.

Figure 2-7 - Existing Airside Facilities



Source: FAA Airfield Facility Directory (AFD), May 21, 2020 (Not for navigation)

2.2.1.1. Runways

Four active bi-directional runways currently serve airport operators at SFB. Three of those runways are parallel and oriented in an east-west direction and are identified as 9L-27R, 9C-27C, and 9R-27L. Runway 18-36 is oriented in a north-south direction. Both Runways 9L-27R and 18-36 are certified for air carrier use. **Table 2-1** provides a summary of the Airport's runway specifications**.**

Table 2-1 - Runway Specifications

	Runway 9L-27R	Runway 9C-27C	Runway 9R-27L	Runway 18-36
Dimensions				
Length	11,002’	3,578’	5,839’	6,002’
Width	150’	75’	75’	150’
Surface Material	Asphalt	Asphalt	Asphalt	Asphalt/Concrete
Surface Treatment	Grooved	None	None	Grooved
Lighting	HIRL[1]	MIRL[2]	HIRL[1]	MIRL[2]
Marking	Precision	Basic	Precision/Non-Precision	Non-Precision
Approach Aids	ILS[3]/GPS[4]/LOC[5]/ PAPI[6]-4/MALSR[7]	PAPI[6]-2	ILS[3]/GPS[4]/LOC[5]/ PAPI[6]-4/ MALSR[7]/REILs[8]	RNAV[9] GPS[4]/ PAPI[6]-4/REILs[8]
Load Bearing Capacity by Gear Type				
SWL (pounds)	100,000	12,000	67,000	111,000
DWL (pounds)	279,000	N/R	80,000	183,000
DTW (pounds)	840,000	N/R	N/R	599,000
Approach Slope	50:1; 50:1	20:1; 20:1	50:1; 20:1	20:1; 20:1
Effective Gradient	0.21%	0.12%	.09%	.10%
Runway End Coordinates				
Latitude	9L: 28° 46’ 54.25” N	9C: 28° 46’ 42.43” N	9R: 28° 46’ 11.80” N	18: 28° 46’ 59.83” N
	27R: 28° 46’ 54.44” N	27C: 28° 46’ 42.49” N	27L: 28° 46’ 11.89” N	36: 28° 46’ 00.40” N
Longitude	9L: 81° 15’ 21.44” W	9C: 81° 14’ 43.71” W	9R: 81° 14’ 1.81” W	18: 81° 14’ 05.24” W
	27R: 81° 13’ 17.80” W	27C: 81° 14’ 03.50” W	27L: 81° 12’ 56.20” W	36: 81° 14’ 05.10” W
Notes:				

1. HIRL; High Intensity Runway Lights
2. MIRL; Medium Intensity Runway Lights
3. ILS; Instrument Landing System
4. GPS; Global Positioning System
5. LOC; Localizer
6. PAPI; Precision Approach Path Indicator
7. MALSR; Medium Intensity Approach Lighting System; not on Runway 27L approach end
8. REILs; Runway End Identifier Lights
9. RNAV; Area Navigation

Sources: Atkins, 2020; AirNav, 2020.

2.2.1.1.1. Runway 9L-27R

Runway 9L-27R is considered the Airport’s primary runway and measures 11,002 feet long by 150 feet wide. It is constructed of asphalt and has a grooved surface with 25-foot wide paved shoulders. The pavement strength rating

is 100,000 pounds (lbs) for single wheel load (SWL); 279,000 lbs for dual-wheel load (DWL); and 840,000 lbs for dual tandem wheel load (DTW). That runway was extended by 1,402 feet to the east in 2013. Runway 9L has a displaced threshold located 1,000 feet from its approach end.

2.2.1.1.2. Runway 9C-27C

Parallel Runway 9C-27C lies south of the primary runway, and measures 3,578 feet long by 75 feet wide. Runways 9L-27R and 9C-27C are separated, centerline-to-centerline, by 1,200 feet. In addition, Runway 9C-27C connects to Taxiway C at Runway 18-36 and Taxiway C connects to Taxiway Bravo-7 (B-7). Therefore, it can be and is used as an air carrier taxiway allowing aircraft to exit onto Taxiway Mike (M) to access the terminal ramp area. Runway 9C-27C is constructed of asphalt and has an SWL strength of 12,000 lbs.

2.2.1.1.3. Runway 9R-27L

Parallel Runway 9R-27L lies south of Runway 9C-27C and is used primarily for GA training and corporate operations. It is 5,839 feet long and 75 feet wide. Its separations from 9L-27R and 9C-27C, centerline-to-centerline, are approximately 4,300 feet and 3,100 feet, respectively. Runway 9R-27L is composed of asphalt and has SWL and DWL strength capacities of 67,000 and 80,000 lbs respectively. Runway 9R has a 839-foot displaced threshold.

2.2.1.1.4. Runway 18-36

The north-south runway is designated as Runway 18-36 and measures 6,002 by 150 feet. Runway 18-36 provides crosswind coverage for small aircraft and efficient cost-effective air carrier operations. Runway 18-36 is constructed of asphalt and concrete, has a grooved surface, and 25-foot paved shoulders. The pavement on Runway 18-36 has SWL, DWL, and DTW load bearing strength capacities of 111,000, 183,000, and 599,000 lbs respectively.

2.2.1.1.5. Runway Declared Distances

The FAA requires the use of declared distances for all runways specified for commercial use, as well as runways with certain operational conditions. The Airport publishes declared distances for each of its four runways which are listed in **Table 2-2**. Declared distances are a means of obtaining a standard safety area by reducing the usable runway length dependent on the type of operation (takeoff or landing) and are defined as:

- Takeoff Run Available (TORA) – The runway length declared available and suitable for the ground run of an aircraft taking off.
- Takeoff Distance Available (TODA) – The TORA plus the length of any remaining runway or clearway beyond the far end of the TORA.
- Accelerate Stop Distance Available (ASDA) – The runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting takeoff.
- Landing Distance Available (LDA) – The runway length declared available and suitable for an aircraft to land.

Table 2-2 - SFB's Declared Distances

Declared Distance	Runway 9L	Runway 27R	Runway 9C	Runway 27C	Runway 9R	Runway 27L	Runway 18	Runway 36
TORA	11,002’	11,002’	3,578’	3,578’	5,839’	5,839’	6,002’	6,002’
TODA	11,002’	11,002’	3,578’	3,578’	5,839’	5,839’	6,002’	6,002’
ASDA	11,002’	11,002’	3,578’	3,578’	5,839’	6,264’	5,956’	6,002’
LDA	10,002’	11,002’	3,578’	3,578’	5,000’	5,839’	5,956’	6,002’

Source: FAA 5010 Airport Data Sheets

2.2.1.2. Taxiways

All the Airport’s taxiway pavement surfaces are composed of asphalt. The Airport’s four runways each have a parallel taxiway to accommodate operations. Taxiways Alpha (A), Bravo (B), Charlie (C), Lima (L), Mike (M), and the portion of Romeo (R) between Taxiways C and Echo (E) are 75 feet wide. All other taxiways are 50 feet wide except for Taxiway Sierra (S) which is 35 feet wide. These taxiways, some of which have existed since World War

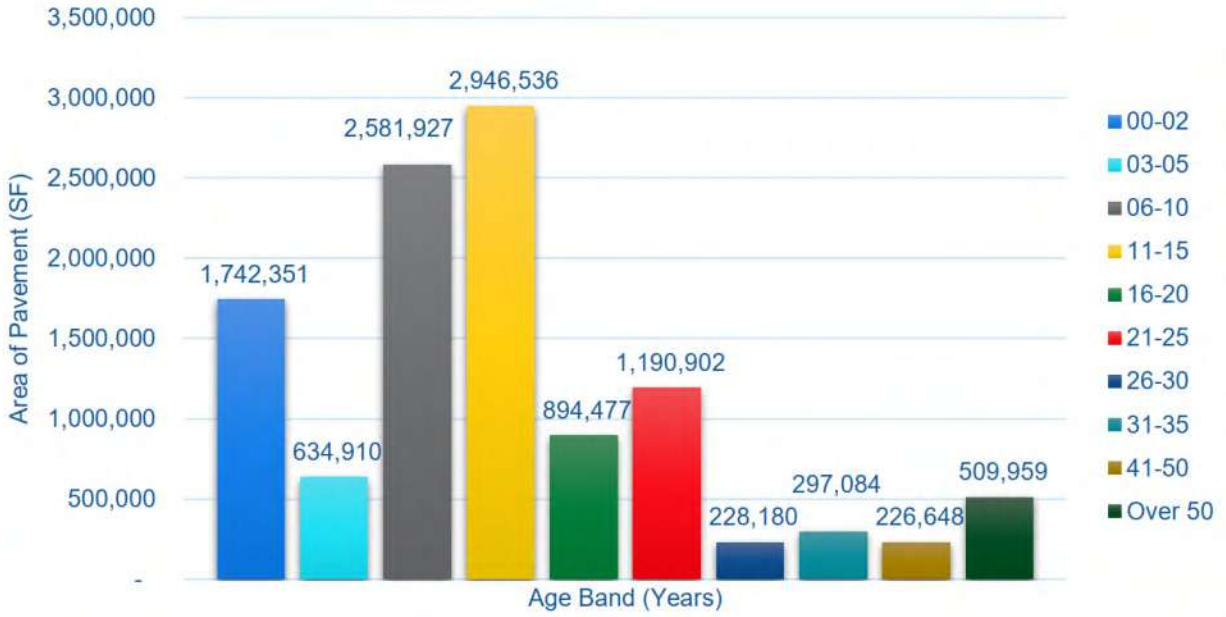
II, are designed to meet the specifications of the runway they serve, as well as the critical aircraft associated with each runway. A summary of the Airport's taxiways is as follows:

- Taxiway A is a 75-foot-wide partial length parallel taxiway located on the northside of Runway 9L-27R, with a runway centerline to taxiway centerline separation of 400 feet. At present, Taxiway A connects the Avocet and Constant Aviation aprons and provides access to Runway 9L-27R via Connector Taxiways L and A-3.
- Taxiway B is a 75-foot-wide full-length parallel taxiway serving Runway 9L-27R. Located just south of Runway 9L-27R, Taxiway B has a runway centerline to taxiway centerline separation of 400 feet except for the portion found east of Runway 18-36, which maintains a centerline separation of 600 feet. Taxiway B provides access to both ends of Runway 9L-27R as well as Taxiways Kilo (K), L, R, Runway 18-36, and Connector Taxiways B-1, B-2, B-3, B-4, B-7, B-8, and B-10.
- Taxiway C is a 75-foot-wide taxiway which originates at the southern extent of Taxiway K and runs east providing access to the commercial passenger aircraft terminal apron and Runway 18-36 where it seems to end, however it continues east of Runway 18-36 along the alignment of Runway 9C-27C until connecting with Taxiway B-7. Taxiway C also connects with Taxiways L, M, Papa (P), and R. When south of Runway 18-36, Taxiway C has a centerline separation of 300 feet from the Runway centerline.
- Taxiway E is a 75-foot-wide taxiway which connects Runway 18-36 with Taxiway R at a point 2,100 feet from Runway 36's approach end.
- Taxiway K is a 50-foot-wide taxiway located south of Runway 9L and Taxiway B and connects the GA apron and the terminal ramp. Because of its close proximity to the Runway 9C approach end and the GA apron tie-down positions, Taxiway K, is non-accessible to aircraft with tail heights or wingspans exceeding 34 or 80 feet respectively. Taxiway K-1 is a connector taxiway from Taxiway K to the approach end of Runway 9C.
- Taxiway R is a full-length parallel taxiway serving the west side of Runway 18-36. Its centerline separation from Runway 18-36 is approximately 490 feet. Its width is 50 feet except for the portion of R between Taxiways C and E, which is 75 feet wide. Taxiway R provides access to both ends of Runways 18-36, and 9C, as well as Taxiway B, Taxiway C, Taxiway E, and Taxiway S.
- Taxiway S is a 35-foot-wide full-length parallel taxiway serving Runway 9R-27L. Taxiway S maintains a 400 foot centerline separation from Runway 9R-27L and provides access to both ends of Runway 9R-27L as well as Taxiways R and Uniform (U), and Connector Taxiways S-1, S-2, S-3, S-4, S-5.
- Taxiway L is a 75-foot-wide taxiway that intersects Runway 9L-27R at a point approximately 2,500 feet from the 9L approach end. Taxiway L runs in a north-south direction, starting from Taxiway C at the commercial terminal apron running north across the Runway 9C approach end, intersecting Taxiway B and then Runway 9L-27R, and ceases at Taxiway A.
- Taxiways M and P are short connector taxiways, which connect Runway 9C-27C to the commercial terminal apron. Taxiway P is closed to aircraft with wingspans greater than 49 feet (Airplane Design Group I) given its pavement fillet geometry. Taxiway P is unique in that it contains the Airport's compass calibration pad.
- Taxiway U is a 35-foot wide connection between Taxiway S and the west side of South East Ramp. It runs from Taxiway S to the northwest corner of South East Ramp where it becomes a hangar access taxilane which continues to the southwest corner of South East Ramp's facilities.

2.2.1.3. Pavement Strength/Condition

The Airport has a mix of pavement conditions as was revealed by onsite analysis of airfield pavement during a February 2019 site visit, discussion with airport staff, and consultation of SFB's 2019 Airport Pavement Evaluation Report (APER) associated with FDOT's Statewide Airfield Pavement Management Program (SAPMP). Standard airfield pavement design practices presume a 20-year pavement design life. **Figure 2-8** depicts the Airport's average pavement ages reported in FDOT's SFB APER. According to the data presented in that figure, the Airport's average pavement age is 14 years, and nearly 56 percent of it is more than 11 years old.

Figure 2-8 - APER's Figure 3.1.2 – Average Age of Pavements at Inspection



Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019

The APER also reported the functional classification of the Airport's pavement, grouped in three categories; Apron, Runway, and Taxiway/Taxilane. **Figure 2-9** depicts the Airport's identified pavements' functional use by area in square feet as was reported in SFB's APER. Additionally, the APER reports the airfield pavement facility surface types, grouped in four categories of pavement; Portland cement concrete (PCC) 27 percent, asphalt concrete (AC) 29 percent, asphalt concrete overlaid on asphalt concrete (AAC) 22 percent, and asphalt concrete overlaid on Portland cement concrete (APC) 22 percent. **Figure 2-10** depicts the Airport's amount of each pavement type reported in SFB's APER.

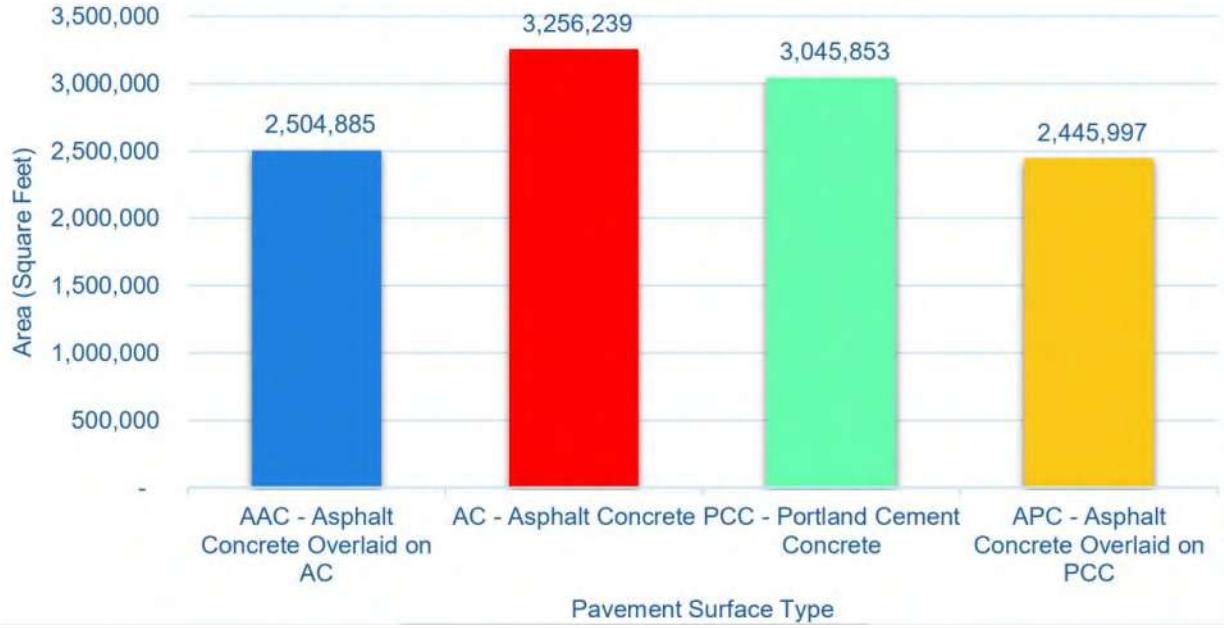
Figure 2-9 - APER's Figure 3.1.3 – Airfield Pavement Functional Classification Use by Area

Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019

The FDOT performed a network-level Pavement Condition Index (PCI) of the Airport's pavements, which provided insight for understanding the overall condition of the network (current and future). This insight allows for the planning of short and long-term budget needs for pavement maintenance or replacement, and to identify the pavement sections which are subject for project consideration. The computation of a PCI requires examination of

specific distress types (with causes attributed to climate, load, or other distress mechanisms), determination of the severity, and quantity of distress manifestation.

Figure 2-10 - APER's Figure 3.1.4 (a) – Pavement Surface Type by Area (SF)



Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019

Figure 2-11 summarizes the Airport's network-level pavement condition analysis based on the most recent PCI Survey inspection results, as was reported in SFB's APER. According to that data, over 75 percent of the Airport's pavement was classified as being in 'good', 'satisfactory', or 'fair' condition.

Figure 2-11 - APER's Figure 4.1.1 – Latest Condition – Overall Network

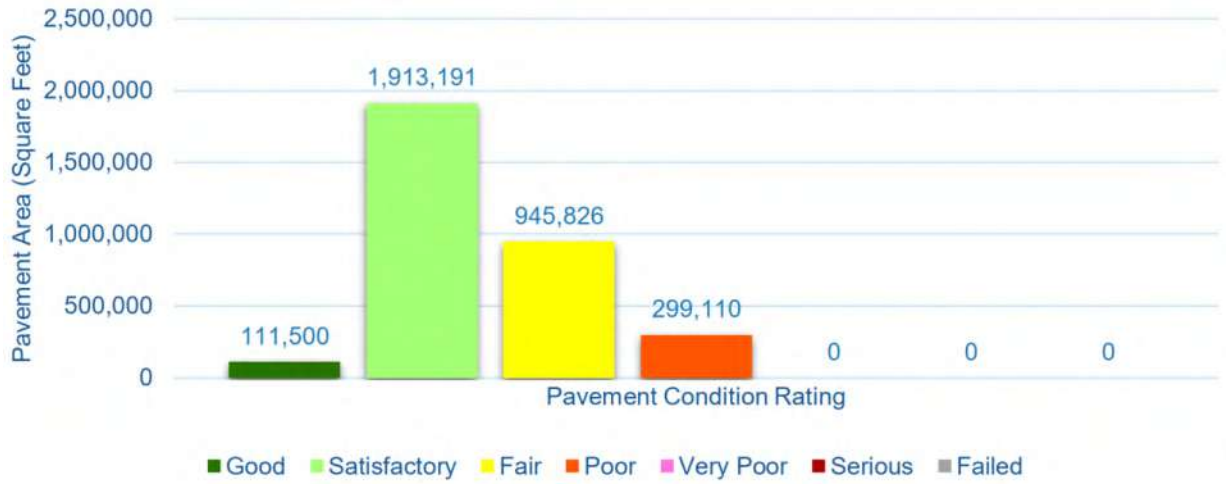
Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019

Figure 2-12, Figure 2-13, and **Figure 2-14** depict the branch-level (Runway, Taxiway, or Apron) pavement conditions reported in the Airport's APER.

Nearly 91 percent of the Airport's runway pavements are reported to be in 'good' to 'fair' condition, however the outer half of Runway 18-36 was identified as being in 'poor' condition. The inner 75 feet (37.5 feet on either side of Runway centerline) of that runway was rehabilitated in 2010 and is now considered to be in 'fair' condition.

Almost half (46 percent) of the Airport's taxiway pavement was reported to be in 'poor' to 'serious' condition. The Airport has already developed designs to rehabilitate most of those taxiway pavements, specifically Taxiways A, B, L, and C.

Figure 2-12 - APER's Figure 4.1.2 (a) – Latest Condition – Runway Pavements



Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019

Figure 2-13 - APER's Figure 4.1.2 (b) – Latest Condition – Taxiway Pavements

Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019

Figure 2-14 - APER's Figure 4.1.2 (c) – Latest Condition – Apron Pavements

*Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019*While the vast majority (81.5 percent) of the Airport's apron pavement is reported to be in 'good' to 'fair' condition, some apron areas have been identified to require rehabilitation soon. Specifically, the asphalt areas along the perimeter of the terminal area's PCC apron, most of Constant Aviation's asphalt apron, and the asphalt portions of the L3Harris Airline Academy's aircraft parking apron. **Figure 2-15** depicts the Airport's Airfield PCI Exhibit as it appears in the APER.

2.2.1.4. Runway Design Code (RDC)

The Runway Design Code (RDC) signifies standards to which a runway is to be built and maintained. Aircraft Approach Category (AAC), Airplane Design Group (ADG), and approach visibility minimums are combined to form the RDC of a specific runway. The AAC portion of the RDC relates to the aircraft approach speed, as depicted in **Table 2-3**. The ADG is the second component of the RDC and it is represented by a roman numeral as depicted in **Table 2-4.** The ADG relates to the aircraft wingspan or tail height. Instrument approach visibility minima measured as runway visual range (RVR) makes up the final component of a RDC as depicted in **Table 2-5**. RVR is the distance over which a pilot can see the runway surface markings while on the runway centerline and is normally expressed in feet. The airport reference code (ARC) is the critical RDC minus the approach visibility minimums. The existing RDC of each of the Airport's runways are outlined in **Table 2-6.**

Table 2-3 - Aircraft Approach Category (AAC)

AAC	Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Source: FAA AC 150/5300-13A, Airport Design

Table 2-4 – Airplane Design Group (ADG)

Group #	Tail Height	Wingspan
I	< 20'	< 49'
II	20' - < 30'	49' - < 79'
III	30' - < 45'	79' - < 118'
IV	45' - < 60'	118' - < 171'
V	60' - < 66'	171' - < 214'
VI	66' - < 80'	214' - < 262'

Source: FAA AC 150/5300-13A, Airport Design

Table 2-5 – Visibility Minimums

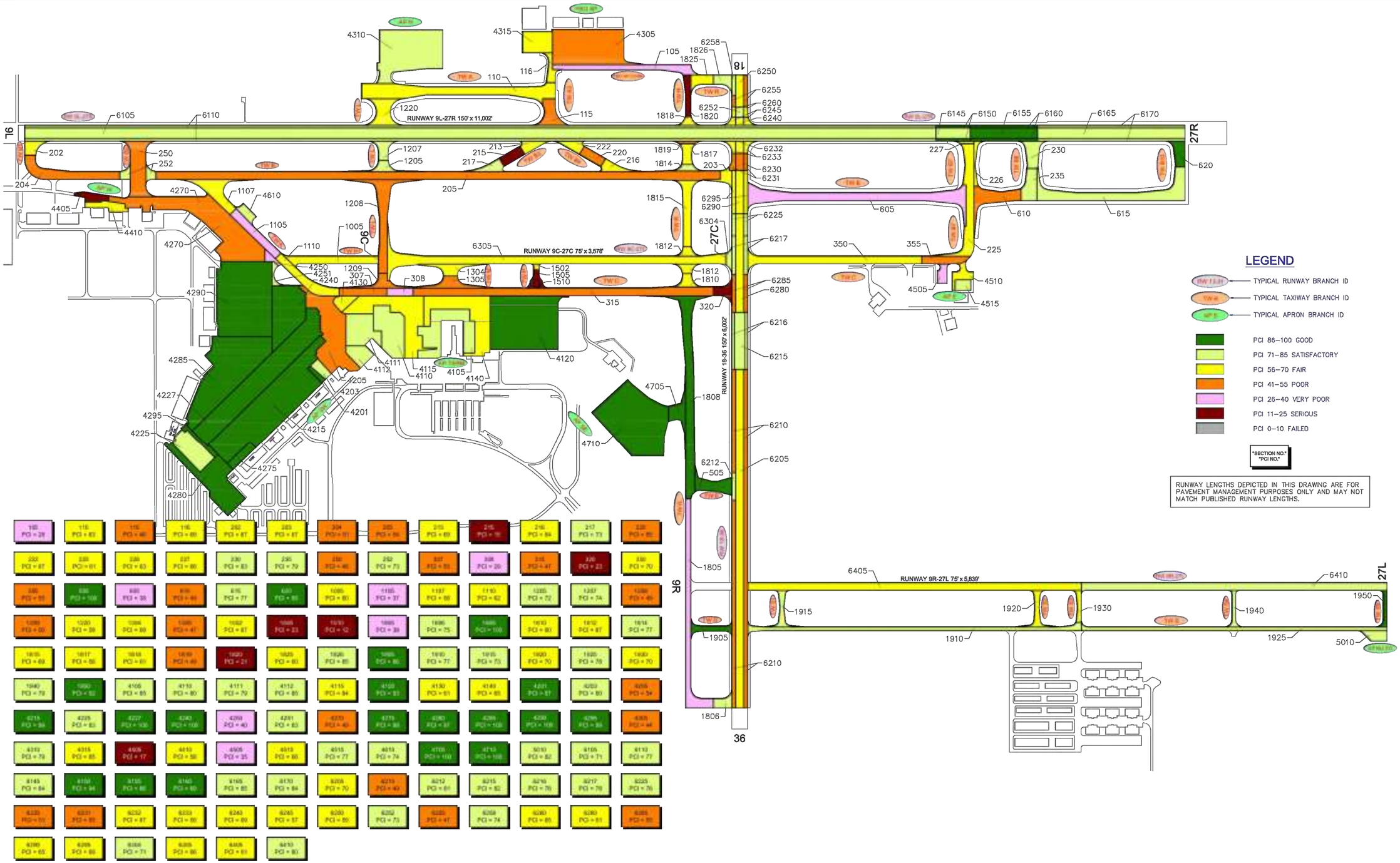
RVR (')	Flight Visibility Category (statute mile)
VIS	Visual Approach
5,000'	Not lower than 1 mile
4,000'	Lower than 1 mile but not lower than ¾ mile (APV ≥ 3/4 but < 1 mile)
2,400'	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)
1,600'	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)
1,200'	Lower than 1/4 mile CAT-III PA)

Source: FAA AC 150/5300-13A, Airport Design

Table 2-6 – SFB's Existing RDCs

Runway	Existing RDC
9L-27R	D-V-2400
9R-27L	B-II-2400
9C-27C	B-I (Small Aircraft)-VIS
18-36	D-IV-4000

Source: Atkins Analysis, 2020



Source: FDOT Statewide Airfield Pavement Management Program; Airport Pavement Evaluation Report; SFB, November 2019.

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update

Airfield Pavement Condition Index (PCI) Map

Figure 2-15

Page intentionally left blank

2.2.1.5. Airfield Safety Areas and Object Free Areas

Runways and taxiways are surrounded by imaginary areas known as “safety areas” and “object free areas”. The purpose of these areas is to minimize the likelihood of serious damage to aircraft that unintentionally leave designated movement areas as well as to offer greater accessibility for firefighting and rescue equipment during emergencies. These areas require appropriate grading between one percent and five percent. The designated areas must remain free of obstructions to enhance the safety of aircraft that overrun, undershoot, or veer off the airfield pavement.

According to FAA’s AC 150-5300-13A, the dimensions of the Runway Safety Area (RSA), and Runway Object Free Area (ROFA), are based on the runway’s specific RDC. The dimensions of the Taxiway Safety Area (TSA) and Taxiway/Taxilane Object Free Areas (TOFA) are determined by the ADG of the critical aircraft. **Table 2-7** depicts the dimensions of the Airport’s safety and free areas.

Table 2-7 – Runway and Taxiway Safety Area Dimensions

	Runway 9L-27R	Runway 9R-27L	Runway 9C-27C	Runway 18-36
Runway Safety Area				
Length Beyond Runway End	1,000’	600’	240’	1,000’
Length Prior to Threshold	600’	600’	240’	600’
Width	500’	300’	120’	500’
Runway Object Free Area				
Length Beyond Runway End	1,000’	1,000’	240’	1,000’
Length Prior to Threshold	600’	600’	240’	600’
Width	800’	800’	250’	800’
Taxiway Safety Area **Width**	214’	79’	214’	171’
Taxiway Object free Area **Width**	320’	131’	320’	259’
Taxilane Object Free Area **Width**	276’	115’	276’	225’

Source: FAA AC 150/5300-13A, Airport Design

2.2.1.6. Runway Protection Zones (RPZs)

Per FAA AC 150/5300-13A, Runway Protection Zones (RPZ) are set in place ‘to enhance the protection of people and property on the ground.’ RPZs are most commonly located off the ends of each runway, and they are trapezoidal in shape. There are two types of RPZs; approach and departure. Dimensions for an approach RPZ are a function of the Aircraft Approach Category (AAC) and approach visibility minimum associated with the approach runway end, and they are typically larger than a departure RPZ. Departure RPZ dimensions are a function of the AAC and departure procedures associated with the runway. Typically, RPZs start at a location 200 feet beyond the end of a runway, however displaced thresholds and declared distances may require an approach RPZ to start at a location other than 200 feet beyond the runway end, and that is when two RPZs would be required. Approach and departure RPZs normally overlap. **Table 2-8** depicts the dimensions of the existing RPZ.

Table 2-8 – Runway Protection Zone Dimensions

	Runway 9L-27R		Runway 9R-27L		Runway 9C-27C		Runway 18-36	
	Approach	**Departure**	**Approach**	**Departure**	**Approach**	**Departure**	**Approach**	**Departure**
Length	2,500’	1,700’	2,500’ / 1,000’	1,000’	1,000’	1,000’	1,700’	1,700’
Inner Width	1,000’	500’	1,000’ / 500’	500’	250’	250’	1,000’ / 500’	500’
Outer Width	1,750’	1,010’	1,750’ / 700’	700’	450’	450’	1,510’ / 1,010’	1,010’

Source: FAA AC 150/5300-13A, Airport Design

2.2.1.7. Lighting, Marking, and Signage

A variety of lighting, marking, and signage are available at the Airport to facilitate identification, approach, landing, and taxiing operations. These aids are essential during operations at night and during adverse weather conditions. These systems, categorized by function, are further described in the following sections.

2.2.1.7.1. Identification Lighting

A rotating airport beacon light universally indicates the location and presence of an airport. The rotating beacon is equipped with an optical system that projects two beams of light (one green and one white) 180 degrees apart. The Airport's beacon is located on the west side of the airfield in the Airport industrial park area. Specifically, the Airport beacon is found at the intersection of Mellonville Avenue and East 29th Street and its elevation is 193 feet above mean sea level (AMSL). It was installed in 2010 and uniquely acts as a cell tower.

2.2.1.7.2. Obstruction Lighting

Airspace obstructions near the Airport are marked or lit at all times to warn pilots of their presence. Existing obstructions that cannot be removed are identified and lit. Those obstructions may be identified for pilots on approach charts and on the official Airport Obstruction Chart, published by the National Oceanic and Atmospheric Administration (NOAA).

2.2.1.7.3. Approach Lighting

There are three types of approach aids: electronic navigational aids, visual approach aids, and approach lighting. Approach Lighting Systems (ALS) are used in the approaches to runways as adjuncts to electronic NAVAIDS for the final portion of IFR approaches and as visual guides for nighttime approaches under VFR conditions. Approach lighting systems provide pilots with visual clues regarding aircraft alignment, roll angle, height, and position relative to a runway's landing threshold.

The Airport's Runways 9L, 27R, and 9R are each equipped with a medium intensity approach lighting system (MALS) with runway alignment indicator lights (RAILs) known as MALSRs. Those systems assist pilots transitioning from the cockpit instrument landing segment to the visual runway environment and provide a lighted approach path along the extended runway centerline. RAILs flash in sequence as a series of blueish-white lights moving toward the runway threshold. These lights effectively emphasize runway centerline alignment. Roll indication is emphasized by a single row of white lights located on either side and symmetrically along the column of approach lights.

Another of the Airport's approach light systems are Precision Approach Path Indicators (PAPIs). A PAPI is a system of lights located near a runway end which provides pilots with visual descent guidance information during an approach to that runway. That system typically has a visual range of approximately four miles. Runways 9L, 27R, 9R, 27L, 18, and 36 are each equipped with PAPI-4 (four-light unit) systems while Runways 9C and 27C are equipped with PAPI-2 (two-light unit) systems. All approach light systems are reported by SAA to be in good condition.

2.2.1.7.4. Runway End Identification Lighting

Runway End Identification Light (REIL) systems help pilots identify runway thresholds in areas of light pollution or large open spaces. REILs consist of two synchronized flashing unidirectional white lights situated near a runway's threshold. They are visible through 360 degrees of the azimuth and can be seen several miles from an airport under good visibility conditions. Following are the Airport's runway ends equipped with REILs: 27L, 18, 36, and 9C. SAA reports that all of the Airport's REIL systems are in good condition.

2.2.1.7.5. Runway Edge Lighting

Runway edge lights are white, visible through 360 degrees of the azimuth, and can be seen several miles from an airport under good visibility conditions. Runway edge lighting is used to outline the edges of a runway during periods of darkness or restricted visibility. These systems are classified in accordance with their intensity or brightness. The Airport implements High Intensity Runway Lights (HIRL) on Runways 9L-27R and 9R-27L. Runways 9C-27C and 18-36 are equipped with Medium Intensity Runway Lights (MIRL). All runway edge lighting systems are reported by SAA to be in good condition.

2.2.1.7.6. Runway Threshold Lighting

The identification of runway ends or thresholds assists pilots of approaching aircraft in much the same manner as other approach aids. Runway ends or displaced thresholds are given special lighting consideration. Threshold identification lights make use of a two-color lens: red and green. The green half of the lens faces the approaching aircraft and indicates the beginning of the usable runway. The red half of the lens faces the airplane on the rollout or takeoff, indicating the end of the usable runway. Each of the Airport's runway ends are equipped with threshold lights. The threshold lighting on Runways 9L, 9R, and 27R are each equipped with a continuous bar of light, augmenting each's precision approach lighting. SAA reports that the threshold lighting systems are in good condition.

2.2.1.7.7. Taxiway Lighting

The final segment of a flight commences with the taxi operation to the terminal gate, parking apron or hangar. Taxiway lighting, which delineates the taxiway edges provides guidance to pilots during periods of low visibility and darkness. The most commonly used type of taxiway lighting consists of a series of blue fixtures spaced a minimum of 200 feet apart along the taxiway edges. These lights provide taxiway alignment up to the apron. Excluding Taxiway F, all the Airport's taxiways are equipped with Medium Intensity Taxiway Lighting (MITL) spaced 75 feet apart on straight taxiway segments and varied distances along curved taxiway pavement. Most of the taxiway lighting network has been converted to a high efficiency, light-emitting diode (LED) system since the completion of the last AMPU. That system is reported by SAA to be in good condition.

2.2.1.7.8. Apron Lighting

The entire apron in front of the Airport's commercial terminal building is equipped with a floodlight system via a network of 12 high-mast light poles (one per gate). The Airport's newest apron, known as 'Romeo Ramp,' and is equipped with four high-mast floodlights around its landside border. However, most of the Airport's remaining apron areas are not lit. SAA reports that the apron lighting systems are in good condition.

2.2.1.7.9. Airfield Markings

The Airport's airfield markings are currently compliant with FAA standards and recommendations. Runway 9L, 9R, and 27R are marked with precision markings in accordance with the ILS precision approaches to those runway ends. Runway 18-36 is marked with non-precision markings consistent with the established RNAV GPS approach to the Runway 18 end. Runway 27L is also equipped with non-precision markings which support its RNAV GPS approach. Runway 9C-27C is marked with basic visual markings. Magnetic headings and variation have pushed all of the runways to their 'half-way point' and will require re-designation to 10-28 and 1-19 once paint conditions warrant remarking.

Taxiway markings are more basic in nature; however, FAA Advisory Circular 150/5340-1L, *Standards for Airport Markings*, identifies requirements for Part 139 certificated airports which include enhanced taxiway centerline markings, surface painted hold sign markings, and extension of the runway holding position markings onto paved shoulders, all of which are provided at the Airport.

2.2.1.7.10. Signage

The Airport's signage consists of all required signage for a Part 139 certified airport including airfield location, mandatory instruction, and runway hold position signage. The majority of signs are lit with LED systems, and they assist pilots in recognizing their position on the airfield and direct them to their desired locations. They are key components to ground operations as they provide air traffic control (ATC) personnel the ability to effectively relay direction to pilots. It is recommended that all signs which are not LED are upgraded when practical.

2.2.1.8. Land and Hold Short Operations

Land and Hold Short Operations (LAHSO) operations are an ATC procedure intended to increase airport capacity without compromising safety. Previously known as Simultaneous Operations on Intersecting Runways (SOIR), LAHSO has replaced the procedure by expanding to include landing operations to hold short of an intersecting runway or taxiway. Specific markings are placed on the runway pavement to depict the safe hold short line prior to the intersecting airfield pavement. LASHO markings and signage are located on three of the Airport's four runways. Runway 9R-27L is the Airport's sole runway that does not have LAHSO markings and signage.

2.2.2. Navigational Aids

Navigational aids, commonly referred to as NAVAIDs, assist pilots with en route navigation, approaches, and departures into and out of airports. They consist of both ground-based electronic systems and space-based satellite radio systems. NAVAIDs vary in sophistication. Typically, the degree of sophistication relates to the information provided to an approaching aircraft's pilot. The more sophisticated the NAVAID, the lower the minimums are at an airport. For that reason, instrument approaches and the NAVAIDs that make up the ground-based equipment required to perform the approach procedure are divided into two categories: precision and non-precision. A precision approach provides both horizontal and vertical guidance to pilots as their aircraft descends to land. A non-precision approach provides only horizontal guidance to the runway end.

The types of NAVAIDs available at an airport play an important role in use of the facility. Typically, pilots of corporate or commercial aircraft anticipate access to an airport in nearly all-weather conditions. Therefore, it is incumbent upon an airport to have NAVAIDs that allow for approaches to the airport during marginal and instrument flight conditions if it intends to attract or serve corporate or commercial aircraft.

Various types of NAVAIDs are utilized at the Airport. Ground-based electronic NAVAIDs that are located on or near the Airport are classified as en route NAVAIDs or terminal area NAVAIDs. Details on those two classes of NAVAID are discussed further in the following sections.

2.2.2.1. En Route Navigational Aids

En route NAVAIDs are designed to assist pilots with navigation between their origin and destination airports. En route NAVAIDs are established to maintain accurate en route air navigation. They use ground-based transmission facilities and onboard receiving instruments. There is one type of en route NAVAID in the Orlando operating area. The very high frequency (VHF) omnidirectional range (VOR) is a ground based NAVAID which transmits high frequency radio signals 360 degrees in azimuth from its station. These radio signals enable pilots to turn at a given point above the ground or fly along a radial and align with the station. VORs are often combined with distance measuring equipment (DME) or tactical air navigation equipment (TACAN). These emit signals enabling pilots to determine their line-of-sight distance from the facility. The TACAN also provides azimuth information for military aircraft.

In addition, VORs are used to define low altitude (Victor) and high altitude (Jet Route) airways through the area. Low altitude airways are designated from 1,200 feet AGL, up to but not including, 18,000 feet MSL (Class E airspace). They are generally used to accommodate lower-speed, non-jet aircraft. They are also used to vector jet traffic into and out of airports. Pilots flying to and from the Airport may use the Orlando VORTAC (VOR and TACAN) and/or the Ormond Beach VORTAC. The Orlando and Ormond Beach VORTACs are approximately 15 nautical miles (NM) south-southwest and 32.2 NM north-northeast of the Airport respectively.

2.2.2.2. Terminal Area NAVIDs and Landing Aids

Included in this group are NAVAIDs located at or near the airfield for providing aircraft guidance information while arriving, departing, or overflying the area under all weather conditions. Landing aids provide either precision or non-precision approaches to an airport or runway. Both precision and non-precision approaches provide runway alignment course guidance (horizontal guidance) to pilots, while precision approaches also provide glide slope information (vertical guidance) for descent purposes. The Airport has eight Instrument Approach Procedures (IAPs), three of which are instrument landing systems (ISL) and the other five are area navigation (RNAV) GPS procedures. Seven of the Airport's eight IAPs provide vertical guidance, therefore they are all considered precision approaches. Characteristics of each IAP are listed in **Table 2-9,** and descriptions of each type of procedure are provided in the following sections.

Table 2-9 – SFB Instrument Approach Procedure Summary

Instrument Approach Procedure			Aircraft Category			
			A	B	C	D
Runway 9L ILS or LOC	Straight-In ILS	Precision	255 – ½	255 – ½	255 – ½	255 – ½
Runway 9R ILS or LOC	Straight-In ILS	Precision	239 – ½	239 – ½	239 – ½	239 – ½
Runway 27R ILS or LOC	Straight-In ILS	Precision	245 – ½	245 – ½	245 – ½	245 – ½
Runway 9L RNAV (GPS)	LPV DA	Precision	255 – ½	255 – ½	255 – ½	255 – ½
Runway 9R RNAV (GPS)	LPV DA	Precision	239 – ½	239 – ½	239 – ½	239 – ½
Runway 18 RNAV (GPS)	LPV DA	Precision	249 – ¾	249 – ¾	249 – ¾	249 – ¾
Runway 27L RNAV (GPS)	LNAV MDA	Non- Precision	420 - 1	420 - 1	420 – 1½	420 - 2
Runway 27R RNAV (GPS)	LPV DA	Precision	245 – ½	245 – ½	245 – ½	245 – ½

Source: FAA, AirNav.com, 2020

2.2.2.2.1. ILS Systems

ILSs are considered a Precision Approach as an ILS system provides an approach path for alignment and descent of an aircraft on final approach to a runway. The system provides three functions: guidance, range, and alignment. Guidance is provided vertically by a ground-based glide slope antenna and horizontally by a localizer antenna. Marker beacons or Distance Measuring Equipment (DME) furnishes range. Approach lighting systems and runway edge lights supply visual alignment.

Currently SFB has a Category I ILS established for Runways 9L, 9R, and 27R. The ILS approaches to these runways use a standard 3.0-degree glide slope with a runway threshold crossing height of 45 feet for Runway 9R and 55 feet for both Runways 9L and 27R. The Airport's ILS approaches can be flown whenever the ceiling is 200 feet or greater and visibility is at least one-half mile.

2.2.2.2.2. RNAV-GPS

Area Navigation (RNAV-GPS) instrument approaches have become commonplace as GPS and Wide Area Augmentation System (WAAS) have become mainstream. RNAV-GPS approaches utilize a space-based radio-navigation system consisting of a constellation of satellites and a network of ground stations used for monitoring and control. The Airport is equipped with five RNAV approaches, four of which utilize WAAS and provide vertical course guidance. The RNAV approaches to Runways 9L, 9R, and 27R provide precision approach minima of half-mile visibility and decent altitudes (DAs) of 200 feet AGL. The other two RNAV approaches to Runways 18 and 27L provide minima of three-quarter mile visibility with 200 feet DA and one mile visibility with 400 feet DA respectively.

2.2.3. Commercial Passenger Facilities

2.2.3.1. Commercial Terminal Apron

The Airport's commercial service apron is approximately 67,500 square yards. It is in the immediate vicinity of the commercial terminal gates and supports commercial aircraft when navigating to and from and docking with the terminal concourse. The East Terminal Apron is roughly 27,250 square yards and is located immediately east of the commercial terminal apron. That apron area is currently used for aircraft maneuvering, equipment staging, and for remain overnight (RON) parking of aircraft. However, upon completion of the on-going terminal expansion, this apron will be occupied by the Airport's four newest terminal contact gates (Gates 1 – 4). The East Terminal Apron's strength is sufficient to support large, wide-body air carrier aircraft, e.g., B747, B767, B777, B787, A340, A350, A380, etc. The displacement of commercial terminal apron from the completion of the terminal expansion is offset from the newly constructed Romeo Ramp. The Romeo Ramp is located along Taxiway R and is approximately 35,400 square yards.

2.2.3.2. Commercial Terminal Building

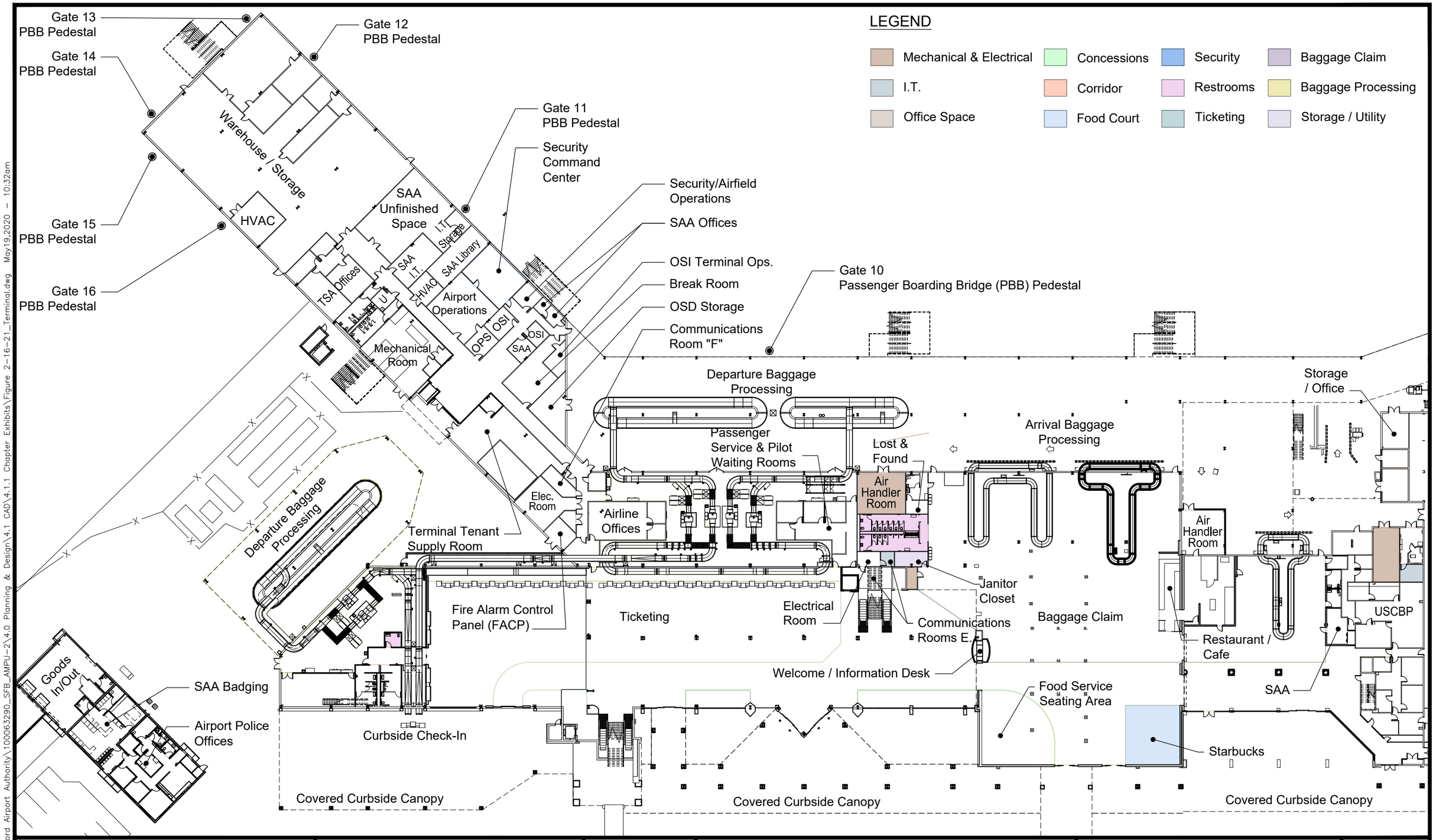
The Airport's commercial terminal facility is south of Runway 9C-27C and west of Runway 18-36. The terminal complex is accessible via East Lake Mary Boulevard by Red Cleveland Boulevard, as well as Airport Boulevard. Prior to 2020 the terminal complex was split between domestic (Terminal B) and international (Terminal A) passenger spaces. However, given both terminals' international sterile corridors, each has the flexibility to serve

domestic or international passengers, therefore the differentiation between the two dissolved, and it is currently referred to as simply the 'passenger terminal.' An international sterile corridor is a dedicated space where international passengers arrive or depart and are kept separate from domestic passengers. Those at the Airport allow for the flexibility to service domestic or international operations at Gates 5 through 13. However, Gates one through four and 14, 15 and 16 are limited to domestic passenger operations as they are not linked to the international sterile corridor.

The space previously known as the 'Domestic Terminal (Terminal B)' was originally constructed in 1992 and was expanded in 2000 and 2001. Like many areas of the terminal, that area is currently being expanded to nearly double the ticketing/check-in spaces (from 27 to 43 ticket counters), increase the linear pick-up/drop-off curb frontage, and expand the Airport's in-line baggage processing facilities, to include the Airport's first ever curb-side check-in area. On-going terminal construction is likely to be completed near the end of this AMPU planning process. As such, those expansions are considered 'existing' infrastructure for planning purposes even though they have yet to be commissioned.

The area previously known as 'Terminal B' has grown from approximately 166,000 square feet of conditioned space as reported in the Airport's 2012 AMPU to approximately 178,000 square feet (approximately 96,000 and 82,000 square feet on its first and second floors respectively). The first level of that area consists of a main lobby, ticketing, departure and arrival areas, Starbucks, a café, gift shop, and multiple baggage claim areas, all accessible to the public. Areas on the first level which require secured access control and are not accessible to the public include inbound and outbound baggage processing areas, airline offices, airport security and operations offices, terminal tenant supply rooms, mechanical, electrical, I.T. rooms, and warehouse storage space. Approximately 47,000 square feet of covered, secured, unconditioned space is primarily used for ground service equipment (GSE) storage and baggage processing functions. **Figure 2-16** depicts the first level of the Area previously known as 'Terminal B'.

Page intentionally left blank



OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N
0 25' 50'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International Airport Master Plan Update

Terminal Gates 10 - 16 First Floor

Figure 2-16

Page intentionally left blank

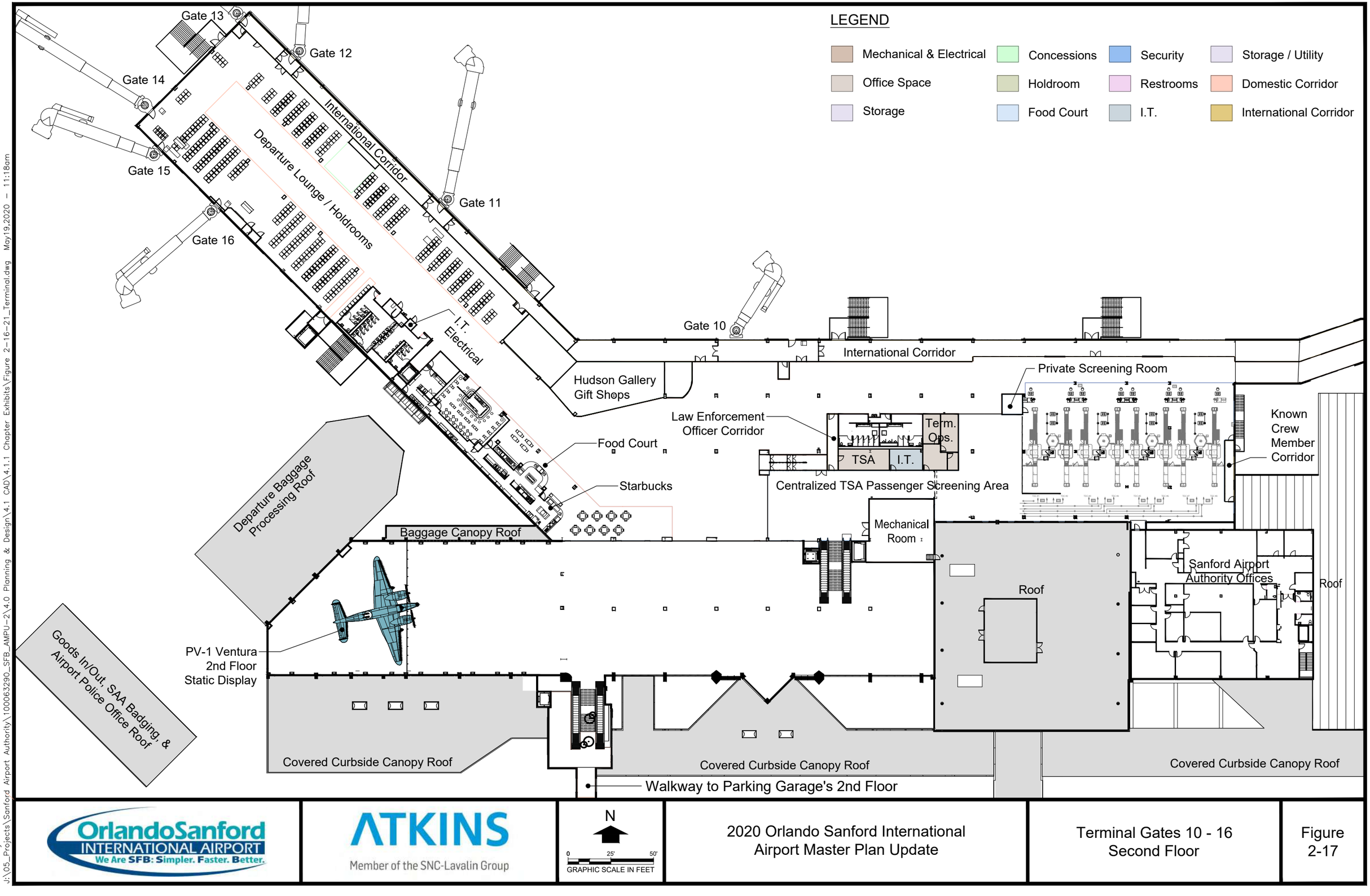
The second level of the area previously known as ‘Terminal B’ consists of a centralized TSA passenger screening area, a large gift shop, a food court including another Starbucks, other concession areas, and departure hold rooms for Gates 10 through 16. This area also houses airport operations and SAA offices. Making way for a new centralized passenger screening area, OSI, Inc. recently relocated its offices from just west of the existing passenger screening area to the Welcome Center building. **Figure 2-17** depicts the second level of the Area previously known as ‘Terminal B’.

The area previously known as the ‘International Terminal’ or ‘Terminal A’ was constructed in 1996 along with a 60,000-square-foot Federal Inspection Service (FIS) facility. The FIS was expanded in 2004 and 2005 to accommodate international traffic growth. This area is depicted on **Figure 2-18** and **Figure 2-19** and encompasses approximately 209,000 square feet of conditioned space (approximately 93,000 and 116,000 square feet on its first and second floors respectively). As is depicted in **Figure 2-18**, the majority of its first level consists of US Customs and Border Protection (USCBP) offices and the FIS Immigrations and Naturalizations processing areas. Another large portion of the first level consists of a new baggage claim area which provides three baggage claim islands. The baggage claim area is the only portion of the first level which does not require security screening or clearance and is accessible to the public. Other elements of the first level of this area consist of airline offices, pilot lounge and dispatch, duty free warehouse, and various storage space. Ground handling personnel offices are also located in a 2,600-square-foot space on the first level of the terminal pier directly underneath Gates 7 and 8. The first level also consists of approximately 45,500 square feet of covered, secured, unconditioned space primarily used for GSE storage and baggage processing functions.

As is depicted in **Figure 2-19**, the second level of the area previously known as ‘Terminal A’ is devoted to passenger departure lounges with supporting concessions including duty-free shopping, several restaurants and pubs, and a VIP lounge (Royal Palm Lounge). An unconditioned area approximately 5,600 square feet on the second level consists of a covered and screened outdoor space which is used as a smoking area. As was previously mentioned, OSI, Inc.’s offices are located adjacent to the Royal Palm Lounge, in the second level of the Welcome Center building, which is connected to the terminal via a second level enclosed walkway over the airport entrance road.

Figure 2-20 and **Figure 2-21** depict the newly constructed terminal expansion, which added four commercial passenger service gates to the Airport. The first level (**Figure 2-20**) of that expansion consists primarily of 14,000 square feet of covered, unconditioned space primarily used for GSE storage. There are two mechanical and I.T. rooms on the first level which make up approximately 4,500 square feet of conditioned space. The second level (**Figure 2-21**) is almost entirely made up of 20,600 square feet of a conditioned sterile corridor leading to Gates 1 through 4’s PBBs.

Page intentionally left blank



OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N

0 25' 50'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International Airport Master Plan Update

Terminal Gates 10 - 16
Second Floor

Figure 2-17

LEGEND

Mechanical & Electrical | Concessions | Security | Baggage Claim
I.T. | Corridor | Restrooms | Baggage Processing
Office Space | Food Court | Ticketing | Storage / Utility

MATCH LINE - A

Gate 5
PBB Pedestal

Stairwell to
Second Floor

Office
Space

Vacant

Restrooms

Office
Space

OSI
Storage

Swiss Port Pilot /
Dispatch Lounge?

Departure Baggage Processing

CBP/FIS?

Restrooms

Immigrations and
Naturalization

M

Elec.
Room

I.T.

CBP Arrivals Baggage

CBP/FIS?

Employee
Entrance

CBP
Agriculture

Air Handler
Room

Customs & Border Protection (CBP) / Federal
Inspection Service (FIS) Offices

Air
Handler
Room?

Restrooms

Baggage Claim

Duty
Free
Warehouse?

Restrooms

Riser Room

Covered Curbside Canopy

Covered Curbside Canopy

MATCH LINE - B (See Fig. 2-20)

Gate 7
PBB Pedestal

Gate 8
PBB Pedestal

Ground
Handling
Offices

I.T.

Gate 9
PBB Pedestal

Gate 6
PBB Pedestal

MATCH LINE - A

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N
0 25' 50'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International
Airport Master Plan Update

Terminal Gates 5 - 9
First Floor

Figure
2-18

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\Figure 2-16-21_Terminal.dwg May11,2020 - 8:33am

MATCH LINE - A

LEGEND

- Mechanical & Electrical
- Office Space
- Storage
- Concessions
- Holdroom
- Food Court
- Security
- Restrooms
- I.T.
- Storage / Utility
- Domestic Corridor
- International Corridor

Sterile Corridor

Gate 5

Alpha Duty Free Gift Shops

Screened Lanai

Smoking Lounge

Corridor to Gates 1 - 4

MATCH LINE - B (See Fig. 2-21)

Fire Alarm Control Panel (FACP)

Hudson's News Stand

Departure Lounge

Alpha Duty Free Gift Shops

Roof

Budwiser Tap Room Sanford

Kids Work

Air Handler Room

Food Court

Cleaning Office

Third Floor Access Corridor

Discovery Orlando Sanford

Available Concession Space

Stair Well

Covered Curbside Canopy Roof

Covered Curbside Canopy Roof

Restrooms

Restrooms

Red Cleveland Blvd. (Airport Entrance Road)

Walkway over Entrance Road to Royal Palm Lounge

MATCH LINE - C

Smoking Lounge

Gate 7

Gate 8

Sterile Corridor

Gate 9

Gate 6

MATCH LINE - A

MATCH LINE - C

Royal Palm Lounge

Restrooms

Airports World Wide (AWW) Offices

OrlandoSanford INTERNATIONAL AIRPORT We Are SFB: Simpler. Faster. Better.

ATKINS Member of the SNC-Lavalin Group

N

0 25' 50'

GRAPHIC SCALE IN FEET

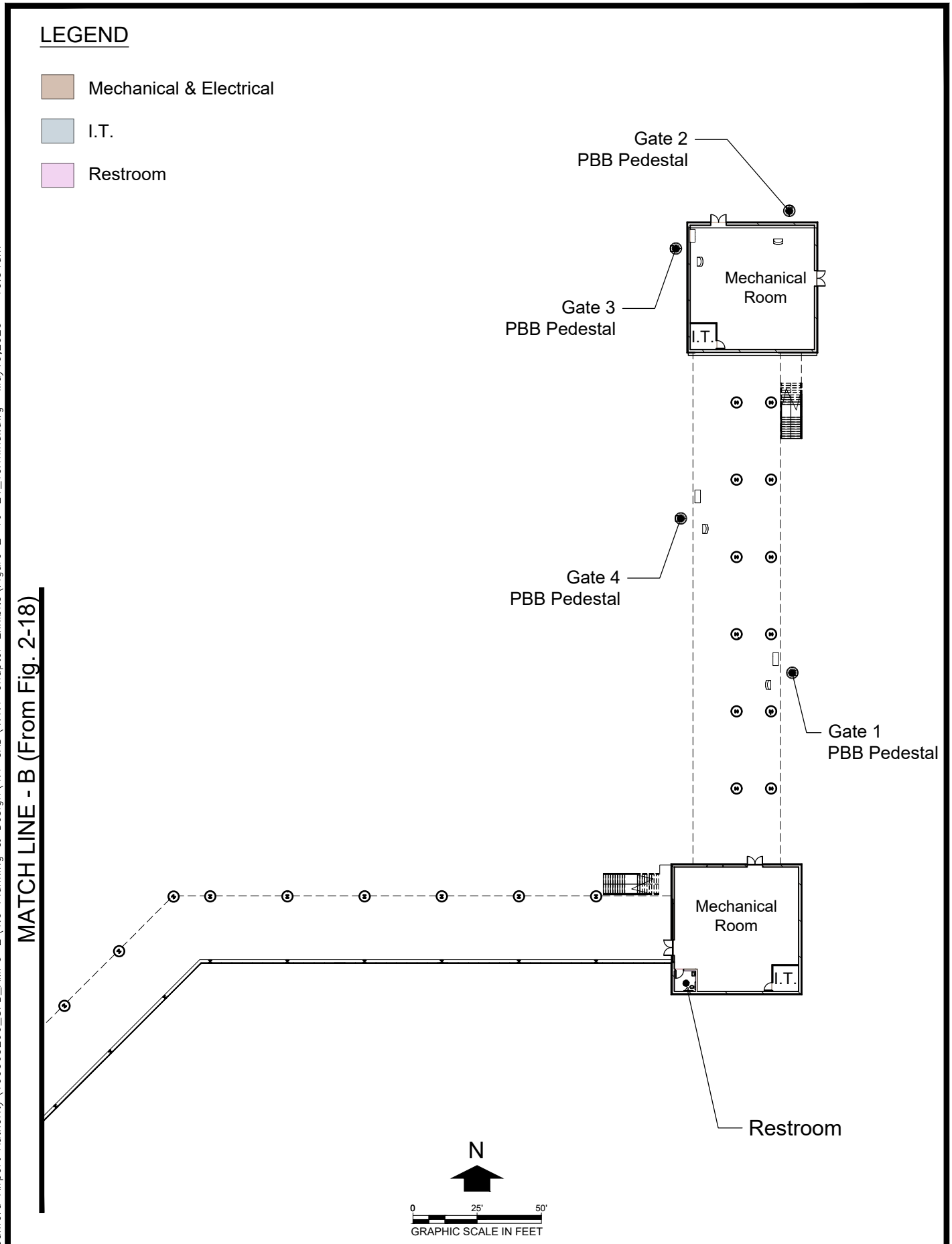
2020 Orlando Sanford International Airport Master Plan Update

Terminal Gates 5 - 9 Second Floor

Figure 2-19

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\Figure 2-16-21_Terminal.dwg May19,2020 - 1:19pm

Page intentionally left blank

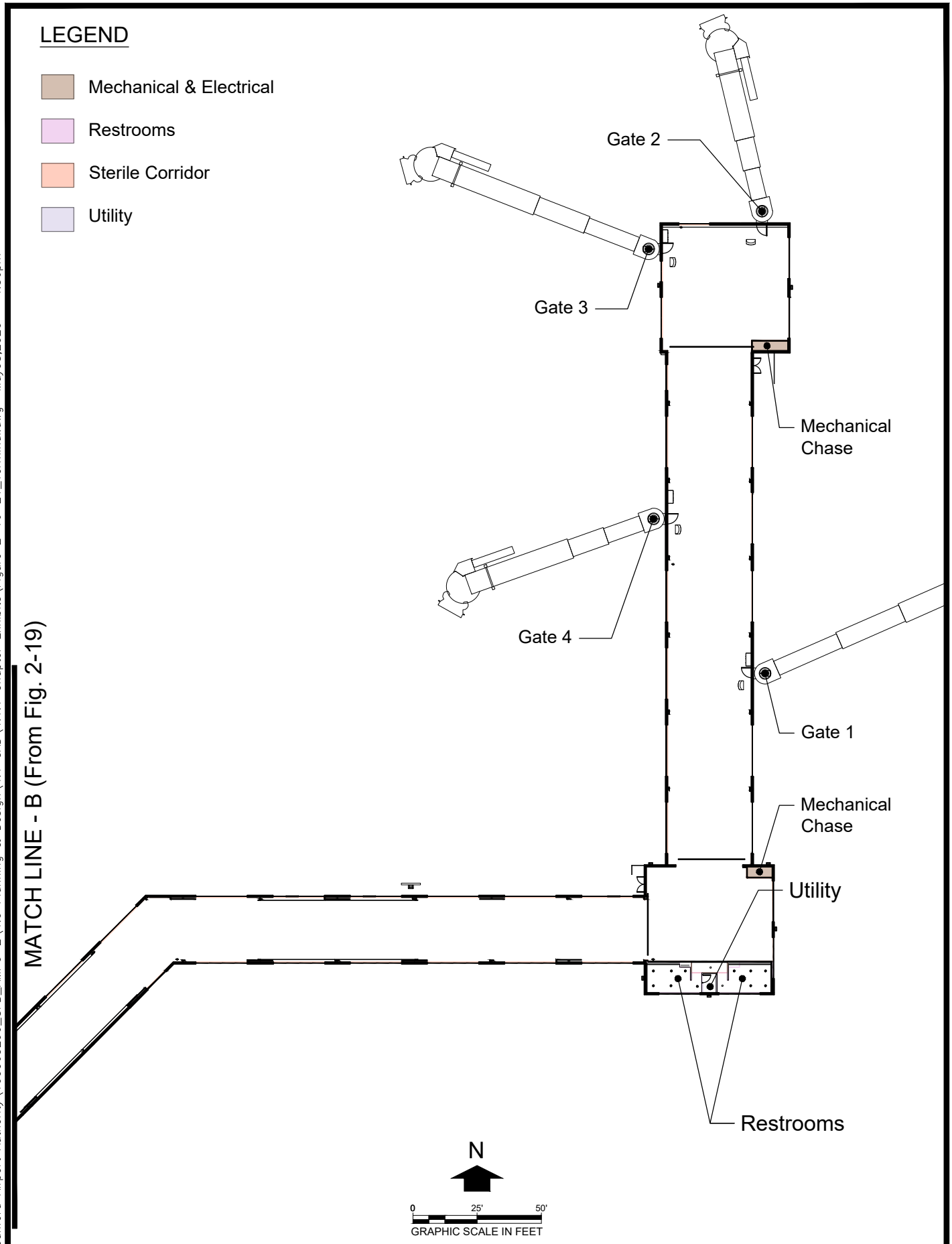


OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

2020 Orlando Sanford International
Airport Master Plan Update
Terminal Gates 1 - 4 First Floor

Figure
2 - 20



OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update
Terminal Gates 1 - 4 Second Floor

Figure 2 - 21

2.2.3.3. Access and Circulation

2.2.3.3.1. Ground Access System

The existing transportation network of the region is important in assessing the Airport's future development. The existing ground access system supports not only passengers coming to and from the Airport but cargo which is being transported in and out as well. The access system is well developed in the Sanford area and consists of highway, rail, and air service. A CSX railway shares the Airport's western border and has several spurs on airport property which provide rail access to the Airport's industrial tenants. The closest passenger rail stations are SunRail's 'Sanford Station' and 'Lake Mary Station' which are both about a seven-mile drive to or from the Airport's terminal curb. Major highways in the area consist of U.S. Highway 17-92, SR-46, SR-415, County Road 427, and State Highway 417 (the Central Florida GreeneWay). I-4 is the nearest interstate, located approximately seven miles west of the Airport (see **Figure 2-2**).

2.2.3.3.2. Airport Access

The transition to Greater Orlando's newest international airport began in the early 1990s. As construction of the Central Florida GreeneWay created a direct highway link between the Airport and the resorts of Kissimmee and Walt Disney World, SAA authorized construction of a new passenger terminal (previously known as 'Terminal B'), which was completed in 2001.

Regional access to the Airport is provided via I-4, I-95, and the Central Florida GreeneWay. I-4 runs east and west through the central part of Florida, connecting Tampa, on the west coast, with Daytona Beach on the east coast. I-95 is a north-south route, located along the east coastline connecting Jacksonville and Miami. The Central Florida GreeneWay is an expressway located within one mile of the Airport connecting the City of Sanford with eastern Orlando, Kissimmee/St. Cloud area, and Disney attractions. The Airport is situated between these three highways, with I-4 located to the west, I-95 to the east, and the Central Florida GreeneWay located to the southwest.

SR-46 is an east-west highway, providing access to the Airport from the west via I-4 and from the east via I-95. The Florida Department of Transportation (FDOT) finished widening SR-46 in 2019 from two lanes to four lanes between Mellonville Avenue (west of the Airport) and SR-426 (east of the Airport). The four-lane East Lake Mary Boulevard encircles airport property by connecting with SR-46 at the Airport's northeast property corner and travelling south and west to connect with the Central Florida GreeneWay.

Local airport access is provided via a variety of routes. From the north, the Airport may be accessed by driving south on County Road 427 (Sanford Avenue), and turning east onto Wylly Avenue, ultimately entering the Airport from the west. Another option is to continue south on County Road 427 and turning east onto Airport Boulevard.

The Airport can be accessed from the south via US Highway 17-92, County Road 427, and East Lake Mary Boulevard. **Figure 2-2** illustrates the roadways within the Airport's vicinity.

2.2.3.3.3. Terminal Building Curb Frontage

The terminal building curb provides space for passenger and baggage drop-off and pick-up. Approximately 906 feet of total frontage exist, of which 764 feet is usable for pick-up and drop-off. The remaining 142 feet of curb frontage consists of pedestrian crosswalks. The terminal curb road consists of four traffic lanes: two for loading and unloading baggage, and two through lanes.

2.2.3.4. Automobile Parking Facilities

Vehicular parking in the Airport's terminal area includes separate parking areas that can be categorized as public parking, employee parking, and seasonal/discretionary parking. **Figure 2-22** and **Figure 2-23** identify the various automobile related facilities near the terminal area.

2.2.3.4.1. Public Parking

There are five public parking facilities provided at the Airport; the Cell Phone Lot (Lot C), Economy Lot (Lot E), Hourly Lot (Lot H), Garage (Lot G), and Long-term Lot (Lot L). The Cell Phone Lot is located off Red Cleveland Boulevard, just north of the Vigilante memorial aircraft display. It evolved from a small, unmarked gravel area in 2010 to its current square paved area of approximately 26,900 square yards able to efficiently accommodate approximately 70 standard sized vehicles. Parking in the cell phone lot is free. It is intended to reduce the number of vehicles traversing the terminal curb, thereby relieving curb-side vehicle congestion. Overnight parking in the cell phone lot is prohibited as it is not intended to store unoccupied passenger vehicles.

Page intentionally left blank

Legend

- Public Parking
- Seasonal Parking
- Employee Parking
- Rental Car Facilities
- Bus/Taxi/TNC Area

Passenger Terminal

Hourly Parking 'Lot H'
(≈230 vehicle spaces)

Red Cleveland Blvd

Welcome Center

Parking Garage 'Lot G'
(830 spaces)

Bus/Taxi/TNC

Enterprise, National, Avis, Hertz, Budget Return Lot
(154 spaces)

Enterprise, National, Avis/Budget Ready Lot
(165 spaces on 1.7 acres)

Hertz/ Dollar/ Thrifty Ready Lot
(162 spaces)

Hertz/Dollar/Thrifty Rental-Car Washing and Servicing Area
(8.2 acres)

Control Tower Ln

Overflow Grass Lot
(≈300 vehicle spaces)

Economy Parking 'Lot E'
(608 vehicle spaces)

Cleveland Ave

Hangar Rd

Employee Parking Lot
(≈250 vehicle spaces)

Airline Ave

Long-Term Parking 'Lot L'
(806 spaces)

Alamo Rental Car Return, Washing and Servicing Area

Alamo Rental-Car Ready Lot
(375 spaces)

Alamo Employee Lot (74 spaces)

Police Vehicle Inspection Station

Red Cleveland Blvd

E Airport Blvd

E Airport Blvd

Enterprise Washing and Servicing Area

Seasonal 'Lot 1'
(≈760 vehicle spaces)

Golden Lake

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N

0 250' 500'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International Airport Master Plan Update

Vehicle Facilities ≤ Half Mile from the Terminal Area

Figure 2-22

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\Figure_2-22 & 23_Vehicle Facilities.dwg Jun 18,2020 - 1:04pm

Legend

- Public Parking
- Seasonal Parking
- Rental Car Facilities
- Bus/Taxi/TNC Area

E 30th St

Seasonal RAC Storage Lot (1.7 acres)

TNC Staging Lot (60 spaces on 1 acre)

Hertz Vehicle Washing and Servicing Area (4.5 acres)

Seasonal 'Lot 2' (≈525 vehicle spaces on 5 acres)

Avis/Budget Vehicle Washing and Servicing Area

Mellonville Ave

Carrier Ave

E Airport Blvd

Taxiway S

Taxiway R

Taxiway R

36

Cell Phone Lot (≈70 spaces on 0.7 acres)

Red Cleveland Blvd

Marquette Ave

N

0 200' 400'

GRAPHIC SCALE IN FEET

OrlandoSanford INTERNATIONAL AIRPORT We Are SFB: Simpler. Faster. Better.

ATKINS Member of the SNC-Lavalin Group

2020 Orlando Sanford International Airport Master Plan Update

Vehicle Facilities ≥ Half Mile & ≤ 1 Mile from the Terminal Area

Figure 2-23

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\Figure_2-22 & 23_Vehicle Facilites.dwg Jun18,2020 - 11:30am

What was once a seasonal turf overflow parking lot became the economy parking 'Lot F' when it was paved, marked and lit in 2016. Lot E is at the southeast corner of the intersection of Red Cleveland and Airport Boulevards, and the rate to park there is $13 per day. There are 596 parking spaces and 12 spaces for the disabled in the economy lot. During peak periods approximately 300 more vehicle spaces are provided in a seasonal turf lot adjacent to the northern edge of Lot E. Lot E is served by a shuttle bus every 15 minutes which transports passengers to and from the terminal curb. A concrete sidewalk connects the lot to the terminal curb if someone didn't want to utilize the shuttle bus.

The closest lot to the terminal is the Hourly parking 'Lot H', which is due east of the terminal building adjacent to the international ticketing area. Lot H was utilized primarily by employees, however the Airport's increase in passenger traffic has necessitated its repurposing. Lot H had a capacity of storing 345 vehicles, however the ongoing terminal expansion project required the removal of over 100 vehicle spaces and 8 spaces for the disabled. As such, Lot H currently has capacity for storing 230 vehicles. The first 15 minutes of parking is free, and then the rate is $2 for every 20 minutes with a maximum daily charge of $28.

The vehicle parking garage 'Lot G' is due south of the area previously known as the 'Domestic Concourse.' It was opened to the public in August 2007. The parking garage is predominantly used for short- and long-term parking, offering 830 public parking spaces in its five levels. The public parking rate for the garage is $2 per 20 minutes up to a maximum daily rate of $17. The garage has a direct connection to the terminal building via an enclosed pedestrian bridge from the second floor of the garage which leads to an elevator and escalators providing access to the domestic passenger ticket counter area.

The long-term parking 'Lot L' is located south of the parking garage, is slightly farther from the terminal building. It has a total capacity of 806 vehicles and is the second most economical parking option constantly available to Airport users. The current parking rate for the long-term lot is $2 per 30 minutes up to a daily maximum rate of $14.

2.2.3.4.2. Seasonal Parking

The seasonal lots are unpaved areas used for overflow parking most typically experienced during the winter holiday season. The Airport utilizes two such turf lots. While the capacity, fee structure, and operation of the seasonal overflow lots are likely to change annually, typically the Airport charges flat parking rates based on the number of days a car is parked. The Airport offers shuttle buses every 15 minutes between the seasonal overflow parking areas and the terminal building. When in use the seasonal lots are lit by portable gas generated flood lights for safety and security. The current fee structure for the seasonal lots is $10 per day up to a weekly maximum rate of $50 and a total maximum of $100.

Seasonal 'Lot 1' is at the southeast corner of the Airline Avenue, Airport Boulevard intersection. It has the capacity to house approximately 760 vehicles. Seasonal 'Lot 2' is east of the northeast corner of the intersection of Mellonville Avenue and Airport Boulevard. It has the capacity to house approximately 525 vehicles. Both lots are opened at the discretion of the Airport based on anticipated demand for parking facilities during peak periods.

2.2.3.4.3. Employee Parking

Airport employees have a designated employee parking lot, known as 'Lot E'. It is west of the long-term lot and provides approximately 250 vehicle parking spaces. The employee lot is connected to the terminal building via a sidewalk which parallels Airline Avenue.

2.2.3.5. Ground Transportation

The Airport's ground transportation services have historically experienced large demand levels resulting from passengers consisting mainly of tourists en route to one of Orlando's many area attractions. The Airport's ground transportation services include rental cars, busses, limousines, taxi service, and rideshare companies Uber and Lyft. Figure 2-19 and **Figure 2-20** previously identified the various ground transportation facilities located in the Airport's terminal area.

2.2.3.5.1. Rental Cars

Eight rental car companies currently provide services at the Airport. They include Alamo, Avis, Budget, Dollar, Enterprise, Hertz, National, and Thrifty. Each have a rental counter and office space located in the Welcome Center building across the street from the terminal curb. Dollar and Alamo both have large independent facilities within the Airport's terminal area used for washing and servicing vehicles and additional parking of vehicles ready for rental. Specifically, Dollar and Thrifty currently have parking positions for 305 vehicles in their designated private parking area, and Alamo currently maintains 650 parking positions. The need for rental car ready space has grown to the point that the Airport's short-term parking lot was converted to such in 2017. This converted lot has 154 standard vehicle parking spaces and four designated spaces for disabled drivers or passengers.

2.2.3.5.2. Taxi/Bus/Limo

There are over 100 companies which provide either taxi, shuttle bus, limo, and other pre-arranged transportation options to the Airport's travellers. The designated pick-up zone for taxi, and pre-arranged shuttle services is adjacent to the western edge of the Welcome Center which is directly across the street from the passenger terminal. This area contains open air covered canopies for passenger comfort and convenience. There is approximately 200 linear feet available for taxis and shuttles (estimated space for four taxis and two shuttles). Approximately 320 linear feet are available for larger buses (estimated space for four buses). Also located in this area are approximately 10 parking spaces for taxis, limos, and shuttles and four spaces for airport operations vehicles.

2.2.3.5.3. Ride-share

The aviation industry is widely referring to a rideshare company as a Transportation Network Company (TNC). The two most prolific TNCs are Uber and Lyft, both of which provide their services to the Airport's users. TNCs share the same pick-up zone as taxi and buses previously mentioned. However, they are not staged in that location, but rather in a designated TNC staging lot located at the intersection of East 29th Street and Carrier Avenue. A geofence has been established to provide TNC drivers a first-in, first-out (FIFO) experience which ensures fairness and that TNC vehicles are only taking up space along the terminal curb facilities when they are summoned, thereby reducing curb side congestion.

2.2.4. General Aviation Facilities

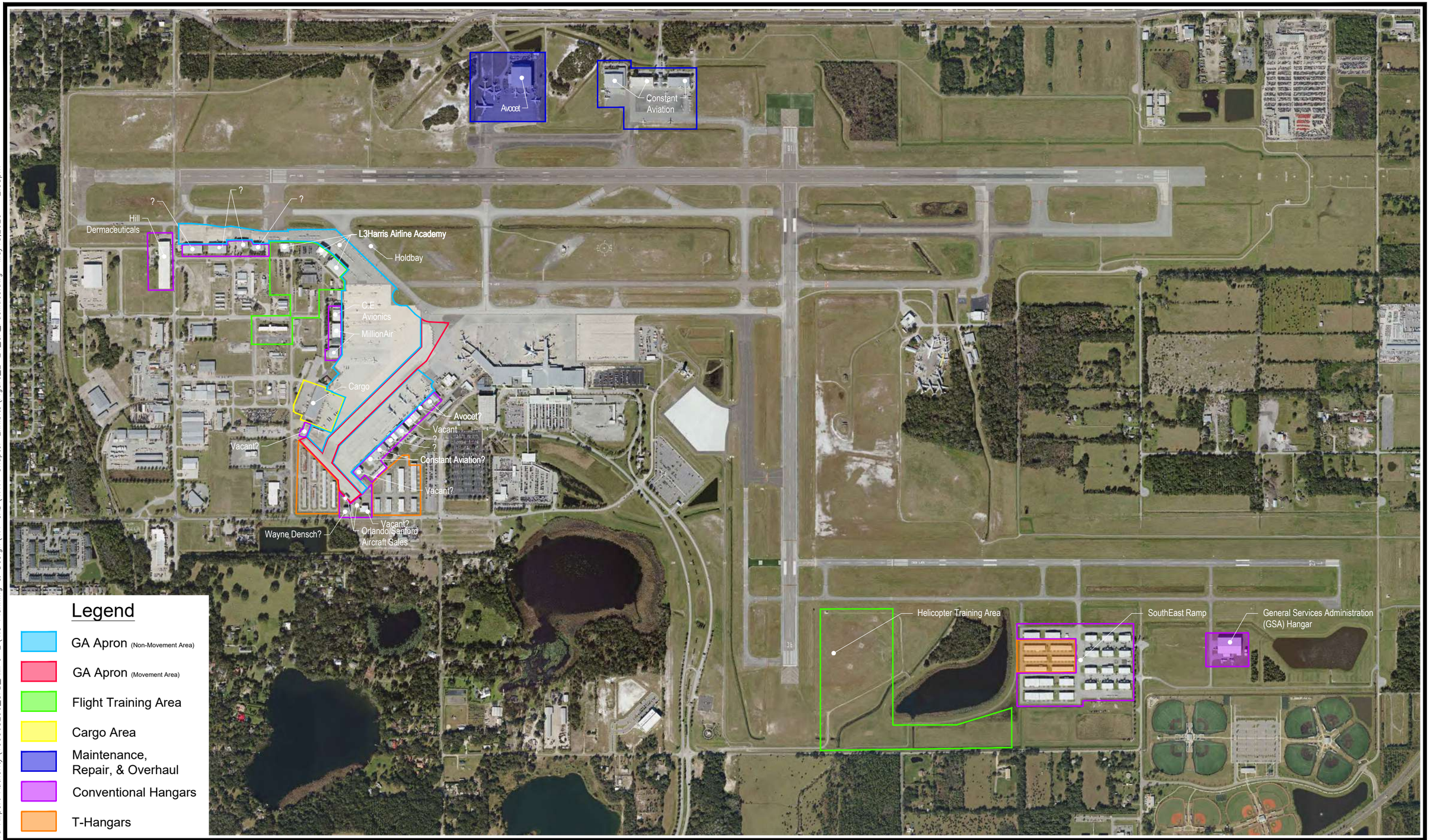
The Airport's GA activity consists primarily of corporate, flight training, and recreational flying operations. The facilities associated with those types of operations include aircraft storage hangars, based and transient aircraft tie-down aprons, fixed base operators (FBOs), and GA vehicle parking. Presently, a total of 348 aircraft are based at the Airport. The Airport's based aircraft mix consists of 222 single-engine, 47 multi-engine, 14 turbo-prop, 59 jet aircraft, and 6 helicopters. **Figure 2-24** depicts Airport's GA facilities.

2.2.4.1. Aircraft Storage Buildings/Hangars

Storage needs for GA aircraft often reflect an airport's local climatic weather conditions. In addition, the size and sophistication of an airport's based aircraft fleet reflects the types of hangars needed. In general, aircraft with higher values are more likely to be stored in larger, more secure facilities. There are two types of hangar space available at the Airport; T-hangars and conventional hangars.

2.2.4.1.1. Conventional Hangars

A conventional hangar is typically a rectangular or square shaped facility and can hold multiple aircraft while also allowing for additional equipment to be stored within the facility. These hangars are often stand-alone structures, however they can also be connected. Conventional hangars provide greater flexibility than T-hangars because they do not have interior support structures that limit aircraft positioning. They are usually equipped with utilities such as electricity, water, and possibly sewer services. A review of the Airport's facilities reveals a total of 49 conventional hangar buildings. Some of those hangar buildings contain multiple bays. For example, the 18 conventional hangar structures on the South East Ramp complex consist of 24 corporate hangars with 12 offices, 42 large box hangars, and 8 small box hangars (74 total bays). Other conventional hangars are intended to store multiple aircraft, such as those found along Hangar Road, or those associated with FBO or MRO operations.



OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N

0 500' 1,000'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International Airport Master Plan Update

General Aviation, Cargo, and Other Tenant Facilities

Figure 2-24

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\Figure_2-24_GA_Facilities.dwg May18,2020 - 2:58pm

Page intentionally left blank

2.2.4.1.2. T-Hangars

T-Hangars are designed to maximize aircraft storage utilization while minimizing both cost and utilized land. They typically allow for the complete protection of aircraft stored inside and are often scaled for small recreational aircraft. These facilities are usually rectangular and store aircraft in a line by alternating direction of aircraft by nose and tail.

The Airport's T-hangar facilities are found primarily in two areas. The original T-Hangar area consists of 13 buildings, containing a total of 106 units for aircraft storage. Those buildings are located on the south side of the West GA Apron. Of the 106 units, 32 are built for typical twin-engine aircraft and the remaining 74 were built for single-engine aircraft. The South East Ramp hangar complex was established in 2005 and is adjacent to Runway 9R-27L. This complex contains six T-Hangar buildings (four large T-hangar buildings and two small T-Hangar buildings) which provide 34 units for light-twin aircraft and 24 units for single-engine aircraft.

2.2.4.2. General Aviation Apron Areas

The Airport contains multiple GA apron areas, located on its west, north, and east sides, which serve a variety of airport tenants' aircraft parking and tie-down needs.

2.2.4.3. Fixed Base Operators (FBOs)

Up until March 2019, the Airport relied on two large FBOs to provide fueling, maintenance, and terminal facilities to small aircraft GA and corporate users. Those FBOs include Constant Aviation and MillionAir. However, due to the increase of corporate aircraft maintenance needs, Constant Aviation has turned its focus on the growing demand of aircraft maintenance leaving MillionAir as the Airport's sole FBO provider.

2.2.4.3.1. MillionAir

MillionAir is located on the West Apron adjacent to the L3Harris Airline Academy and the Air Cargo operations area. The main facility is 30,955 square feet, of which 6,955 square feet is used as office, administration, lounge, and flight planning space. The main hangar is approximately 24,000 square feet with 11,490 square yards of adjacent apron space which is equipped with roughly 15 universal tie-down spaces. MillionAir maintains a secondary hangar, measuring approximately 14,400 square feet in area.

MillionAir provides fuel services to its customers via four 20,000-gallon Jet-A tanks and one 20,000-gallon AvGas tank located at the fuel farm on East 30th Street. MillionAir recently acquired control of Constant Aviation's two 20,000-gallon fuel tanks; one Jet-A and one AvGas tank. Fuel dispersal to aircraft is provided by MillionAir via multiple fuel trucks. MillionAir's private automobile parking area allows for 41 parked vehicles.

Other aircraft services currently provided by MillionAir include bottled oxygen, parking, heavy aircraft maintenance including power plant, avionics services, aviation accessories, catering, pilot supplies, car rentals, and courtesy transportation.

2.2.4.4. Other Aviation Tenants

The Airport is home to several other aviation tenants. Tenant businesses include aircraft and avionics maintenance operators, flight schools, aircraft/helicopter manufacturers, aircraft sales and rentals, and small air taxi and charter operators. The following sections discusses the Airport's major tenants in further detail.

2.2.4.4.1. Avocet MRO Services

Avocet is a FAA and European Union Aviation Safety Agency (EASA) certified MRO provider who has conducted aircraft maintenance for over 25 years. Avocet has recently pioneered the standard process of converting a passenger Airbus A321 to a freighter aircraft. Over the next five years it is estimated that 1,600 A321 aircraft will be converted worldwide, and Avocet is projecting to handle over 60 of those conversions at the Airport. Avocet's hangar and apron are located due west of the Constant Aviation Apron. Avocet leases various other facilities on the Airport. The SAA constructed a new 44,000-square-foot hangar designed to accommodate a B767-300 aircraft in January 2011. That hangar includes approximately 4,000 square feet of shop space and 5,300 square feet of office space.

As stated previously, Avocet's operations are expected to steadily grow throughout the planning period's mid-term. Avocet's representatives have expressed to SAA the likely need for additional hangar and apron space to keep up with their expected increases in MRO activity in the immediate future.

2.2.4.4.2. CE Avionics

CE Avionics is one of the Airport's longest running tenants, established at the Airport in 1970. Representing all major aircraft manufactures, CE Avionics provides complete sales, installation, and service of avionics, autopilots, and flight instrumentation. CE Avionics conducts their main operations from a single 12,000-square-foot corporate box hangar (100 x 120 feet) and 4,000-square-foot office and shop space (100 x 40 feet) adjacent and due north of the MillionAir FBO.

CE Avionics' clients consist mainly of corporate aircraft which are no longer covered by their factory warrantees, and approximately 75 percent of their clients are not based at SFB. Approximately 25 percent of their clients are local, one of which is the L3Harris Airline Academy, its 'next door neighbor' which brings an average one aircraft per day for maintenance and repair.

Some of the largest aircraft types that CE Avionics services include King Airs, Cessna Citations, Falcon 400s, Hawker 900 and 950s, and Gulfstream G-IVs, G-Vs, and G-450s. CE Avionics' business is not limited to aircraft physically located at the Airport. They dispatch mobile ground units to any airport in Central Florida (from as far south as Boca Raton to as far north as Jacksonville), providing on-demand service. Approximately 30 to 40 percent of CE Avionics' installations are conducted in that manner.

CE Avionics' 18,000-square-foot aircraft parking apron was fully reconstructed between 2015 and 2017. Their vehicle parking area abuts their office and shop space and consists of 15 paved parking spaces, but with 23 employees their vehicle parking area is over capacity.

A meeting with CE Avionics revealed that their sales are expected to double, and they are looking to hire 15 additional employees in the next five years. According to CE Avionics' key staff, their facilities at the Airport need to grow commensurately. That rapid growth projection partly stems from the FAA's mandate that all aircraft operating in any airspace requiring a transponder be equipped with an Automatic Dependent Surveillance-Broadcast (ADS-B) by January 1, 2020. The FAA's final rule which established the ADS-B mandate was published in May 2010, and the FAA's public communication since then has remained clear that there will be no extensions to their January 1, 2020 deadline. Only aircraft which are flown in uncontrolled airspace or those without electrical systems (i.e. hot air balloons and gliders) are exempt from the mandate.

2.2.4.4.3. Constant Aviation

Constant Aviation announced its acquisition of StarPort Aviation in March 2017. As previously mentioned, Constant was one of the Airport's two FBOs up until March 2019. Constant specializes in airframe and engine maintenance, major repairs, avionics, interior refurbishment, paint, parts distribution and accessory services and is one of the fastest growing MROs in the country. In addition to SFB, they have branches at Cleveland Hopkins International Airport (CLE), Cuyahoga County Airport (CGF), Phoenix-Mesa Gateway Airport (IWA), and McCarran International Airport (LAS). They also have 'aircraft on ground' (AOG) mobile response teams which enable them to provide maintenance, avionics and structure technicians anywhere in the country.

Constant's main facility is on the north side of Runway 9L-27R just off SR 46, though they utilize several facilities at various locations on the Airport. Constant's main facilities are the Airport's closest to the approach end of Runway 18 and consist of one 12,000-square-foot office building and passenger lounge and two 20,000-square-foot hangars with room for up to four Gulfstream Vs, and a 30,000-square-foot maintenance hangar flanked by approximately 17,000 square feet of office space. Their aircraft parking apron is approximately 27,800 square yards. Constant's main ramp can withstand the weight of a Boeing 727 (170,000 pounds) and has 18 anchored tie-down positions for smaller aircraft. As was previously mentioned, they have a 40,000-gallon fuel farm (two 20,000 gallon tanks; one Jet-A and one Avgas) which is now owned and operated by MillionAir. The typical aircraft fleet served by Constant includes Bombardier, Dassault, Textron (Hawker/Beechcraft), Embraer, Nextant, and Gulfstream aircraft.

Constant also utilizes a 20,000-square-foot hangar with approximately 2,000 square feet of office space due south of the approach end of Runway 9L, adjacent to Hill Dermaceuticals. That hangar facility is equipped with approximately 5,900 square yards of aircraft parking apron and a 17-space vehicle parking lot. Finally, Constant utilizes two 8,100-square-foot (90 x 90 feet) hangars connected to the Airport's west ramp located on Hangar Road.

Constant's main automobile parking lot has the capacity for roughly 150 vehicles, eight of which are reserved for customers. However, the company currently employs 216 people and expect to grow by 30 to 50 people in the next year. As such, their representatives indicated that Constant's designated parking infrastructure is currently deficient.

2.2.4.4.4. Hill Dermaceuticals

Hill Dermaceuticals (Hill) is a privately-owned pharmaceutical company that develops and manufactures innovative dermatology products for children and adults. Hill provides unique products that enhance the treatment of difficult to treat dermatologic diseases, and their sole purpose is 'to serve the field of dermatologic diseases exclusively, to the very best of its ability.' Hill was the first industrial business to be built at the Airport since 1987.

Hill's main facilities were originally built in 1999 and consist of a 7,500-square-foot (60 x 125 feet) aircraft hangar and a 1,040 square yard (125 x 75 foot) aircraft parking apron southwest of Runway 9L's approach end. They have a 10,000 gallon above ground fuel tank at the western edge of the apron. Their Good Manufacturing Practices (GMP) facility is connected to the southern edge of their hangar and is 57,500 square feet (125 x 460 feet). As such, their hangar and GMP facility, which are connected, make up 65,000 square feet, the Airport's largest building aside from its terminal facilities. The GMP is flanked with vehicle parking able to park 28 and 20 vehicles on its east and west sides, respectively. The northwest corner of the GMP is equipped with a truck dock.

Hill has expanded its main facilities twice since 1999. In 2002 and 2008 they extended their GMP to the south by approximately 160 feet (20,000 square feet) and 80 feet (10,000 square feet) respectively. Between 2016 and 2017 Hill built another facility on airport property, just north of the Seminole County Supervisor of Elections building, which is at the northeast corner of the intersection between Airport Boulevard and Mellonville Avenue. Hill's new building is approximately 19,500 square feet and is equipped with a truck dock, and a 24-space vehicle parking lot. As such, Hill's building facilities have averaged an annual expansion of 2,750 square feet from 1999 to 2017.

2.2.4.4.5. L3Harris Airline Academy

The majority of the Airport's pilot instruction is performed by L3Harris Airline Academy, which was previously Aerosim Flight Academy. L3Harris is an accredited, full-service flight training school, offering flight training (private, instrument, commercial, ATP, and recurrent training), ground school, and pilot supplies. L3Harris currently bases 105 aircraft at the Airport; 48 Cessna 172s, 25 Cirrus SR20s, 23 Piper Seminoles, 5 Diamond DA42s, 6 Piper Arrows, and 4 King Air C-90s. In 2018, L3Harris generated an average of 1,100 flights per week, and that steadily increased throughout 2019.

The Academy operates out of seven buildings on the airfield. They have a dedicated Testing Center building (2749 Flightline Avenue) which is 1,685 square feet consisting of computer testing cubicles. Their course classrooms are in a 17,235-square-foot building at 2700 Flightline Avenue Their administration building contains offices and briefing rooms and is 8,550 square feet at 2694 Flightline Avenue Their flight operations building is 12,100 square feet at 2649 Flightline Avnue, and consists of aircraft dispatch, offices, and a retail supply store. L3Harris' largest building is a 39,072-square-foot residential dormitory for students at 1345 East 28th Street. Their Part 142 training program is in a 10,000-square-foot hangar and office at 1320 East 26th Place. Their shipping and receiving as well as storage for aircraft parts, GSE and personnel is contained in an 8,640-square-foot building at 1350 East 26th Place.

Their aircraft are parked in approximately 100 apron tie-downs, in a non-nested configuration which is safer and more efficient especially with student pilots. However, the flight school is running out of ramp and hangar space, so aircraft parked in nested rows may be required temporarily until additional apron and or hangar space is made available.

L3Harris conducts their own aircraft fueling operations via fuel trucks. Their fuel is stored in two 10,000-gallon AvGas fuel tanks, one 500-gallon MoGas (unleaded aviation fuel) tank, and one 20,000-gallon Jet-A fuel tank. Their operations average a monthly fuel consumption rate of 50,000 gallons, 7,000 gallons, and 1,000 gallons for AvGas, Jet-A, and MoGas respectively.

L3Harris' vehicle parking areas consist of 156 paved parking spots, nine of which are reserved for visitors, 14 are reserved for employees, seven spots for fleet vehicles, and 126 spaces available to all. However, the paved parking area is inadequate for L3Harris' needs, therefore grass overflow lots are consistently used.

2.2.4.4.6. South East Ramp

The South East Ramp private hangar complex was established in 2005 and has over 275,000 square feet of hangar facilities for lease in 24 buildings. South East Ramp provides a wide range of hangar types and sizes including 12 corporate hangars (each over 9,000 square feet), five large box hangars (range from 1,528 to 3,857 square feet), four large T-hangar buildings (1,452 square feet per unit), and two small T-hangar buildings (807 square feet per unit). South East Ramp includes a large, 48,610-square-foot hangar used exclusively by the General Services Administration (GSA).

South East Ramp contains a full-service pilot lounge and meeting center that includes kitchen facilities, a flight planning area, and an entertainment area featuring club-style furnishings, large-screen TV and pool table.

South East Ramp's facilities store a variety of GA aircraft. Currently, there are 82 single-engine piston, 12 multi engine piston, six turbo prop, six jet, and three helicopter aircraft based at South East Ramp. Those aircraft generate an average of approximately 85 flights each week. Fuel for those aircraft is stored in two 12,500-gallon self-serve tanks (one Jet-A and one 100LL) just north of the pilot lounge. This designated 100LL fuel is only available to South East Ramp aircraft that are members of the fuel co-op. South East Ramp can also provide fuel services to jet aircraft via their 3,000-gallon Jet-A fuel truck. Each month South East Ramp aircraft consume approximately 20,000 and 2,300 gallons of Jet-A and AvGas fuel respectively.

South East Ramp has consistently grown and has plans to expand their facilities to the south and east to keep up with the demands and desires of aircraft owners to store their aircraft in South East Ramp's facilities.

2.2.4.5. General Aviation Automobile Parking

GA automobile parking is typically limited to designated areas along the front or side of each facility. Parking facilities range from two spaces to more than 100 spaces, as in the case of L3Harris Airline Academy and Constant Aviation. Tenant meetings revealed that one of the strongest needs felt by most GA tenants was for additional paved automobile parking.

2.2.5. Air Cargo Facilities

The Airport's air-cargo activity has historically utilized air-carrier aircraft, as no all-cargo carrier has been established. For this reason, a roughly 53,000-square-foot cargo building was constructed near the terminal apron just north of the Airport's original T-hangar facilities. This cargo building is equipped with a 6,600-square-foot refrigeration facility which allows for the storage of items such as flowers and perishable foods for overseas import or export.

2.2.6. Support Facilities

Several support facilities serve important roles in ensuring the efficiency of airport operations. These services include airport operations and maintenance, ARFF, ATC, fuel facilities, airport utilities, and airport police. These services all play key roles in the support of the Airport's aviation operations. **Figure 2-25** identifies the Airport's support facilities.

2.2.6.1. Airport Operations and Maintenance

The Operations Department is collectively responsible for all airside functions, terminal and landside coordination, and coordination of safety and security related functions. All Transportation Security Administration (TSA) directives, airfield inspections, wildlife management, airport user group communications, airspace coordination with ATC, and aircraft noise abatement issues are responsibilities of this department. The Operations Department conducts the required security classes of tenant employees for security badging purposes and maintains the integrity of the Airport's badging system.

The Airport's maintenance equipment is stored in several buildings on the west side of the airfield. These buildings are used to store lawn mowers and other shop and maintenance equipment. FAA guidelines indicate maintenance-building needs are related to the amount of paved areas and activity levels. For instance, increases in runway, taxiway, and apron pavement, combined with increasing activity levels, may result in the need to provide additional maintenance building space.

2.2.6.2. Airport Rescue and Firefighting

Airports that serve commercial passenger aircraft operations are required to have active and adequate ARFF facilities and personnel.. FAR Part 139.315 establishes an ARFF index that categorizes facilities based on size and assigns an index letter. The index for an ARFF facility is dependent upon the longest aircraft operated by an air carrier that operates an average of more than five flights a day from that airport. For example, airports that average more than five flights a day for an aircraft with a length between 91 to 126 feet would be an index "B". In the Airport's case, the ARFF facility is classified as a 'D' facility with a limited 'E' certification (24 hours advanced notice required by commercial service air carrier). The index 'D' certification is a direct result of the international air charter operations. These international operators primarily use wide-body aircraft such as the Boeing 767-200 and the Airbus A330-200 which require a well-equipped and capable ARFF facility and personnel.

Eleven full-time and two part-time employees are tasked with the responsibility of maintaining first response readiness for any airfield disaster or emergency response incidents that might occur. The Airport's ARFF facility has state of the art equipment and currently has one 3,000-gallon vehicle, three 1,500-gallon vehicles, and one 1,000-gallon vehicle. In addition, the Airport has an agreement with the City of Sanford and Seminole County Fire Departments to provide supplemental equipment and coverage in case backup support is needed.

Page intentionally left blank

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N

0 500' 1,000'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International
Airport Master Plan Update

Airport Support Facilities

Figure
2-25

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\Figure_2-23_SupportFacilities.dwg Apr01,2020 - 12:12pm

Page intentionally left blank

2.2.6.3. Fuel Storage

The Airport's fuel storage tank capacity ranges in size from 10,000 gallons to 250,000 gallons. Tanks owned by Hill Dermaceuticals and South East Ramp are located near their facilities, and as was previously mentioned MillionAir's tanks are located near Constant Aviation's facilities. However, most of the fuel tanks are located along 30th Street in the Commerce Park and are owned and managed by OSI, INC. (see **Figure 2-18**). **Table 2-10** lists the fuel storage facilities located on airport property. The 30th Street fuel farm has a total storage capacity of 950,000 gallons, which is dedicated entirely to Jet-A fuel and is intended primarily for use by scheduled air carrier aircraft.

Table 2-10 – Existing Fuel Tank Facilities

Aircraft Category				
Facility	**Owner/Leasee**	**Location**	**Size (gallons)**	**Content**
Tank 1	L3Harris Airline Academy	1250 E. 30th Street	10,000	100LL
Tank 2	L3Harris Airline Academy	1250 E. 30th Street	10,000	100LL
Tank 3	MillionAir	2841 Flight Line Avenue	20,000	Jet-A
Tank 4	MillionAir	2841 Flight Line Avenue	20,000	100LL
Tank 5	Constant Aviation	100 Constant Court	20,000	Jet-A
Tank 6	Constant Aviation	100 Constant Court	20,000	100LL
Tank 7	Hill Dermaceuticals	2650 S. Mellonville Avenue	10,000	Jet-A
Tank 8	Sheriff's Office	500 Don Knight Lane	10,000	Jet-A
Tank 9	South East Ramp	Self Service on Apron	12,500	100LL
Tank 10	South East Ramp	Self Service on Apron	12,500	Jet-A
Tank 11	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 12	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 13	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 14	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 15	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 16	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 17	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 18	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 19	OSI, INC. / Menzies	E. 30th Street	50,000	Jet-A
Tank 20	OSI, INC. / Menzies	E. 30th Street	250,000	Jet-A
Tank 21	OSI, INC. / Menzies	E. 30th Street	250,000	Jet-A
Tank 22	OSI	Commerce Park	20,000	Jet-A
Tank 23	OSI	Commerce Park	20,000	Jet-A
Tank 24	OSI	Commerce Park	20,000	Jet-A

Source: *Sanford Airport Authority*

2.2.6.4. Air Traffic Control Tower

The Airport's ATCT is the agency responsible for controlling aircraft operations within the terminal area and the area approximately five NM from the airport reference point (ARP). The majority of this area is centered over the Airport from the surface up to 1,600 feet mean sea level (MSL). The ATCT provides air traffic control for the Airport itself, while Orlando International Airport (MCO) provides terminal radar approach control (TRACON) for the rest of the terminal area surrounding SFB.

FAA air traffic controllers provide ATC services at the Airport via the Sanford ATCT, which exercises control over aircraft operations on the ground and in the Airport's traffic control area (Class C). Currently, there are 23 FAA personnel (17 controllers, one manager, four supervisors, and one office administrator) authorized to operate the

Tower. Sanford Tower is a Level 9 IFR tower with a 232-complexity index, and is operational daily between the hours of 6:30 a.m. and 11:00 p.m. Sanford Tower is seven stories high and located to the East of the International Terminal Building, due north of Romeo Ramp. The FAA commissioned the permanent tower site in the fall of 1993. Construction of the ATCT was completed in 1996. Sanford Tower is consistently one of the top 30 busiest in the Nation due to the Airport's heavy flight training operations.

2.2.6.5. Utilities

Based on existing utility records and information provided by the respective utility companies, an overview of the existing utilities present on airport property was created and presented in **Figure 2-26**. Information was collected on the existing potable water, natural gas, and storm sewer networks that service both the main terminal as well as the Airport's GA facilities. Sanitary sewer force mains and pump stations are present on airport property, and their information is included in the overview.

Potable water is supplied to airport facilities by the City of Sanford, Florida's Department of Water and Sewer Utilities. A water main runs parallel with East Lake Mary Boulevard, to the Airport's southern property line. A portion of that water main crosses the east side of the property, continuing along SR-415A. To the west of the Silver Lake Drive and East Lake Mary Boulevard intersection, three branches from that water main continue north, onto airport property. The eastern most of the three branches continues north and then east along Marquette Avenue and is used to service GA facilities. The other two branches continue north, following Ohio Avenue and South Mellonville Avenue, respectively. Both are used to support the network of water lines that service the main terminal areas.

A separate water main is located north of airport property, along East 25th Street (SR 46). This main provides potable water for the corporate hangar facilities located north of Runway 9L-27R. This main runs east along the road and branches to the south at Beardall Avenue and then continues south to Moore's Station Road where it turns to the west and provides service to the Airport's ARFF facilities.

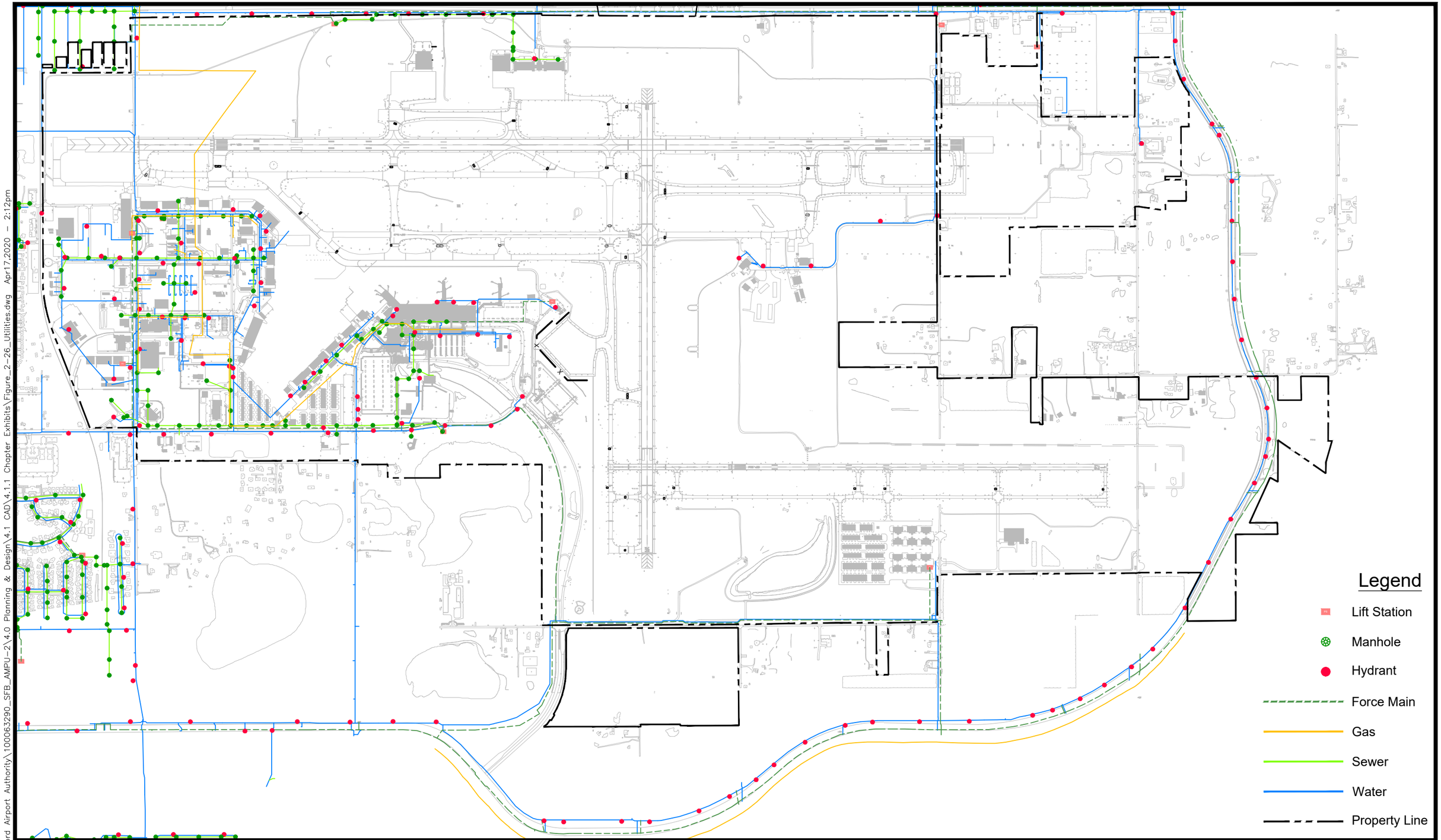
Natural gas is supplied to the Airport's main terminal facilities by Florida Public Utilities. A four-inch polyethylene gas line runs along the southern edge of East Lake Mary Boulevard, south of airport property. Unlike the water main, this gas line does not continue along SR 415A, rather it stops short of entering the east side of the Airport's property. It does not supply gas to any airport owned facility. The main terminal facilities are supplied by a six-inch steel coated and wrapped steel gas line that originates north of East 25th Street (SR 46), north of the Airport's property. That gas line crosses under Runway 9L-27R, and supplies several smaller lines, one of which runs along Carrier Avenue and Airport Boulevard up to the main terminal facilities. There are no gas lines that support the Airport's GA facilities.

The Airport's sanitary services are provided by the City of Sanford, Florida's Department of Water and Sewer Utilities. Sizes of force mains are unknown, and therefore have been excluded. There are several force mains that support the Airport, one of which is located along East Lake Mary Boulevard. This force main follows the same path to the east as the water main, with a portion crossing onto airport property. Like the water line, this force main branches off just west of the East Lake Mary Boulevard intersection. This branch continues north to Marquette Avenue where it splits into two more branches. The east branch continues east along Marquette Avenue until it connects into a pump station located near the GA facilities. The north branch continues north to Airport Boulevard. where it continues to the west. That branch supports the main terminal facilities through a network of force mains and four pump stations. A sixth airport pump station is located at the north end of the property, just south of SR-46. That pump station supports a force main which splits into two branches, one east and one west. Both branches continue in their respective directions off airport property.

Storm sewers are located throughout the main terminal facility areas, as well as near the GA facilities and the corporate hangars located north of Runway 9L-27R. Sizes of pipes and inlets are unknown and therefore not included. The two main storm sewer lines run parallel to Airport Boulevard and East 28th Street. Another storm sewer network is located on the northern portion of airport property, along the south side of SR-46. That pipe network services the corporate hangars in that area. No storm sewer network was recorded for the GA facility area.

2.2.6.6. Airport Police Department

The Airport Police Department is comprised of its chief, twelve officers, and one reserve officer. Airport Police Officers provide law enforcement coverage for the Airport on a continual basis. As a rule, a minimum of two Police Officers are scheduled on-duty at any given time. The Airport Control Center reports to the Airport Police Chief, who in turn, reports to the Airport President & CEO. There are six full time Airport Dispatchers, and one full time Airport Dispatch Supervisor. The Control Center personnel monitors and records all activities at the Airport, tracks all needs and



OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N
0 600' 1200'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International Airport Master Plan Update

Existing Utility Network

Figure 2-26

Page intentionally left blank

events during on-going emergencies and activities, and provides radio and telephone assistance to all airport users including: Airport Operations, ARFF, Airport Police, Airport Maintenance, and Airport Administration.

The dispatchers monitor and provide support for no less than 12 complex computer systems, such as the Airfield Lighting System, the Spillman-Summit Records Management System (RMS) & Computer Aided Dispatch (CAD), the Thorguard lightning protections system, the Simplex Fire Alarm system, the Hirsch-Velocity Access Control system, the Genetec-Omnicast digital Video Recording system, the NICE digital Audio Recording system, and the Emergency Generator Monitoring system.

2.3. Airspace Structure

Congress granted the FAA the authority to control all airspace over the United States by passing the Federal Aviation Act of 1958. The FAA then established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. Airspace, including air navigation facilities, airports, and landing areas, aeronautical charts and information, associated rules, regulations and procedures, technical information, personnel, and material. System components shared jointly with United States Military branches are also included. Florida's airspace has high traffic capacity due to its multiple major commercial airports, as well as its numerous GA airports. The state's ideal flying conditions which occur almost year-round promotes GA pilots' activity to thrive. High tourism demand drives daily commercial passenger traffic which is a large contributor to the state's overall high air traffic volume.

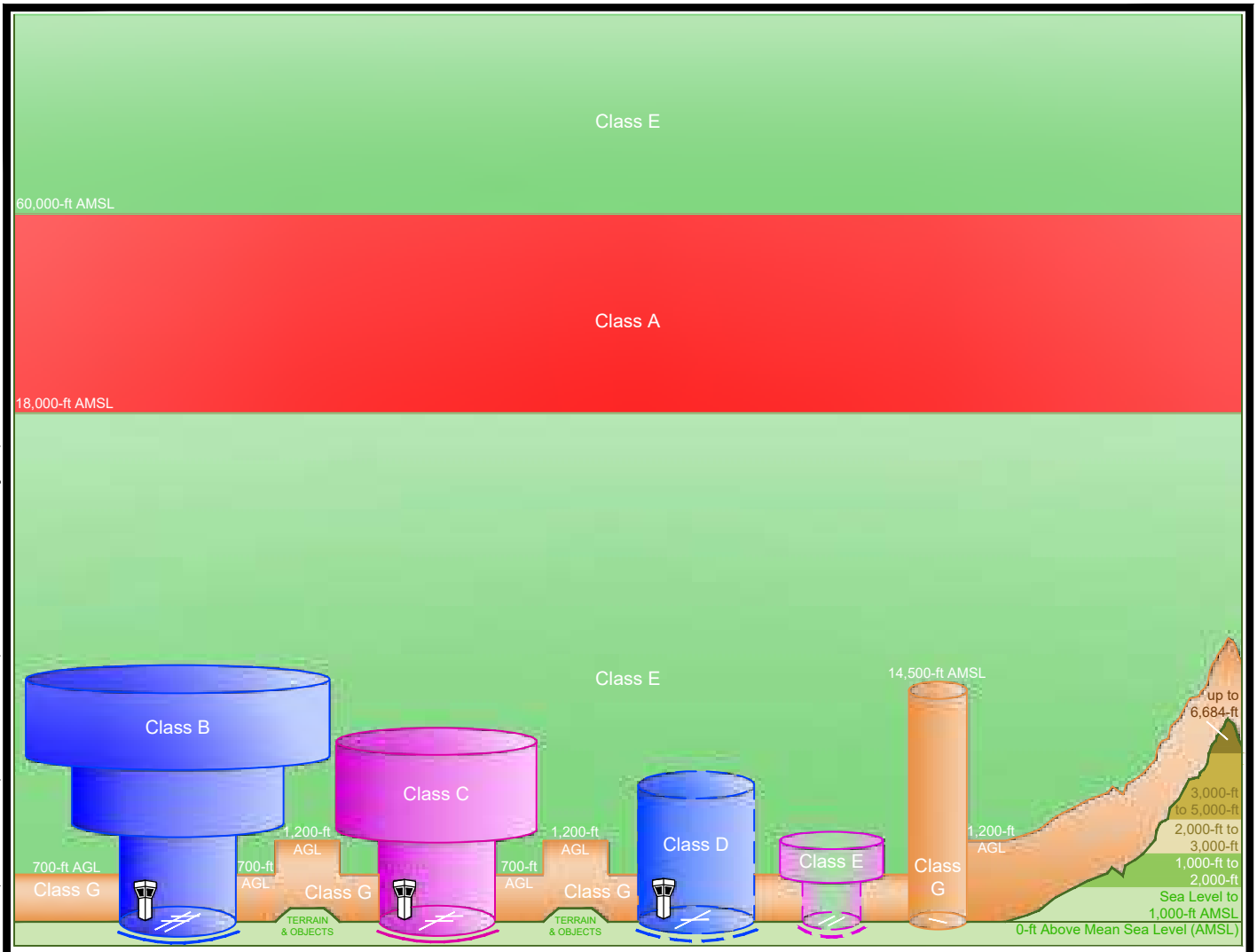
2.3.1. Airspace Environs

Airspace is classified as controlled or uncontrolled. Controlled airspace is supported by ground-to-air communications, NAVAIDs, and air traffic services. In September 1993, the FAA reclassified major airspace. Those classifications are graphically depicted in **Figure 2-27** and **Figure 2-28** depict the regional airspace surrounding the Airport. The types of controlled airspace in the Orlando/Sanford area include:

- Class A airspace, which includes all airspace between 18,000 feet AMSL and 60,000 feet AMSL (as well as waters 12 NM off the cost of the 48 contiguous states).
- Class B airspace, which is generally the airspace from 10,000 feet AMSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers and is designed to contain all published instrument procedures once an aircraft enters the airspace.
- Class C airspace is from either the surface or 1,200 feet AMSL to 4,000 feet AMSL. This variation can be determined based on the location within the five NM coverage from the airport property. The Airport is classified as Class C airspace. The Airport's airspace includes all airspace from the established 55 feet AMSL elevation, up to 4,000 feet AMSL, and consists of two airspace layers.
- Class D airspace for airports with ATCTs, which normally extends from the surface to 2,500 feet above an airport's established elevation (charted in AMSL) and includes control zones and airport traffic areas. Class D airspace surrounding the airports in the Orlando area are individually configured.
- Class E airspace, which includes all controlled airspace other than Class A, B, C, or D. Class E airspace extends upward from either the surface of the designated altitude to overlying or adjacent controlled airspace. Class E airspace includes transition areas and control zones for airports without ATCTs.
- Class G airspace, which is uncontrolled airspace.

2.3.1.1. Class C Airspace

The Airport's airspace is classified as Class C, which is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at some commercial service airports. To fly inside Class C airspace, aircraft must have a two-way radio, an encoding transponder, and pilots must have established communication with the ATC controlling that airspace. Aircraft may be flown below the floor of Class C airspace or above Class C airspace ceiling without establishing communication with ATC.



Communication Requirements and Weather Minimums

	Class A	Class B	Class C	Class D	Class E	Class G
Minimum Pilot Qualification	Instrument Rating	Student *	Student *	Student *	Student *	Student *
Entry Requirements	IFR: ATC Clearance VFR: Operations Prohibited	ATC Clearance	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: None	None
VFR Visibility Below 10,000 AMSL **	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	Day: 1 Statute Mile Night: 3 Statute Miles
VFR Cloud Clearance Below 10,000 AMSL	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal ***
VFR Visibility 10,000 AMSL and Above **	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	5 Statute Miles	5 Statute Miles
VFR Cloud Clearance 10,000 AMSL and Above	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 1 Statute Mile Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal
Airport Application	N/A	• Radar • Instrument Approaches • Weather • Control Tower • High Density	• Radar • Instrument Approaches • Weather • Control Tower	• Instrument Approaches • Weather • Control Tower	• Instrument Approaches • Weather	
Special VFR Permitted?	No	Yes	Yes	Yes	Yes	N/A

* Prior to operating within Class B, C, or D airspace (or Class E airspace with an operating control tower), student, sport, and recreational pilots must meet the applicable FAR Part 61 training and endorsement requirements. Solo student, sport, and recreational pilot operations are prohibited at those airports listed in FAR Part 91, Appendix D, Section 4.

** Student pilot operations require at least 3 statute miles visibility during the day and 5 statute miles visibility at night.

*** Class G VFR cloud clearance at 1,200 AGL and below (day): clear of clouds.

Orlando Sanford International Airport — We Are SFB: Simpler. Faster. Better.

ATKINS — Member of the SNC-Lavalin Group

Airport Master Plan Update
U.S. Airspace Classifications

Figure 2-27

Source: FAA Jacksonville Sectional Aeronautical Chart, Effective to August 15, 2019

OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

Airport Master Plan Update
Regional Airspace

Figure 2-26

Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\2-28_SFB_Regional Airspace.dwg Jul08,2020 – 2:24pm

Class C airspace surrounds airports that have an operational ATCT, are serviced by a radar approach control, and have a certain number of IFR operations or passenger enplanements. In the case of SFB, Orlando Approach Control provides approach control services.

There are two layers of Class C airspace centered over the Airport. The inner core area is approximately five NM in diameter centered about the Airport and extends vertically from the Airport's elevation to the floor of Orlando International Airport's (MCOs) Class B airspace, or 3,000 feet MSL. The airspace in the eastern most portion of the Airport's inner five NM ring begins at 700 feet MSL and extends vertically to the floor of MCOs Class B airspace. The elevated floor in this area enables operations at Cedar Knoll airport (private airport located approximately four NM due east of SFB) without coordination with Sanford's ATCT. The outer ring of SFBs Class C airspace has a diameter of approximately 10 NM and extends from 1,300 feet MSL to the floor of MCOs Class B airspace, or 3,000 feet MSL. The Class C airspace is active between 6:30 a.m. and 11:00 p.m. local time. When the Airport's ATCT is not in operation, the Class C airspace reverts to Class G airspace.

2.3.1.2. Class B Airspace

The Airport's Class C airspace is enclosed in the Class B airspace of MCO, which is approximately 21 miles southwest of the Airport. Class B airspace is defined around the busiest airports in the nation. All aircraft entering Class B airspace must obtain ATC clearance prior to entry. Aircraft must be equipped with a two-way radio for communications with ATC, an operating Mode C transponder, and automatic altitude reporting equipment. VFR flights may proceed under their own navigation after obtaining clearance but must obey any explicit instructions given by ATC. The exact shape of the airspace varies from one Class B area to another, but in most cases, it has the shape of an inverted wedding cake, with a series of "shelves" of airspace of several thousand feet in thickness centered on a specific airport. Each shelf is larger than the one beneath it. Class B airspace normally begins at the surface in the immediate area of its airport, and successive shelves of greater thickness and radii begin at higher altitudes at greater distances from the originating airport. At the Airport's location within the Class B airspace of MCO, the Class B is from 3,000 feet up to 10,000 feet AMSL.

2.3.1.3. Restricted Airspace

Restricted airspace is located directly east of the Airport's airspace. Entry into restricted airspace is prohibited under certain conditions without a special clearance obtained from the controlling agency obtained directly or via ATC. Restricted airspace designated R-2935 and R-2934 is located directly east of the Airport and is primarily in place for Kennedy Space Center located in Cape Canaveral, Florida. If pilots stay below 11,000 AMSL they will remain below R-2935, however R-2934 restricts all elevations.

2.3.1.4. Alert Areas

Alert areas are depicted on aeronautical charts to inform non-participating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. Pilots should be particularly alert when flying in these areas. All activity within an alert area must be conducted in accordance with CFRs, without waiver, and pilots participating as well as pilots transiting the area must be equally responsible for collision avoidance. Alert area designated A-294 is located directly to the northeast of the Airport. This area is identified to have a high volume of flight training activity from the surface to 4,000 feet AMSL.

2.3.1.5. Victor Airways

Victor Airways are commonly referred to as 'highways in the sky' as they are low altitude airway corridors that typically measure eight miles wide and are between altitudes 1,200 and 18,000 feet AMSL. Aircraft assigned to altitudes above 18,000 feet use the Jet Route (High Altitude) system.

Victor airways are designated navigational routes ranging between VOR facilities. They are recognized on sectional charts with a 'V' followed by its designated number. Victor airways have a floor of 1,200 feet AGL and extend rising to an altitude of 18,000 feet AMSL and their width depends on the distance between their navaid vertices, such as very-high frequency omni-directional range stations (VORs). When two VORs are less than 102 NM apart, the victor airway between them extends four NM on either side of the centerline for a total width of eight NM. When two VORs are more than 102 NM apart, the width of the airway beyond 51 NM from a VOR is 4.5 degrees on either side of the centerline. The maximum width of the airway is at a designated changeover point between the two navaids, which is typically halfway. Four Victor Airways are near the Airport, including V51, V267, V533, and V437 which passes directly over the Airport and connects to the Orlando Melbourne International Airport (MLB) VOR.

2.3.2. Delegation of Air Traffic Control Responsibilities

The FAA operates 22 Air Route Traffic Control Centers (ARTCCs), which control aircraft operating under IFR within controlled airspace, while in the en route phase of flight. The Airport is within the area controlled by the Jacksonville Center, which controls airspace that encompasses Northern Florida, the southeast quarter of Georgia, the southeast half of South Carolina, and small adjacent portions of both North Carolina and Alabama. Jacksonville Center transfers pilots to the Orlando approach control prior to their entry to the Airport's airspace.

Jacksonville ARTCC exercises their control of activity into and out of the Airport through remote radar and radio facilities located throughout the region. All air controllers employed by the Jacksonville Center are located at a single operation site in Hilliard, Florida (Jacksonville metropolitan area). From this location, controllers manage air traffic within the five-state region described above.

2.3.3. Operating Procedures

The FAA Act of 1958 established the FAA as the responsible agency for the control and use of navigable airspace within the United States. An analysis of airspace use is critical in determining the capacity of the airfield and the operational interaction of the Airport and its surrounding airports. Flights into the Airport are conducted using both IFR and VFR. IFR governs procedures for conducting instrument flight during adverse weather conditions. VFR governs the procedures for flight under visual conditions. Most air carrier operations are conducted under IFR, even if weather conditions do not dictate such procedures. Published procedures for instrument approaches outline a pilot's required flight path and altitude. The Jacksonville ARTCC is responsible for en route control of all aircraft operating on an IFR flight into the Sanford Area.

Pilots can enter or exit the Sanford Area via federal airways. Many aircraft use Victor Airways, which are generated by VORs, providing air navigation orientation to pilots.

An airport such as SFB, which has an operating ATCT, has a defined air traffic area (ATA) surrounding it. Aircraft within the ATA must be in contact with ATC to receive approval for takeoffs, landings, and over flights of the Airport. Standard ATAs are designed to include all airspace within five NM of the Airport, up to but not including 3,000 feet AGL.

2.3.4. Airports in the Region

There are currently 10 public-use airports within a 30 NM radius of SFB. Their brief descriptions are provided in **Table 2-11**. There are numerous private airports within a 30 NM radius of SFB. 'Private airports' are publicly or privately owned, but they are not open or available for public-use. However, they may be available upon an invitation of the owner or manager.

Table 2-11 – Airports Surrounding Orlando Sanford International Airport (SFB)

Airport Name (Identifier)	Location (Distance from SFB)	NPIAS Classification	Runway Headings & Dimensions
Orlando Executive (ORL)	Orlando, FL 14.8 NM South-West	Regional/Reliever	**7/25:** 6,004' x 150' **13/31:** 4,625' x 100'
Deland Municipal (DED)	DeLand, FL 17.6 NM North-Northwest	Regional/Reliever	**5/23:** 4,301' x 75' **12/30:** 6,001' x 100'
Orlando Apopka (X04)	Apopka, FL 18.7 NM East-Southeast	N/A	**15/33:** 3,987' x 60'
Massey Ranch Airpark (X50)	New Smyrna Beach, FL 20.3 NM North-East	N/A	**18/36:** 4,360' x 60'
Orlando International (MCO)	Orlando, FL 21.2 NM South-West	Primary Service/Large Hub	**18L/36R:** 12,005' x 200' **18R/36L:** 12,004' x 200' **17R/35L:** 10,000' x 150' **17L/35R:** 9,001' x 150' **H1:** 44' x 44'
New Smyrna Beach (EVB)	New Smyrna Beach, FL 22.5 NM North-East	Regional/Reliever	**7/25:** 5,000' x 75' **11/29:** 4,319' x 75' **2/20:** 4,000' x 100'
Arthur Dunn Air Park (X21)	Titusville, FL 23.0 NM South-East	Local/GA	**15/33:** 2,961' x 70' **4/22:** 1,805' x 100'
Umatilla Municipal (X23)	Umatilla, FL 23.6 NM North-West	Basic/GA	**1/19:** 2,500' x 60'
Daytona Beach International (DAB)	Daytona Beach, FL 25.9 NM North-East	Primary Service/Non-Hub	**7L/25R:** 10,500' x 150' **7R/25L:** 3,195' x 100' **16/34:** 6,001' x 150'
Space Coast Regional (TIX)	Titusville, FL 27.8 NM South-East	Regional/GA	**18/36:** 7,319' x 150' **9/27:** 5,000' x 100'

Source: *Skyvector.com, FAA 5010 Airport Data Sheets*

2.4. Land Use and Zoning

Land use and zoning around an airport is critically important to the future utility and sustainability of airport operations. Without the security and support provided by compatible land uses around an airport property, airports and their sponsors can face a variety of safety difficulties, health and human safety concerns, and social/political dissent, which in the long run detracts from an airport's ability to reach its full public value potential.

The Airport is situated on approximately 2,400 acres and boasts one of the most efficient and user-friendly passenger terminal facilities in the United States. The Airport is located within the boundaries of the City of Sanford in the north western portion of Seminole County Florida, 18 miles northeast of Orlando, FL.

Future County and City land use policy should consider existing as well as future Airport facility development within their land use/zoning plans. Currently, property to the east and south of the Airport is used for agriculture. The areas north and west of the Airport are a mix of residential and commercial land uses. The previous master plan anticipated that the by-pass road (Lake Mary Boulevard extension) would encourage residential and commercial development south and east of the Airport, and that has indeed occurred in the last five years. Residential development is not considered a compatible land use for areas surrounding an airport, however commercial and industrial land uses are more compatible. Airport height zoning currently exists in the City of Sanford for the area lying under the western approach to Runway 9L ILS. SAA is working with County Planning and Zoning officials to hold residential development to a minimum under the approaches to the Airport's runways. In fact, the SAA plans to continue acquiring land areas up to Lake Mary Boulevard for additional airport development as well as for protection from residential encroachment.

The FAA requires through grant assurances that the Airport Sponsor assures compatible uses and heights of structures in the airport vicinity. The FAA relies on state and local zoning regulation to provide height and airspace protection. Chapter 333, Florida Statutes, Subsection 333.03(1), provides such protection. The area in the Airport's immediate vicinity is comprised of a variety of existing urban and rural developments. Seminole County continues to grow in population, and the underdeveloped areas near the Airport are subject to potential urban development.

The City of Sanford currently designates the entire expanse of SFB property as Restricted Industrial (RI1) which is compatible with aviation activity.

Land east of Airport property is predominantly unincorporated areas of Seminole County. However, zoning classifications such as Agricultural (AG), Medium Industrial (MI2), General Commercial (GC2), and Restricted Industrial (RI2) can be found.

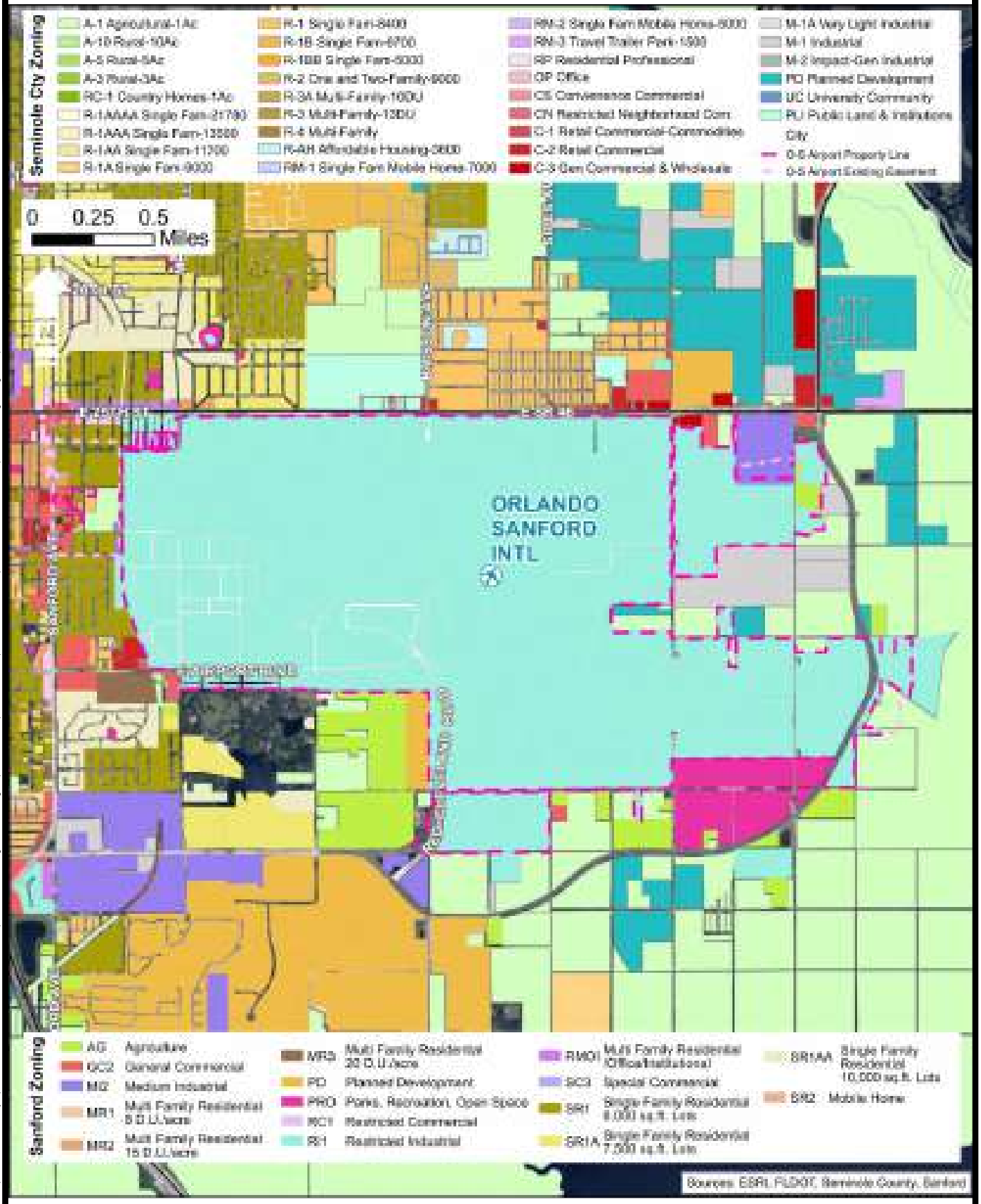
Extending westward of the Airport for several miles is an area characterized primarily by urban residential development that includes the incorporated cities of Sanford and Lake Mary, as well as unincorporated areas of Seminole County. **Figure 2-29** reveals the land use classifications of properties surrounding SFB. In general, south of SFB is a combination of undeveloped land and scattered large lot residential development; however, near the Airport, there are large lot residential properties and subdivisions in the vicinity of Lake Golden, Lake Onora, and Silver Lake.

2.4.1. Currently Vacant and Underutilized Land

Current land uses surrounding the Airport fall into three major categories: residential, industrial, and agricultural. Lands to the north and west of the Airport are predominantly residential. Lands to the east of the Airport are primarily agricultural. Industrial uses are seen to the south of the Airport property. The current on-airport land use is shown in **Figure 2-30.**

2.4.1.1. Commerce Park

The Commerce Park is in the Airport's southwest quadrant and consists of 395 acres, of which 52.5 are still available for future development. The existing buildings within the commerce park are currently at 95 percent capacity. Future development within the Commerce Park will depend upon the Airport's main business development. The Commerce Park is well positioned for future growth, and increased air service is anticipated to bring related job growth. Additionally, high-tech employers in the Lake Mary Boulevard/I-4 area can benefit from the availability of low-cost warehouse and back-office operational space located near air transportation support. Furthermore, the Airport and the area along SR 46 could provide the support areas necessary for a successful executive and high technology center.



Plotted By: HAND3027
J:\05_Projects\Sanford Airport Authority\100063290_SFB_AMPU-2\4.0 Planning & Design\4.1 CAD\4.1.1 Chapter Exhibits\2-27_SFB_Off-Apt_Zoning.dwg Apr06,2020 - 1:03am

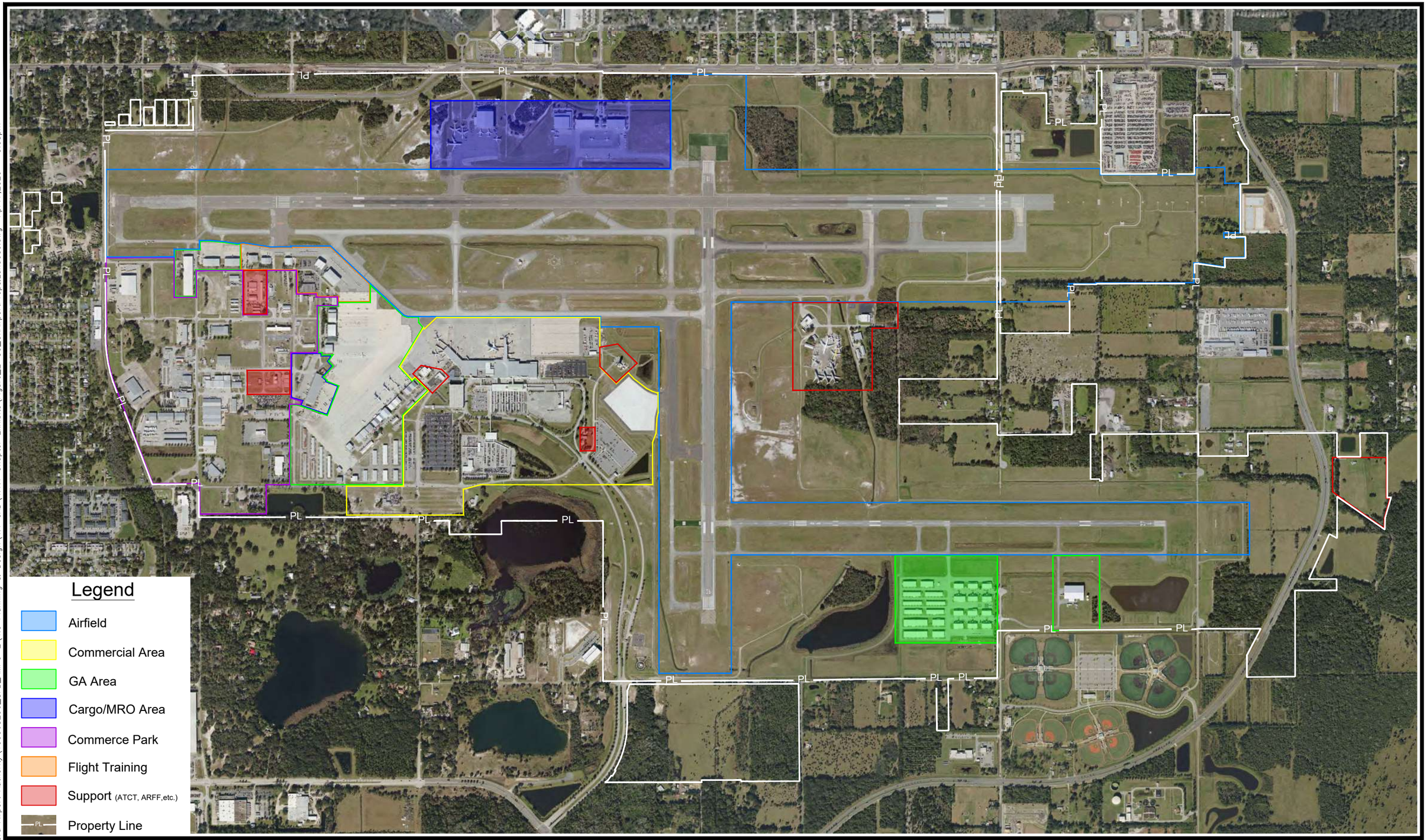
OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

Airport Master Plan Update
Existing Off-Airport Zoning Districts

Figure 2-29

Page intentionally left blank



OrlandoSanford INTERNATIONAL AIRPORT
We Are SFB: Simpler. Faster. Better.

ATKINS
Member of the SNC-Lavalin Group

N

0 1,200' 2,400'
GRAPHIC SCALE IN FEET

2020 Orlando Sanford International Airport Master Plan Update

Existing On-Airport Land Use

Figure 2-30

Page intentionally left blank

2.4.1.2. North Area

Initial discussions have suggested that the Airport's north area, west of Runway 18-36, could be developed for heavy aircraft MRO and future cargo east of Runway 18-36. Since Runway 9L-27R is designated for heavy commercial traffic, this area will allow for significant aviation industrial development.

Furthermore, this area can effectively be accessed via SR-46. This is one of the prime areas for future commercial aviation development. The northern area has been designed to accommodate heavy wide-body aircraft. Constant Aviation and Avocet currently lease property in the Airport's northern area.

2.4.1.3. Southeast Area

The area designated as the southeastern segment is the property found to the south of Runway 9R-27L and east of Runway 18-36. Initial discussions with SAA suggested that this section could be developed for GA operations, such as flight training, maintenance, aircraft storage, etc. Several based operators have previously expressed interest in moving to that area, which could allow them to expand their facilities and could relieve congestion in the Airport's southwestern portion. Such relocations could also separate smaller GA aircraft from the larger and heavier commercial aircraft.

2.4.1.4. East Midfield Area

The Airport's eastern segment, located between Runway 9L-27R and Runway 9R-27L and east of Runway 18-36, had been initially designated for a mixture of GA corporate facilities and non-aviation related development. In the future, it is anticipated that this area could provide for additional conventional hangar and apron space, as well as Airport support facilities (i.e. future ATCT, fuel farms, etc.) as well as make parcels available for corporate or industrial development.

2.5. Summary

This inventory chapter provided a summary of baseline conditions and included detailed information relating to the Airport's property, airside, terminal, and landside facilities, services, location, and tenants, as well as ground access, utilities and environmental considerations. The next step in the planning process is to develop aviation demand forecasts for future aircraft operations, passenger enplanements, and based aircraft. Once completed this information will be compared to data developed in this section to define the adequacy of existing facilities and to provide an indication of what airport enhancements may be necessary throughout the planning period.

Jonathan Hand
WS Atkins, Inc.
482 South Keller Road
Orlando, FL 32810-6101

Tel: +1 407 647 7275/+1 800 284 5182
Fax: +1 407 806 4500