
# Airport Master Plan 2020

*Lakeland Linder International Airport*

City of Lakeland

ATKINS
Member of the SNC-Lavalin Group

# Table of contents

## Tables

## Figures

This Page Intentionally Left Blank

# Executive Summary

Lakeland Linder
International Airport

# 1. Executive Summary

The purpose for updating the Lakeland Linder International Airport (LAL) Airport Master Plan (AMP) is to describe the airports short-, medium-, and long-term plans to meet the future demand in a safe, efficient, economical, and environmentally responsible manner. The AMP assists in ensuring the airport meets the development goals of LAL, the surrounding community, and the national aviation system (NAS) by providing a roadmap for its modernization and expansion.

This executive summary provides a condensed summary of findings of the comprehensive master planning process that was completed in early 2020. Where appropriate, this summary references the location within the AMP where more detailed information can be found.

## 1.1. Inventory and Environmental Overview

To develop a robust and responsible plan, an airport must first have a clear understanding of the existing conditions. The existing condition of the airport infrastructure is the basis for identifying what is needed to meet current and future demands. Chapter 2, Inventory of Existing Conditions, and Chapter 3, Environmental Overview, provide details about the existing condition of the Airport and an overview of environmental issues that may affect future development. A comprehensive inventory was conducted and catalogues information about the runways, taxiways, structures, roadways, land use, and airspace. This information is used to identify any deficiencies that may need to be addressed in the future. Identifying potential environmental impacts is a crucial part of the master planning process as it provides the ability to mitigate potential adverse impacts through avoidance and integration of environmentally conscious means and methods.

## 1.2. Aviation Forecasts

The forecasts of aviation activity is a key component of the AMP as it provides a basis and understanding of all future needs. Chapter 4, Aviation Activity Forecasts, provides a detailed analysis of multiple forecast methodologies that were analyzed for this AMP, as well as the resulting preferred forecast. Aviation activity forecasts are one of the items reviewed and approved by the Federal Aviation Administration (FAA). FAA approval of the forecasts was received on October 10, 2018. FAA approval is required to ensure the forecasts are realistic, based on thorough analysis, data driven, and supported by information provided in the AMP and overall industry trends. This AMP has a base year of 2017 and provides a 20-year forecast of activity from 2018 until 2038.

The Airport’s total based aircraft were allocated to five categories, single-engine, multi-engine, turboprop, jet, and rotorcraft, based on the aircraft type in order, known as the fleet mix. The approved growth rate was then applied to the fleet based on the fleet mix percentages exhibited historically at the Airport combined with industry and the FAA Aerospace Forecast trends. These projections allow for a better understanding of the airport general aviation (GA) needs throughout the planning period.

Total based aircraft are forecast to increase from 247 aircraft in 2017 to 390 aircraft by 2038. According to the forecast, the number of aircraft will increase for every category of the fleet mix with the most significant increase being rotorcraft (156 percent), followed by jets (95 percent), then multi-engine (82 percent). Single-engine aircraft will experience a more moderate increase of 38 percent over the planning period.

Airport operations are a key factor in understanding the major development needs at an airport. Significant increases in operations will drive significant development in airport infrastructure such as runways, taxiways, and aprons. The approved forecast of aviation activity defines an average annual growth rate of 3.1 percent, with annual operations reaching 223,300 by 2038. This growth rate was selected due to the unique operating environment at LAL combined with the entrance of new operational types, such as cargo, during the planning period. All operation types at LAL are projected to continually grow throughout the planning period, in line with historic growth patterns since 2011 at LAL, with projections exceeding FAA Terminal Area Forecasts (TAF) by more than 30 percent in five years and 50 percent in 10-years.

## 1.3. **Facility Requirements**

Following the documentation of existing conditions and the establishment of a realistic and detailed forecast, a determination of facility requirements which will be necessary to accommodate the demand throughout the 20-year planning period is made. Chapter 5, Design Criteria and Facility Requirements, defines those facilities that are necessary to meet that demand. It is important to note that facility requirements are based on specific based aircraft and operational levels being met. While forecasts of aviation activity are thoroughly vetted and ultimately approved by the FAA, a forecast is still a best guess and is subject to inaccuracies due to unknown and unforeseeable influences.

The following sections outline the design criteria and facility requirements that were established as part of this AMP process. Further analysis and details can be found in Chapter 5.

### 1.3.1. Critical Aircraft and Airport Reference Code

Determination of the critical aircraft and associated Airport Reference Code (ARC) is a critical step in the AMP process and has significant implications on the overall development depicted in the Airport Layout Plan. The critical aircraft will determine the design criteria for which the airport will be developed, including dimensional requirements such as runway and taxiway separations and the areas necessary for the protection of aircraft operations, passengers, and the neighboring community.

The FAA defines the critical aircraft as "…the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport." Regular use is defined as having 500 annual operations or more, including local and itinerant operations, but excluding touch-and-go's. An operation is either a takeoff or landing. Further, an airport can have multiple critical aircraft depending on the number of runways and the overall layout of the airport facilities.

The critical aircraft at LAL was determined using FAA's Traffic Flow Management System Counts (TFMSC) data along with Air Traffic Control Tower (ATCT) information, FBO provided details, and letters of commitment/leases with existing and future airport tenants. The Aircraft Approach Category (AAC) and Airplane Design Group (ADG) for the critical aircraft is used to identify the applicable design standards that are used. The existing and future critical aircraft and their AAC and ADG are outlined in **Table 1-1** below.

**Table 1-1 Critical Aircraft**

| Runway | Existing Critical Aircraft | | Future Critical Aircraft | |
|---|---|---|---|---|
| 09/27 | Boeing 737-700 | C-III | Boeing 767-300F | C-IV |
| 05/23 | Boeing 737-700 | C-III | Boeing 737-700 | C-III |
| 08/26 | Cessna 172 | A-I | Cessna 172 | A-I |

### 1.3.2. Runway Length

An analysis of both the takeoff and landing distance needed for the existing and future critical aircraft was completed in accordance with FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design.* The critical aircraft along with a representative fleet of aircraft were analyzed and runway length requirements for useful loads between 60 and 95 percent for all aircraft in the fleet were reviewed.

The minimum runway length required to meet the existing and future critical aircraft, the Boeing 767-300F, was calculated to be approximately 10,000 feet at 95 percent useful load, taking into account the higher than standard temperatures experienced in Lakeland. Based on the analysis and utilizing the highest potential useful load, a runway extension for the primary runway would be necessitated. However, after discussions with the airport tenant operating the future critical aircraft, it was discovered that the operator does not anticipate operating above 80 percent useful load in the immediate future. For this reason, the primary runway, Runway 09/27 (future 10L/28R), meets the existing and future critical aircraft requirements. Should the operational requirements of the airport tenant operating the critical aircraft change, an extension of the primary runway to 10,000 feet may be necessary.

### 1.3.3. Runway Safety Area

A Runway Safety Area (RSA) is a graded surface centered on a runway that is required to be free of all objects except for those that are 'fixed by function' such as runway lights and certain NAVAIDS. The width and length of the RSA depends on the Airport's runway design code (RDC). The RDC is a combination of the AAC and ADG of the critical aircraft, plus the approach visibility minimums for a given runway. When each runway end has a different RDC, the most demanding prevails. The existing and future RDC are presented in **Table 1-2**.

**Table 1-2 Existing and Future Runway Design Code (RDC)**

| Runway | Existing | Future |
|---|---|---|
| 09/27 (Fut. 10L/28R) | C-III-2400 | C-IV-600 |
| 05/23 | C-III-4000 | N/A |
| Future 10R/28L | N/A | C-III-4000 |
| 08/26 (Fut. 09/27) | A-I-VIS | Same |

Meeting RSA requirements is one of the FAA's highest priorities in maintaining safety at the nation's airports. The RSA requirements for each runway based on the existing and future RDC are presented in **Table 1-3**.

**Table 1-3 Runway Safety Area (RSA) Requirements**

| Runway | Length Beyond Runway End | | Width | |
|---|---|---|---|---|
| | Existing | Future | Existing | Future |
| 09/27 (Fut. 10L/28R) | 1,000 ft | 1,000 ft | 500 ft | 500 ft |
| 05/23 | 1,000 ft | N/A | 500 ft | N/A |
| Future 10R/28L | N/A | 1,000 ft | N/A | 500 ft |
| 08/26 (Fut. 09/27) | 240 ft | 240 ft | 120 ft | 120 ft |

### 1.3.4. Runway Protection Zone

The purpose of a Runway Protection Zone (RPZ) is to enhance the safety of people and property on the ground by limiting and/or restricting the construction of certain structures within its bounds. This area should be free of land uses that create glare, smoke, or other hazards to air navigation. Additionally, the FAA requires that no vertical structures are constructed within the extents of the RPZ.

The approach RPZ is based on the AAC plus the approach minimum, while the departure RPZ is based on the AAC and departure procedures associated with the runway. The RPZ requirements for each runway based on the existing and future criteria are presented in **Table 1-4**.

**Table 1-4 Runway Protection Zone (RPZ) Requirements**

| Runway | Length | | Inner Width | | Outer Width | |
|---|---|---|---|---|---|---|
| | Existing (ft) | Future (ft) | Existing (ft) | Future (ft) | Existing (ft) | Future (ft) |
| 09/27 (Fut. 10L/28R) | 2,500 / 1,700 | Same | 1,000 | Same | 1,750 / 1,510 | Same |
| 05/23 | 1,700 | N/A | 1,000 / 500 | N/A | 1,510 / 1,010 | N/A |
| Future 10R/28L | N/A | 1,700 / 1,700 | N/A | 1,000 / 500 | N/A | 1,510 / 1,010 |
| 08/26 (Fut. 09/27) | 1,000 | Same | 250 | Same | 450 | Same |

### 1.3.5. Runway Designations

A runway designation is identified by the whole number nearest to the magnetic azimuth of the runway when oriented along the runway centerline as if on approach to that runway end. Magnetic azimuth is determined by adjusting the geodetic azimuth associated with a runway to compensate for magnetic declination.

Magnetic declination is a natural process and periodically requires the re-designation of runways. As of January 2020, the magnetic declination in Lakeland was 6 degrees, 01 minutes West.

**Table 1-5 Runway Designations**

| Runway | Geodetic Azimuth | Magnetic Azimuth | Runway Designation | |
|---|---|---|---|---|
| | | | Existing | Future |
| 09/27 (Fut. 10L/28R) | 89° 52’ 18.66” | 95° 53’ 18.66” | 09/27 | 10L/28R |
| 05/23 | 44° 51’ 41.00” | 50° 52’ 41.00” | 05/23 | N/A |
| Future 10R/28L | 89° 52’ 18.66” | 95° 53 18.66” | N/A | 10R/28L |
| 08/26 (Fut. 09/27) | 89° 59’ 53.09” | 95° 60 53.09” | 08/26* | 09/27* |

**Runway 08/26 is adjusted in order to better distinguish the turf runway from the primary paved runway.*

## 1.3.6. Runway Strength

The gross weight bearing capacity for Runway 09/27 (Future Runway 10L/28R) is published in the Airport Master Record (FAA Form 5010) as Single Wheel (S) 105,000 pounds and Dual Wheel (D) 170,000 pounds. Runway 05/23 is published as Single Wheel (S) 94,000 pounds and Dual Wheel (D) 150,000 pounds. Runway 08/26 is not posted due to the turf surface composition of the runway.

In early 2020, Runway 09/27 was reconstructed in order to strengthen the pavement. The pavement was strengthened to accommodate the Boeing 767-300F’s maximum takeoff weight (MTOW) of dual tandem 370,800 pounds. The existing and future pavement strengths are presented in **Table 1-6**.

**Table 1-6 Runway Strength Summary**

| Runway | Single Wheel | | Duel Wheel | | Double Duel Tandem | |
|---|---|---|---|---|---|---|
| | Existing | Future | Existing | Future | Existing | Future |
| 09/27 (Fut. 10L/28R) | 105,000 | 120,000 | 170,000 | 222,000 | N/A | 412,000 |
| 05/23 | 94,000 | N/A | 150,000 | N/A | N/A | N/A |
| Future 10R/28L | N/A | TBD | N/A | TBD | N/A | TBD |
| 08/26 (Fut. 09/27) | N/A | N/A | N/A | N/A | N/A | N/A |

*All pavement strengths are in pounds (lbs).*

## 1.3.7. Taxiways

In 2012, the FAA introduced new design standards with respect to taxiways. A new Taxiway Design Group (TDG) was developed which identifies the taxiway design standards, specifically for fillets, that are required. Additionally, new standards were introduced which dictate overall taxiway geometry to decrease the potential for incursions, incidents, or confusing layouts. These changes have had a significant impact on the airport design and several taxiway system geometry updates have been identified at airports nationwide. These updates are not required immediately, however, as airports conduct development projects which impact the taxiway systems, the updates and reconfigurations should be included as part of that development.

At LAL, several updates to the overall taxiway system have been identified as part of the master planning effort. These updates include adjustments to taxiway fillets, realignment of parallel taxiways, shifting of connector taxiways, and removal of taxiways that are no longer required or no longer meet FAA design standards. With the significant upgrade to the instrument approach procedures on the primary runway, addition of the south parallel runway, and the removal of the secondary crosswind runway, significant changes to the overall taxiway system can be expected. All new taxiways have been planned to meet current FAA design standards based on the critical aircraft identified for each area of the overall taxiway system.

In May 2019, the FAA published an update to AC 150/5340-18, *Standards for Airport Sign Systems*, which included an update to taxiway designations. Due to the significant changes to the LAL taxiway system, it is recommended that a review of the overall systems taxiway designations is conducted at the time the existing secondary runway is decommissioned then a new south parallel runway is constructed, and potential re-designation is done to ensure the designations are simple and logical based on the changes. While this re-designation is not necessary at this time, as the overall taxiway system changes with the addition of the south parallel runway and removal of the secondary crosswind runway, it is recommended that the taxiway designations be updated as well. Based on the selected ultimate taxiway re-configuration, an ultimate taxiway re-designation has been proposed on the updated ALP sheet.

### 1.3.8. Inadvisable Airfield Geometry

Inadvisable airfield geometry includes pavement which is non-compliant with updated airfield standards, and pavement geometry prone to high-activity with multiple intersecting centerlines. This can include runway, taxiway and apron pavement and intersections. Similar to the updates that are necessary to meet taxiway design standards, updates to alleviate inadvisable airfield geometry should be made as development projects are completed that impact these specific pavement areas.

At LAL, there is one area with inadvisable geometry:

- Runway 27 end taxiway connector (Taxiway C).

### 1.3.9. Aircraft Run Up Areas

Aircraft run up areas, also referred to as holding bays or holding pads, are crucial for efficient flow on airfields. These are used by pilots to perform their final pre-flight procedures, including instrument and engine performance checks, as well as to hold while waiting for departure clearance or other ATC instructions. They should be designed to provide a clearly marked area for pilots to park that will keep their aircraft clear of the active taxiway. As with many of the other changes that the 2012 update to the airport design AC made, new standards for run up areas were also introduced. Run up areas should provide aircraft the ability to bypass one-another while providing proper wingtip clearances using taxiway centerline markings and other visual cues such as grass islands, where applicable.

LAL does not currently have any run up areas. Run up area’s have been proposed at most runway ends, where able, to accommodate final pre-flight procedures and while holding for departure clearance or other ATC instructions.

### 1.3.10. Annual Service Volume

There are three metrics that describe the capacity of the Airport is simple terms. Those metrics are Hourly VFR Capacity, Hourly IFR Capacity, and Annual Service Volume (ASV). ASV is a measure of the number of annual operations that can occur at the airport without incurring delay, also referred to as annual capacity. Calculating the capacity metrics is completed using the throughput method outlined in FAA AC 150/5060-5, *Airport Capacity and Delay*. Several parameters are considered when calculating the VFR and IFR Hourly Capacity, such as Instrument Approach Procedures (IAP), Visual Flight Rules (VFR), and Instrument Flight Rules (IFR). ASV is calculated based on the existing runway configuration, aircraft mix, and the parameters and assumptions identified herein, and incorporates the hourly VFR and IFR capacities calculated previously. Additional details on the calculation are provided in Section 5.4.

Based on those formulas, the VFR Hourly Capacity at LAL was calculated to be 99 operations per hour in favorable conditions. The IFR Hourly Capacity calculations use many of the same assumptions as the VFR Hourly Capacity calculations but utilize a different set of formulas because of the lower visibility associated with IFR operations. The IFR Hourly Capacity at the Airport is 54 aircraft operations per hour. This lower number of operations is primarily because of the greater aircraft separation requirements and the instrument approach capabilities of the Airport.

ASV is used as a guide in determining when airport development should occur in order to meet the growing demand. FAA Order 5090.5, *Formulation of the NPIAS and ACIP*, states that planning for a new or extended runway to increase hourly capacity should begin once the airports demand reaches 60 percent of the ASV. Development should begin once the airports demand reaches 80 percent of the ASV, or within 5-years of that point. Based on the FAA approved forecast, the ASV at LAL was calculated to be 222,437, with current annual operations totaling 116,653, or 52 percent of the ASV. **Table 1-7** presents the annual demand compared to the current ASV throughout the 20-year planning period.

**Table 1-7 ASV to Operations Comparison**

| Year | ASV | Total Annual Operations | % of ASV |
|---|---|---|---|
| Base Year (2017) | 222,437 | 116,653 | 52 |
| +5 yrs (2023) | | 151,700 | 68 |
| +10 yrs (2028) | | 177,900 | 80 |
| +20 yrs (2038) | | 223,200 | 100 |

Based on the comparison of the ASV to the forecast annual operations, LAL operations will reach the calculated ASV at the end of the 20-year planning period, with operations surpassing 80 percent of the ASV within 10-years. For this reason, planning for capacity enhancements was identified in the facility requirements and included in the overall airport development alternatives.

## 1.3.11. Hangar Facility Requirements

Many of the hangar facility requirements are connected to the number, type, and frequency of aircraft operations and to the number of aircraft based at the airport. Available hangar and apron facilities are some of the most crucial facility requirements at the Airport and are an important part of the planning analysis. Chapter 5 of the Master Plan document presents detailed analysis of the hangar availability and the projected need for new hangars. Information presented in section 5.5.1, Aircraft Storage Hangars, shows a current deficiency at the Airport in both T-Hangars and Conventional Hangars.

## 1.3.12. Aircraft Parking Apron

The Airport has multiple aircraft parking areas. To identify the required parking needed for based aircraft not stored in a hangar, as well as transient aircraft requiring temporary parking, a demand analysis for the parking has been conducted. Transient aircraft are those that are visiting the Airport on a temporary basis and do not remain for an extended period. Due to the Airport's flight training operations, it is assumed that 45 percent of the based single-engine aircraft, 30 percent of multi-engine aircraft, and 20 percent of rotorcraft will be stored on apron pavements. Itinerant apron space is intended for relatively short-term parking periods, usually less than 24 hours. For the purpose of this study, it is assumed the average itinerant aircraft occupies the apron for five hours. Based on calculations presented in section 5.5.2, General Aviation Aprons, the Airport is currently deficient in square footage of apron space.

## 1.3.13. General Aviation Terminal

The existing General Aviation (GA) terminal is described in Chapter 2, Inventory of Existing Conditions. Chapter 5 of ACRP Report 113, *Guidebook on General Aviation Facility Planning*, provides general guidance as to the sizing of GA terminals. The primary consideration is that the facility can support the number of pilots, passengers, and visitors which could reasonably be expected during peak hour operations. GA facility sizing can range from 100 to 150 square feet per person. For planning purposes, the ACRP suggests using a factor of 2.5 people per-peak hour operation (pilots and passengers). Additionally, combining the square-footage of the terminal building and the FBO facility produced total "terminal" space available at the Airport today. The logic being that the majority of GA itinerant users are likely to use the FBOs rather than the Terminal; thus, the FBO shared public space in fact adds to the overall "terminal" space at the Airport, even though the space is located in different physical locations. Calculations shown in Section 5.5.4, GA Terminal, show an existing and future deficiency in terminal square footage. Planning for expansion of the GA terminal facilities is required within the 20-year planning period.

In addition to the GA terminal apron, the Airport is actively pursuing scheduled commercial service. While no commercial service currently exists, prudent planning calls for identification and reservation of adequate airside property and facilities in the eventuality that scheduled commercial service were to begin. For this reason, an area has been identified within each of the airside alternatives for this purpose. Further analysis is provided for a potential commercial passenger terminal in 9.2.2.Appendix A:.

## 1.4. Preferred Development Alternative

The airport development plan outlines the necessary development and facility requirements to meet the forecast demand, ensure competitiveness, financial viability, and to provide the Airport and surrounding community with the greatest overall benefit.

Alternatives have been developed independently for the airside and landside. Airside alternatives include development affecting runways, taxiways, and navigational aids. Landside alternatives include development such as general aviation aprons and hangars, terminal apron and terminal building, MRO and Cargo, and access roads.

### 1.4.1. Preferred Airfield Development Alternative

The preferred airfield development alternative incorporates a major airfield redesign. The redesign is a result of significant growth in operations. A portion of these new operations are a result of a new airport tenant, Amazon Prime Air, which will begin daily cargo operations in July 2020. In addition to increased operations, the new tenant will bring wide body cargo aircraft that will necessitate an overall increase in the Airports airport reference code from C-III to C-IV. **Table 1-8** provides a listing of all major development items included in the preferred airfield development alternative. Detailed information is provided in Chapter 6, Airport Development Plan.

**Table 1-8 Preferred Airfield Development Alternative Major Changes**

| Development Item | Description |
|---|---|
| Runway | Runway 05/23 to be decommissioned, then construct a new south parallel runway to existing Runway 09/27 (Future 10L/28R). The new parallel runway will be 7,400-feet long and 150-feet wide and meet C-III design standards. |
| Runway | Runway 09/27 to be extended (when applicable) from 8,499-ft to 10,000-ft. |
| Approach Lighting System | Runway 09/27 approach light system to be upgraded to an Approach Light System with Sequenced Flashers II (ALSF-2). |
| Navigational Aids | The Instrument Landing System (ILS) will be upgraded from CAT I to SA CAT II, shortly followed by a further upgrade to CAT III. |
| Navigational Aids | The VOR will be relocated to allow for the realignment of Runway 05/23 and associated taxiway system development and meet separation standards. |
| Taxiways | Existing inadvisable taxiway geometry will be adjusted to meet design standards. |
| Taxiways | Taxiway B (Future Taxiway K), from the intersection of Taxiway A south, will be removed to allow for the construction of the new south parallel runway and associated taxiway system development. |
| Taxiways | Taxiway P (Future Taxiway B) will be shifted to allow for the ILS upgrade. Taxiway P will be combined with the shifted Taxiway D and extend the full length of Runway 09/27. |
| Taxiways | A south parallel taxiway will be constructed to the new south parallel runway providing access to the southern airport facilities. |

### 1.4.2. Preferred Terminal Development Alternative

The preferred terminal development alternative incorporates a realignment of the northside facilities in order to consolidate the various types of operations. The realignment is necessary due to the introduction of a major new operational type, air cargo. Additionally, as the airport continues to pursue scheduled commercial service, separation of operational types will continue to be necessary. As outlined in Chapter 5, Design Criteria and Facility Requirements, additional hangar and apron space will be needed to accommodate the forecast demand. In order to ensure long term use of all facilities as the operational types at the airport evolve, distinct area’s have been identified and planned. **Table 1-9** provides a listing of all major development items included in the preferred terminal development alternative. Detailed information is provided in Chapter 6, Airport Development Plan.

**Table 1-9 Preferred Terminal Development Alternative – Major Changes**

| Development Item | Description |
|---|---|
| Cargo | Cargo development is currently underway on the north side of the Runway 9 threshold. Expansion is anticipated and future aeronautical development area has been identified. |
| Business Aviation | A centralized business aviation area has been identified to the southwest of the existing terminal and FBO. This will provide a consolidated area for all business aviation, including relocation of the FBO and support facilities. |
| Storage Hangars | Additional conventional hangars and t-hangars have been identified in the area directly south of the air traffic control tower. |
| Fuel Farm | A centralized fuel farm has been identified between the cargo area and t-hangars that will allow for significant growth when necessary. |
| Future Aeronautical Development | Significant future aeronautical development areas have been identified in the northeast of the airport as a result of the decommissioning of Runway 05/23. Additional areas are identified around the airport where connections to the existing and future taxiway system allow. |

## 1.5. Capital Improvement Plan

The Capital Improvement Plan (CIP) is a tool for outlining planning and development needs over the 20-year planning period. The projects included in the CIP are vital to achieve the future goals and objectives of the airport and meet the growing demand. The projects included in the CIP are prioritized based on meeting the goals of the airport while addressing all capacity, safety, and security needs. The CIP is broken down into short-term (1-5 years), medium-term (6-10 years), and long-term (11-20 years) needs. Projects phasing also takes into account anticipated funding availability in each year. The CIP is presented in **Table 8-2**, **Table 8-3**, **Table 8-4**, and **Table 8-5** within Chapter 8, Capital Improvement .

# Covid-19 Master Plan Disclaimer

Airport master planning is intended to aid an airport in achieving its future goals and objectives by documenting existing conditions, observing past trends to project future growth expectations, and providing a development plan of future facilities needed to meet the airport's future demands. This Airport Master Plan Update (AMPU) commenced in October 2017, and the predicted growth in aviation activity was based upon official FAA historical records on aircraft operations and passenger enplanements reported from 1998 through 2017. The Federal Aviation Administration (FAA) finalized their review and approved the aviation activity forecasts associated with this AMPU on October 10th, 2018.

On March 25th, 2020, the United States President approved disaster declarations for Florida and other states, resulting from what is currently a global pandemic (the Pandemic) of coronavirus disease 2019 (COVID-19) also commonly known as the 'coronavirus pandemic', caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

The Pandemic's outbreak originated from Wuhan, the capital city of the Hubei province, People's Republic of China and was first identified in a person on November 17, 2019, more than one month earlier than doctors began noting cases of the disease. The World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern and a global pandemic on January 30 and March 11, 2020 respectively.

Globalized aviation from Wuhan was evidently the main source of the rapid international spread of the Pandemic. Before being closed due to the Pandemic on January 23, 2020, the Wuhan Tianhe (translated 'Sky River') International Airport was the busiest airport in central China, serving nearly 21 million passengers in 2016, making it the fourteenth busiest passenger service airport in China. That airport provided direct international connections to destinations such as New York City, San Francisco, London, Tokyo, Rome, Istanbul, Dubai, Paris, Sydney, Bali, Bangkok, Moscow, Osaka, Seoul, and Singapore, the combination of which could link an international passenger to practically every international airport in the world.

The global air transport impact from the Pandemic has been unprecedented. Since the birth of commercial passenger aviation in 1926, no other pandemic or event, including the September 11, 2001 Terrorist Attacks (9/11), has been as catastrophic to aviation demand. By comparison, overall revenues from the airline industry fell by $23 billion in the wake of 9/11, whereas forecast implications of the Pandemic range from $63 to $113 billion lost revenues.

Airports Council International (ACI) released an updated model in May 2020 which forecast prolonged and more widespread impacts and effects of the Pandemic, resulting in worse predictions for traffic and revenue losses for airports across all regions. ACI's current prediction estimates a reduction of more than two billion passengers at the global level in the second quarter of 2020 and more than 4.6 billion passengers for all of 2020. That represents an estimated decline in total airport revenues on a global scale of $39.2 billion in the second quarter and more than $97 billion for 2020.

In effort to reduce those impacts to U.S. airports and airlines, among other industries, U.S. Congress passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act (H.R. 748, Public Law 116-136), which was signed into law by the President on March 27, 2020. The CARES Act included $10 billion in funds to be awarded as economic relief to eligible U.S. airports which were affected by the prevention of, preparation for, and response to the Pandemic.

The projections and forecasts in this AMPU may not occur as they are anticipated. However, given the unique operational types at the Lakeland Linder International Airport (LAL), and the introduction of a major cargo operator, impacts of the Pandemic may not be as severe on the airport's activity. Given the almost inevitable recovery of the aviation industry, the levels of aircraft operations predicted by this AMPU may increase the shelf life of the plans presented to facilitate that growth. Furthermore, the timelines presented in the forecast chapter should be viewed as Planning Activity Levels (PALs) to understand that future airport improvements are tied to such levels and not dates on a calendar. Given the uncertainty caused by the Pandemic, development presented in this AMPU may require further justification prior to its implementation.

# Inventory of Existing Conditions

FlyLakeland
Lakeland Linder International Airport

# 2. Inventory of Existing Conditions

The development of an Airport Master Plan (AMP) for Lakeland Linder International 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 information collected as part of the inventory will establish a baseline condition for the Airport which will be compared to future requirements determined from the aviation forecast and the demand/capacity analysis. 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 following sections.

- Airport Facility Inventory
- Airspace Structure
- Land Use
- Previous Studies

## 2.1. Airport Background

Lakeland Linder International Airport (LAL) is publicly owned and operated by the City of Lakeland. LAL is located on an approximate 1,710-acre property in Polk County. The Airport is located approximately five miles southwest of the City of Lakeland and 27 miles east of Tampa International Airport (TPA). **Figure 2-1**, Location Map, depicts the location of LAL within the State of Florida. **Figure 2-2**, Vicinity Map, shows the Airport in relation to the surrounding community.

### 2.1.1. Regional Setting

The location of LAL could be considered both a weakness and opportunity. The Airport is in the vicinity of both TPA and Orlando International Airport (MCO). TPA and MCO are two of the busiest airports within the State of Florida in terms of overall operations and passenger enplanements. According to the Air Service Study completed in 2015, LAL is a viable alternative to accommodate the future excess commercial demand and capitalize on the tourism opportunity within the State of Florida, since TPA and MCO are unable to increase overall capacity. The Airport is approximately 45 minutes from Walt Disney World's main gate.

### 2.1.2. Airport History

Lakeland Linder International Airport was constructed in 1940 to replace the original Lakeland Municipal Airport. The Airport was named Drane Field in honor of Herbert J. Drane, who moved to Lakeland in November 1883, where he was considered one of the founders of the City. Drane served as mayor of Lakeland from 1888-1892 and served as a member of the U.S. House of Representatives from 1917-1933. In 1941 the Airport was leased to the United States War Department to support various World War II missions. At that time, the U.S. Army renamed the Airport to Lakeland Army Air Field. During the duration of the war, military personnel received flight training in various combat bombers and fighter aircraft. At the end of World War II in 1945, the Airport was closed and placed in a standby status until 1946 when the War Assets Administration declared the facility as surplus and turned it over to the City of Lakeland for a return to civil use.

At the time the facility was declared surplus, the size of the Airport's facilities far exceeded the City's needs, and the high cost of converting to public use far outweighed the benefits. After a decade of laying vacant, the closure of a nearby municipal airport in 1957 sparked a need to re-develop Drane Field to have it become suitable for public aviation use. In 1960, after the development for public aviation use, Drane Field was rededicated as Lakeland Municipal Airport. In the 1970s, it was renamed to Lakeland Regional Airport. It was then renamed again in the late 1980s to the name Lakeland Linder Regional Airport. This name honors Paul Scott Linder, who founded Linder Industrial Machinery in 1953. This Lakeland based company was a multimillion-dollar heavy construction machinery company. Linder played a large role in the community and held the title of Chairman of the Lakeland Economic Development Council, and Director of the Florida Chamber of Commerce. The name was then changed again in 2018 to Lakeland Linder International Airport with the opening of the U.S. Customs and Border Control facility at the airport.

### Commercial Air Service

Commercial air service was present at LAL as early as 1947. In that year, National Airlines relocated to the Airport after the closure of Lodwick Field. The airline operated out of the Airport until its final departure in 1962. Shortly after National Airlines left, Allegheny Commuter (Sun Airlines) conducted commercial air service starting from mid-1960's to the early 1970's. From 2006 to 2008 the Airport had partial air service under FAR Part 135 (AirTaxi) by DayJet using Very Light Jet (VLJ) aircraft. However, due to a significant economic downturn DayJet ceased operations in September 2008. The Airport had no commercial air service until the arrival of Direct Air in June 2011. That airline had scheduled commercial passenger service, utilizing Boeing 737s, to destinations including Springfield, IL, Myrtle Beach, SC, Plattsburgh, NY, and Niagara Falls, NY. Direct Air ended service in March 2012.

### Airport Sustainability

In 2012 LAL became the first airport in the region to open a large-scale solar farm on the property. The 5.5-megawatt solar farm was constructed in partnership with the City of Lakeland and Sun Edison. The solar farm effectively eliminates airport electricity costs as well as provides power to approximately 7,000 homes in the area.

### Air Traffic Control Tower

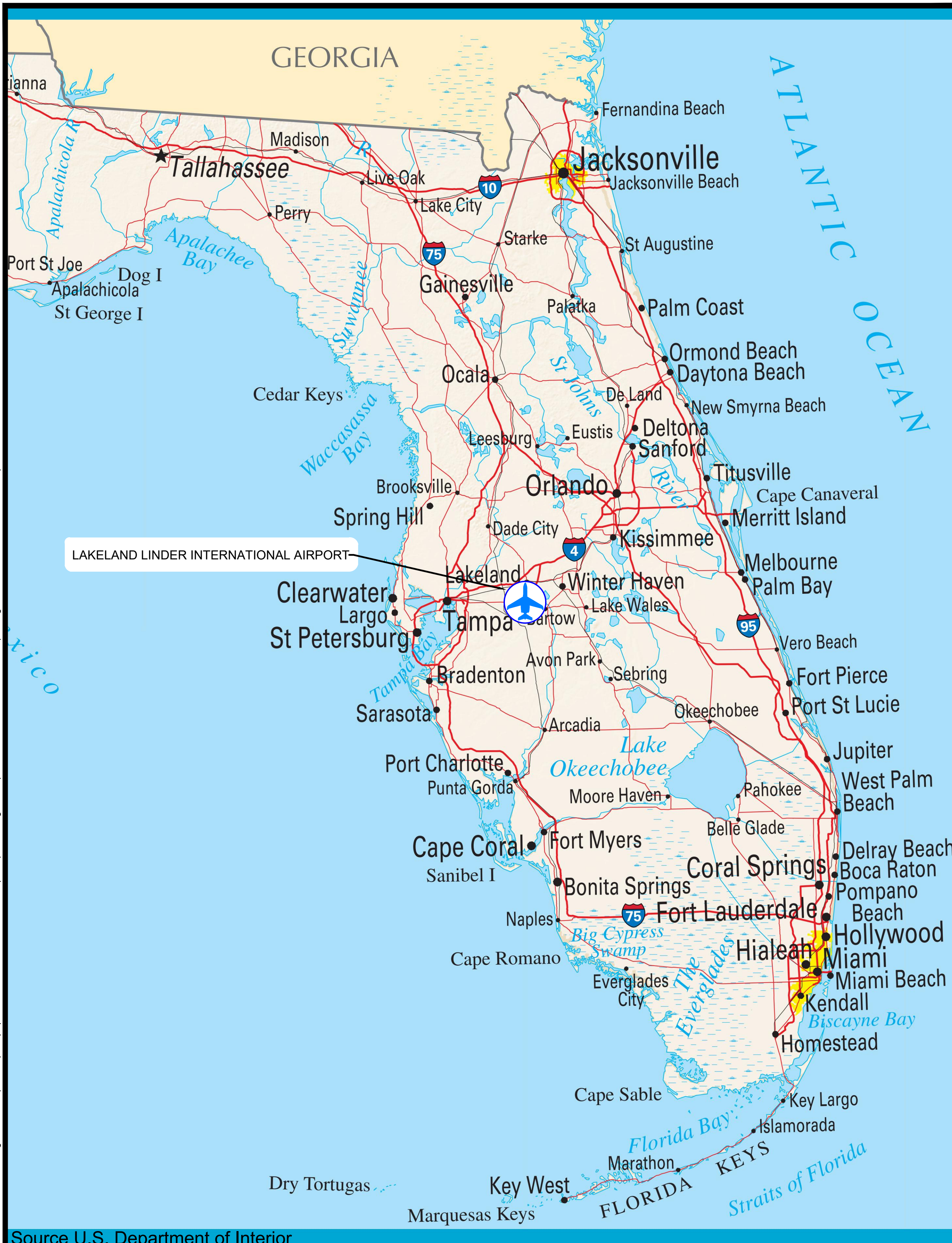
The Airport's new Air Traffic Control Tower (ATCT) was completed in 2016. This facility replaced the previous tower which was no longer located appropriately for controller line of sight, had insufficient height, and was in poor condition. The new ATCT structure and related infrastructure has been positioned to allow clearer line of sight for controllers and to maximize future airport development opportunities.

### US Customs and Border Patrol

A newly developed U.S. Customs and Border Protection Facility was opened in 2017 allowing the Airport to accept international flights. The first international flight was welcomed on November 16, 2017.

## 2.2. Management Structure

The management of the Airport is subject to the City's own organizational structure. **Figure 2-3** presents an organizational chart for the Airport, depicting the direct lines of responsibility structure for airport management and how the Airport connects with the City's formal organizational structure. Policy and operational decisions rest with the City of Lakeland, yet the Airport management has been delegated the authority to make many of the decisions. The Airport's current staff consists of a management team lead by the Airport Director. Reporting directly to the director are managers of various airport functions.




ATKINS

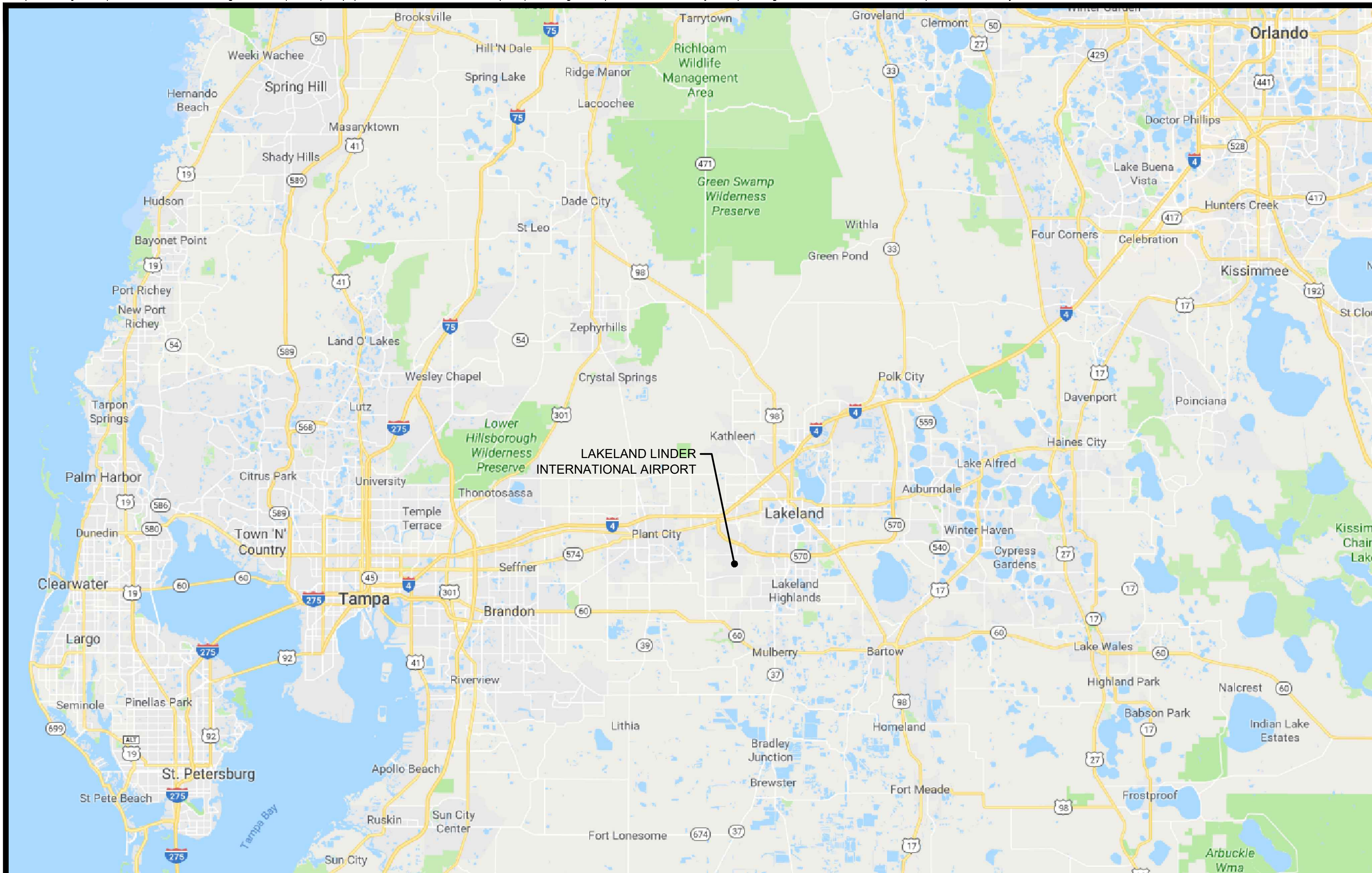
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

FlyLakeland Lakeland Linder International Airport

Location Map

Figure. 2-1




ATKINS
Member of the SNC-Lavalin Group

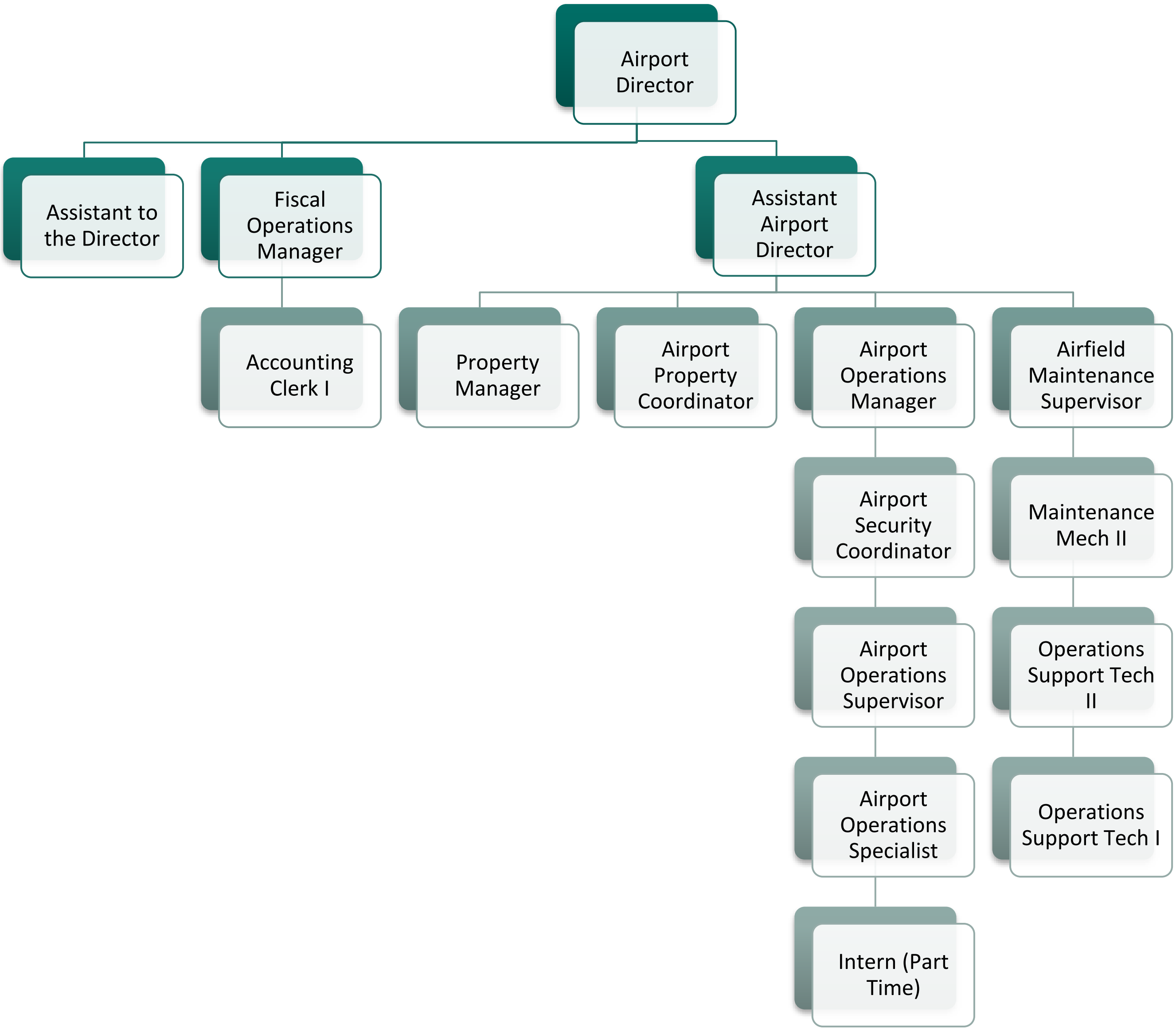
Lakeland Linder International Airport
Airport Master Plan Update

Vicinity Map

FlyLakeland
Lakeland Linder International Airport

Figure. 2-2

**Figure 2-3 Airport Management Structure**




Source: LAL Intermodal Feasibility Study, 2015

## 2.3. Airport Facility Inventory

The identification of existing aviation facilities, their locations and abilities to meet the Airport's daily needs are essential elements of the master planning process. 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; fuel (100LL and Jet A); hangars and tie-downs; major airframe and power-plant maintenance; avionics service; 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.

### 2.3.1. Airside Facilities

Airside facilities are critical components of an airport and include more than just the runways and taxiways. The following sub-sections present information collected on key airside facilities. **Figure 1-4** depicts the airport's existing airfield layout.

#### 2.3.1.1. Runways

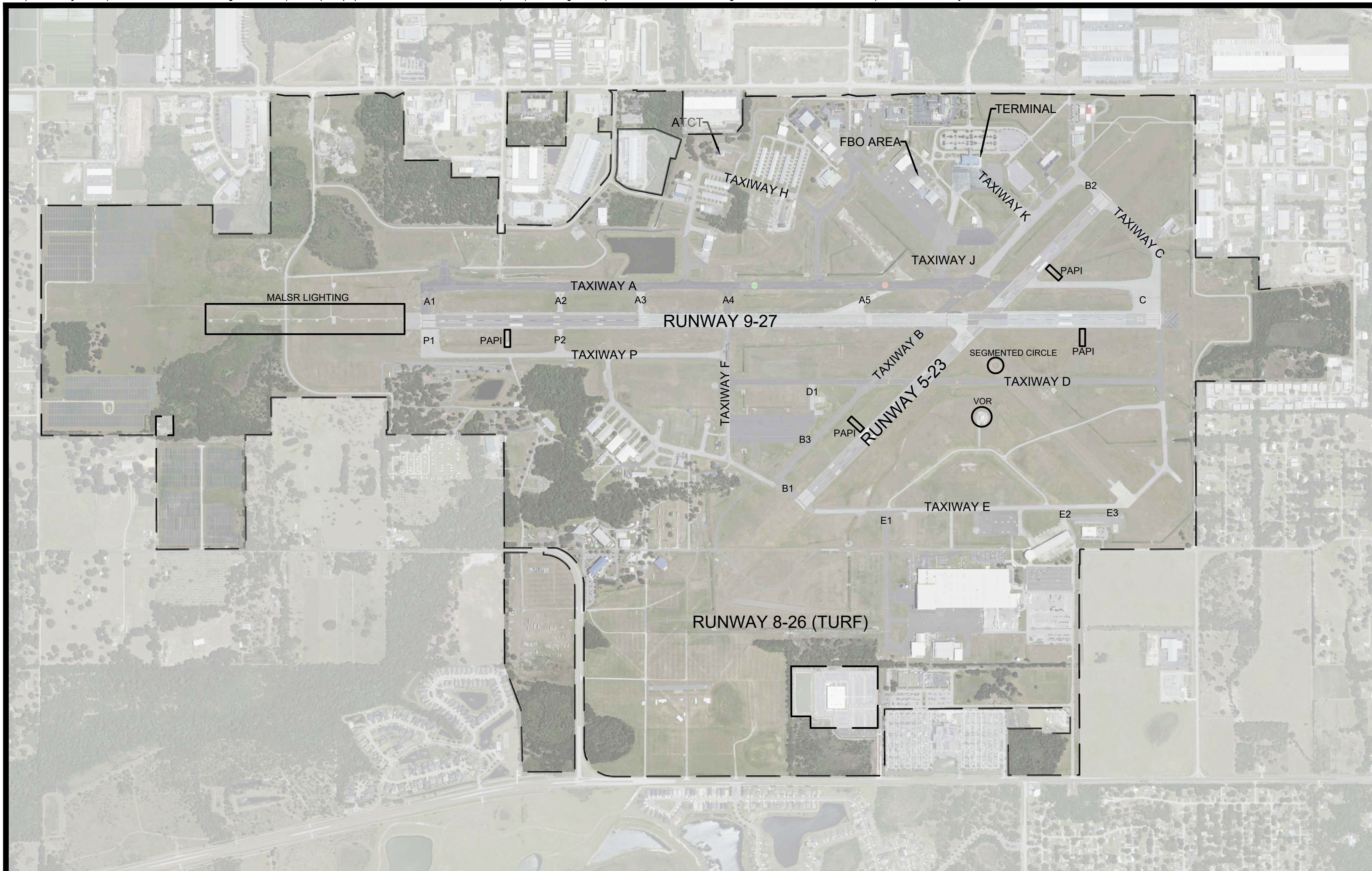
The existing airfield configuration consists of three bi-directional runways. Runway 09/27 is considered the Airport's primary runway and is 8,499 feet long and 150 feet wide. Its surface is grooved asphalt and is currently reported to be good condition. Runway 05/23 is 5,005 feet long and 150 feet wide. It's surface composition similar to Runway 09/27, is grooved asphalt reported in good condition. Runway 08/26 is a turf surface runway and is approximately 2,205 feet long and 60 feet wide. Runway 08/26 was activated in November 2016. Runway 08/26 requires pre-approval from the Airport in order to utilize the facility. **Table 2-1** provides a comprehensive breakdown of each runway and their respective characteristics.

**Table 2-1 Runway Characteristics**

<table>
<tr><th>Dimensions</th><th colspan="2">Runway 09/27</th><th colspan="2">Runway 05/23</th><th colspan="2">Runway 08/26</th></tr>
<tr><td>Length (ft.)</td><td colspan="2">8,499</td><td colspan="2">5,005</td><td colspan="2">2,205</td></tr>
<tr><td>Width (ft.)</td><td colspan="2">150</td><td colspan="2">150</td><td colspan="2">60</td></tr>
<tr><td>Surface Material</td><td colspan="2">Asphalt/Grooved</td><td colspan="2">Asphalt/Grooved</td><td colspan="2">Turf</td></tr>
<tr><td>Markings</td><td colspan="2">Precision/Non-Precision</td><td colspan="2">Precision/Non-Precision</td><td colspan="2">Threshold & Edge Concrete Markers</td></tr>
<tr><th colspan="7">Load Bearing Capacity by Gear Type</th></tr>
<tr><td>SWL* (pounds)</td><td colspan="2">50,000</td><td colspan="2">94,000</td><td colspan="2">N/A</td></tr>
<tr><td>DWL* (pounds)</td><td colspan="2">250,000</td><td colspan="2">150,000</td><td colspan="2">N/A</td></tr>
<tr><td>2DWL (pounds)</td><td colspan="2">N/A</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td>DT (pounds)</td><td colspan="2">550,000</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td>3D (pounds)</td><td colspan="2">840,000</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td>PCN Data</td><td colspan="2">79/F/A/X/T</td><td colspan="2">35/F/A/X/T</td><td colspan="2">N/A</td></tr>
<tr><th colspan="7">Runway Approach Slope & Effective Gradient</th></tr>
<tr><td>Approach Slope</td><td colspan="2">3.00 Degrees</td><td colspan="2">3.00 Degrees</td><td colspan="2">N/A</td></tr>
<tr><td>Effective Gradient</td><td colspan="2">0.10% Up/Down</td><td colspan="2">0.20% Up/Down</td><td colspan="2">N/A</td></tr>
<tr><th>Runway End Coordinates</th><th>Runway 9</th><th>Runway 27</th><th>Runway 5</th><th>Runway 23</th><th>Runway 8</th><th>Runway 26</th></tr>
<tr><td>Latitude</td><td>N 27° 59' 21.2540"</td><td>N 27° 59' 21.4565"</td><td>N 27° 59' 00.3894"</td><td>N 27° 59' 35.5214"</td><td>N 27° 58' 47.2700"</td><td>N 27° 58' 47.2740"</td></tr>
<tr><td>Longitude</td><td>W 082° 02' 01.9263"</td><td>W 082° 00' 27.1192"</td><td>W 082° 01' 13.3832"</td><td>W 082° 00' 34.0067"</td><td>W 082° 01' 30.2920"</td><td>W 082° 01' 05.7030"</td></tr>
</table>

*Single Wheel Load (SWL), Dual Wheel Load (DWL), Two Dual Wheel Load (2DWL), Dual Wheel Tandem (DT), Triple Wheel Tandem (3D)

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-4_LAL Airfield.dwg Jan23,2020 - 1:09pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

Existing Airfield

FlyLakeland
Lakeland Linder International Airport

Figure. 2-4

**Declared Distances**

The FAA requires airports having certain operational limitations to publish declared distances for each runway. This information informs pilots what the available runway lengths are for different types of operations to maintain standard safety areas and protection zones. Declared distances include the following.

- Takeoff Run Available (TORA) – The runway length declared available for the ground run of an aircraft.
- Takeoff Distance Available (TODA) – The runway length declared available for the ground run of an aircraft plus any remaining clearway.
- Accelerate-Stop Distance Available (ASDA) – The length of runway plus any stop way declared available and suitable for the safe deceleration of an aircraft after aborting a take-off.
- Landing Distance Available (LDA) – The length of runway declared available for landings.

The Airport's declared distances have been published. **Table 2-2** shown below, shows the published distances for each category for each runway.

**Table 2-2 Declared Distances**

| Runway | TORA | TODA | ASDA | LDA |
|---|---|---|---|---|
| 9 | 8,499' | 8,499' | 8,414' | 8,414' |
| 27 | 8,499' | 8,499' | 8,499' | 8,499' |
| 05/23 | 5,005' | 5,005' | 5,005' | 5,005' |
| 8 | 1,650' | 2,010' | 2,205' | 1,845' |
| 26 | 1,845' | 2,205' | 2,205' | 1,650' |

Source: Atkins Analysis 2017

### 2.3.1.2. Taxiways/Taxilanes

Both Runways 09/27 and 05/23 have full-length parallel taxiway systems. In addition, LAL has multiple taxiways and taxilanes that provide access to both runways as well as all airside facilities. Those taxiways and taxilanes are designed to satisfy the critical aircraft requirements. **Figure 2-4** depicts the current taxiway and taxilane layout. A summary of LAL's taxiways and taxilanes is as follows.

- Taxiway Alpha (A) is a 75-foot wide full-length parallel taxiway on the north side of Runway 09/27. It lies approximately 400 feet from runway centerline to taxiway centerline. It has five connections from Runway 09/27, with connection A5 being a high-speed exit for operations arriving on Runway 9. This taxiway crosses over Runway 05/23 approximately 1,350 feet from the Runway 23 threshold.
- Taxiway Bravo (B) is a full-length parallel taxiway on the west wide of Runway 05/23. Its width varies based on location. At the Runway 23 threshold and connector B2 the taxiway is 75 feet wide down to the runway crossing of Runway 09/27. After that it becomes 50 feet wide down to connection B1 at the Runway 5 threshold. It's runway separation from Runway 05/23 is 400 feet. Taxiway B has three connections (B1-B3). Connections B1 and B2 are located at either end of Runway 05/23. Connection B3 is located towards the newly constructed apron area in the vicinity of the Runway 5 approach end.
- Taxiway Charlie (C) is located east of the Runway 23 approach end and north of the Runway 27 approach end. It connects those two runway ends and intersects Taxiway A. Taxiway C is 75 feet wide.
- Taxiway Delta (D) is 60 feet wide and lies south of Runway 09/27. It begins at Taxiway Echo and runs west to Taxiway Foxtrot, while crossing both Runway 05/23 and Taxiway B. It crosses Runway 05/23 approximately 1,800 feet from the Runway 5 threshold. There is one connection along Taxiway D (D1) which connects to the newly constructed southwest apron area.
- Taxiway Echo (E) is 50 feet wide and runs on the southeast portion of the Airport. This taxiway begins at the Runway 27 end, runs south of the runway end and turns west adjacent to the Runway 5 approach end. It ultimately connects with the Runway 5 approach end, with three connections (E1-E3) between the

turn west and the runway end. Located near the connections on Taxiway E are tenants including Polk State College, International Aero Academy, Kingsky Flight Academy, and more.

- Taxiway Foxtrot (F) is 50 feet wide and runs perpendicular to Runway 09/27. It begins across the runway from Taxiway A4 and provides access to both Taxiways P and D, as well as the newly constructed apron on the southern portion of the airfield.
- Taxilane Golf (G) is 50 feet wide and runs perpendicular to and north of Taxiway A, towards the airside facilities located on the northern portion of the airfield. The taxilane splits into a "Y" formation, with one direction going towards Taxilane Hotel (H) and the other going towards the existing tenant and Fixed Based Operator (FBO) facilities.
- Taxilane H is 50 feet wide and runs perpendicular to and north of Taxiway A. This taxilane ultimately joins with Taxilane G, after running north of Taxiway A and turning east after passing the T-hangar facilities.
- Taxiway Juliet (J) runs perpendicular to and north of Taxiway A. It has a small section which connects Taxiway A with the Taxilane/Apron for the existing FBO and Terminal Facilities.
- Taxiway Kilo (K) runs perpendicular to Taxiway B. Taxiway K gives access to the existing terminal apron area.
- Taxiway Mike (M) is a 75-foot-wide connector off of the northside of Taxiway P, located between A1 and A2.
- Taxiway Papa (P) is 50 feet wide and runs parallel to Runway 09/27 from the Runway 9 approach end approximately 3,500 feet. This taxiway has two connections, one located at the Runway 9 approach end and another located across from connecting taxiway A2.

#### 2.3.1.3. Airfield Pavement Condition

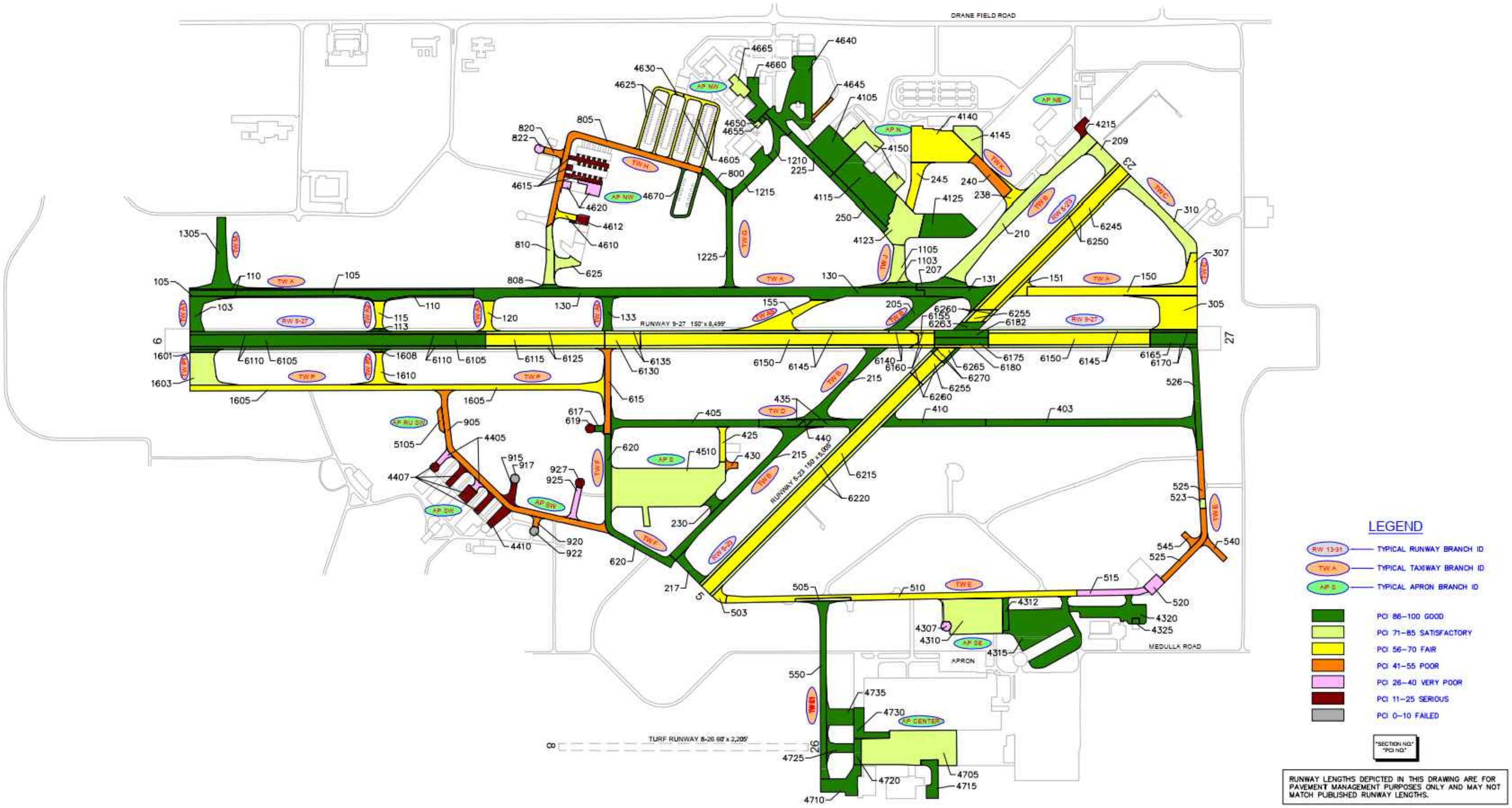
The most recent FDOT Airfield Pavement Condition Index (PCI) Rating Inspection report available for LAL was completed in November of 2019. In this report, both asphalt runways (Runway 09/27 and Runway 05/23) have portions that are deemed in "Fair" condition. Taxiways at LAL have been classified anywhere from good to serious condition. **Table 2-3** and **Figure 2-5** depicts the 2019 pavement condition report at LAL.

**Table 2-3 Taxiway Pavement Condition**

| Taxiway | Pavement Type | Width | PCI Range | Action Needed |
|---|---|---|---|---|
| A | Asphalt | 75' | 63-100 | No |
| B | Asphalt | 75'/50' | 71-100 | No |
| C | Asphalt | 75' | 65-80 | No |
| D | Asphalt | 60' | 57-100 | No |
| E | Asphalt | 50' | 33-100 | Yes |
| F | Asphalt | 50' | 21-100 | Yes |
| G | Asphalt | 50' | 83-100 | No |
| H | Asphalt | 50' | 29-100 | Yes |
| J | Asphalt | 75' | 56-100 | No |
| K | Asphalt | 75' | 51-70 | No |
| M | Asphalt | 75' | 100 | No |
| P | Asphalt | 50' | 65-91 | No |

Source: FDOT PCI Report, 2019

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-5_LAL_PCI.dwg Jan23,2020 - 1:12pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

Existing Pavement Condition

FlyLakeland
Lakeland Linder International Airport

Figure. 2-5

The Airport recently completed an update of the pavement condition study in 2019. The entirety of Runway 09/27 was strengthened in May 2020 due to anticipated aircraft operations. The runway strength can now accommodate a Boeing 767-300F, which has a maximum takeoff weight (MTOW) of 370,800 pounds.

#### 2.3.1.4. Lighting

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

**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 beacon is located north of Taxilane H on the top of the ATCT.

**Obstruction Lighting**

Existing obstructions that cannot be removed are lighted. Obstructions near the Airport are marked or lighted during both daylight and night time hours, to warn pilots of their presence. These 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). A more detailed analysis of airspace obstructions will be conducted as part of the Airport Layout Plan phase of the report.

**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 night-time approaches under VFR conditions. The approach lighting system provides the pilot with visual clues concerning aircraft alignment, roll angle, height, and position relative to the runway threshold.

Runway 9 is equipped with a MALSR. Such systems assist pilots transitioning from the cockpit instrument landing segment to the runway environment. Those systems provide a lighted approach path along the extended centerline of the runway. Runway alignment indicator lights flash in sequence as a series of blue-white lights moving toward the runway threshold. These lights brilliantly 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 approach light system utilized by LAL is the Precision Approach Path Indicator (PAPI). The PAPI is a system of lights located near the runway end, which provides the pilot with visual descent guidance information during an approach to the runway. This type of installation has a visual range of approximately four miles. Runways 09/27 and 05/23 are equipped with PAPI-4 (four light unit) systems while Runway 08/26 is not equipped with approach path indicator systems.

**Runway End Identification Lighting**

Runway End Identification Light (REIL) systems are put in place to help pilots rapidly identify runway thresholds in areas of light pollution or large open spaces. These systems consist of two synchronized flashing unidirectional white lights situated near the runway threshold. Currently, LAL does not have REIL systems on any runways. (NOTE: FAA installed REILs at displaced thresholds on Runway 9R and Runway 9L for Sun ‘n Fun Aerospace Expo special traffic procedures.)

**Runway Threshold Lighting**

The identification of runway ends, or thresholds, assists approaching pilots in much the same manner as other approach aids. 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 usable runway. The red half faces the airplane on the rollout or takeoff, indicating the end of the usable runway. LAL has runway threshold lighting on all paved runway ends. There is no threshold lighting on Runway 08/26.

ATKINS

### Runway Lighting

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. At LAL Runway 09/27 and Runway 05/23 have High Intensity Runway Lights (HIRL). Runway 08/26 is not equipped with any runway lighting.

### Taxiway Lighting

Taxiway lighting, which delineates the taxiway edges provides guidance to pilots during periods of low visibility and at night. The most commonly used type of taxiway lighting consists of a series of blue fixtures located along the taxiway edges. These lights provide taxiway alignment up to the apron. Taxiways A, B, C, J, and K, and Taxilanes H and G all have Medium Intensity Taxiway Lighting (MITL) to help identify the outer boundaries of the taxiway pavement. Taxiways D, E, F, and P are unlit. All existing taxiway lighting utilize LED fixtures.

### Apron Lighting

Portions of the terminal apron, U.S. Customs apron, Polk State College apron, South Ramp apron and FBO apron are lit by overhead mast lighting systems. However, to a large extent, the remaining apron areas at the Airport are not lighted. The current overhead mast lighting systems are in fair to poor condition.

## 2.3.1.5. Markings

The precision runway markings for Runway 5 and Runway 9 are in good condition. Runway 27 and Runway 23 have non-precision markings in good condition. Since Runway 08/26 is a turf runway, concrete markers identify both the thresholds and the runway edge. Markings not meeting current FAA guidelines include the VOR Checkpoint at Taxiway C, the terminal ramp parking position markings, and several vehicle roadway markings located on the north side of the airport.

FAA Advisory Circular 150/5340, *Standards for Airport Markings,* identifies specific requirements for taxiways at Part 139 certificated airports such as LAL. Requirements include enhanced taxiway centerline markings, surface painted hold markings, and extension of the runway holding position markings onto the paved shoulders. All taxiway markings are in compliance with FAA AC 150/5340.

## 2.3.1.6. Signage

Lighted airfield signage currently found on the airfield consists of all required signage for a Part 139 certified airport including airfield location signage, mandatory instruction signage, and runway hold position signage. These airfield identification signs assist pilots in recognizing their location on the airfield and directs them to their desired end point.

## 2.3.1.7. Airport Apron Areas

LAL has multiple apron areas which are utilized by transient and based aircraft. LAL's two primary apron areas that are open to the public and located on the northern portion of the airfield. One is controlled by the FBO (Sheltair), while the other is controlled and operated by the Airport. The Airport currently has 54 aviation related tenants many having airside access and private apron areas. A recently constructed apron area is located northwest of the Runway 5 end, which is accessible by Taxiways B, F, and D1.

Cargo facility development planned on the north side of Taxiway A, at Taxiway M, will have approximately 817,000 square feet of apron to support associated operations. No public aircraft parking will be accommodated on this proposed development.

## 2.3.1.8. FAA Air Traffic Control Tower (ATCT)

LAL operates as a Federal Contract Tower controlled airfield, with operation hours from 0600 to 2200. The newly constructed tower was completed in 2016 and is located in the northern portion of the airfield, just north of Taxilane H. This location was deemed the best location for the current and future layout at LAL. The ATCT is 155 feet high. The Airport has a Class D airspace classification that requires pilots to establish two-way communication prior to entering the airspace. ATCT provides guidance for ground vehicles in movement areas as well, where a constant visual connection is always needed.

## 2.3.2. Navigational Aids

Navigational aids, commonly referred to as NAVAIDs, assist pilots with enroute navigation and approaches as well as departures into and out of airports. These aids consist of both ground-based electronic systems and space-based satellite radio systems. NAVAIDs for an airport vary in complexity, which is primarily based on the type of operations that will be occurring at that certain airport. The more sophisticated the NAVAID, the lower the minimums are at an airport. The basis that categorizes these aids consider the type of guidance pilots are receiving while on approach. If there is both vertical and horizontal guidance, then this can be classified as a precision-approach. If there is only horizontal guidance, it is classified as a non-precision approach.

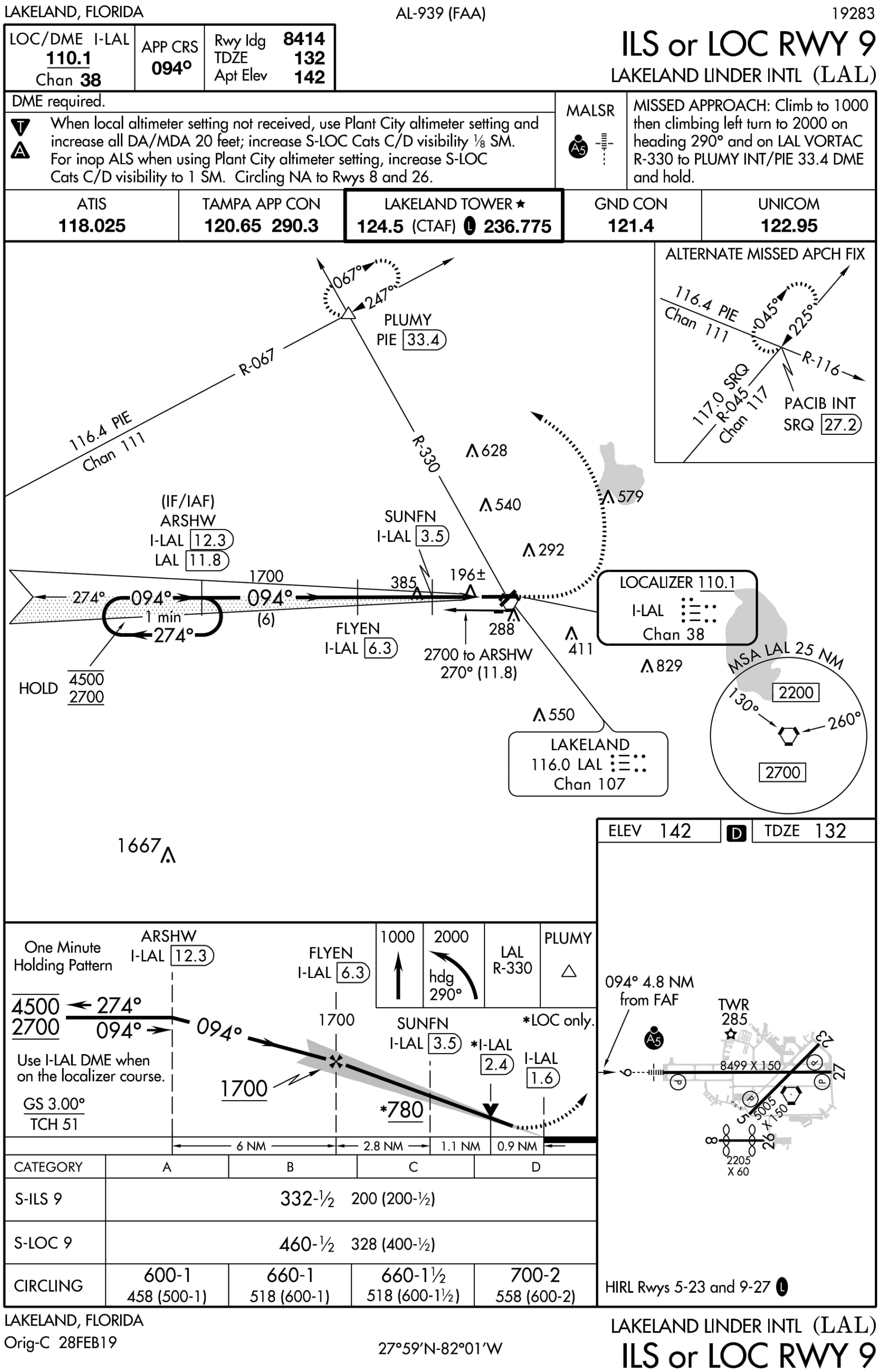
### 2.3.2.1. Terminal Area NAVAIDs and Landing Aids

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.

Currently the Airport has four Area Navigation (RNAV) approaches for Runway 09/27 and Runway 05/23, and two VOR approaches for Runway 09/27. RNAV can be defined as a system of navigation that permits aircraft operation on any desired course within the coverage of station-referenced navigation signals or within the confines of a self-contained system ability. There is one Instrument Landing System (ILS) in addition to one Instrument Landing System Localizer (LOC) for Runway 9. Runway 9 ILS allows for precision instrument operations to be conducted. This allows pilots to operate aircraft into airports where visual contact with the runway ends cannot be established. The system provides both horizontal and vertical guidance to pilots on approach to the runway, where the guidance is established precisely to an appropriate reference point of landing. The VOR approach consists of radio navigation, where a VHF omni directional radio range system allows for aircraft to navigate via the location of the transmitting radio beacon. **Figure 2-6** through **Figure 2-12** depict the Instrument Approach Charts (IAP) for LAL. A description of each approach procedure sorted by runways is listed in **Table 2-4**. Visibility conditions that are listed for each approach procedure is often referred to by pilots and the aviation community as an airport's "approach minimums", "minimums', or "approach minima".

**Table 2-4 Instrument Approach Procedures Information**

| Runway | Type of Approach | Visibility Requirements | Glideslope | Threshold Crossing Height (Feet AGL) |
|---|---|---|---|---|
| Runway 9 | ILS or LOC | 1/2 Mile | 3.00 Degrees | 51 |
| Runway 9 | RNAV (GPS) | <3/4 Mile | 3.00 Degrees | 52 |
| Runway 27 | RNAV (GPS) | >3/4 Mile | 3.00 Degrees | 45 |
| Runway 5 | RNAV (GPS) | >3/4 Mile | 3.00 Degrees | 56 |
| Runway 23 | RNAV (GPS) | >1 Mile | 3.00 Degrees | 50 |
| Runway 9 | VOR | <3/4 Mile | 2.98 Degrees | 52 |
| Runway 27 | VOR | >3/4 Mile | 2.96 Degrees | 45 |




ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

FlyLakeland
Lakeland Linder International Airport

Runway 9
ILS Approach Plate

Figure. 2-6

LAKELAND, FLORIDA — AL-939 (FAA) — 19283

# RNAV (GPS) RWY 9
LAKELAND LINDER INTL (LAL)

| WAAS CH 78305 W09A | APP CRS 094° | Rwy ldg 8414<br>TDZE 132<br>Apt Elev 142 |
|---|---|---|

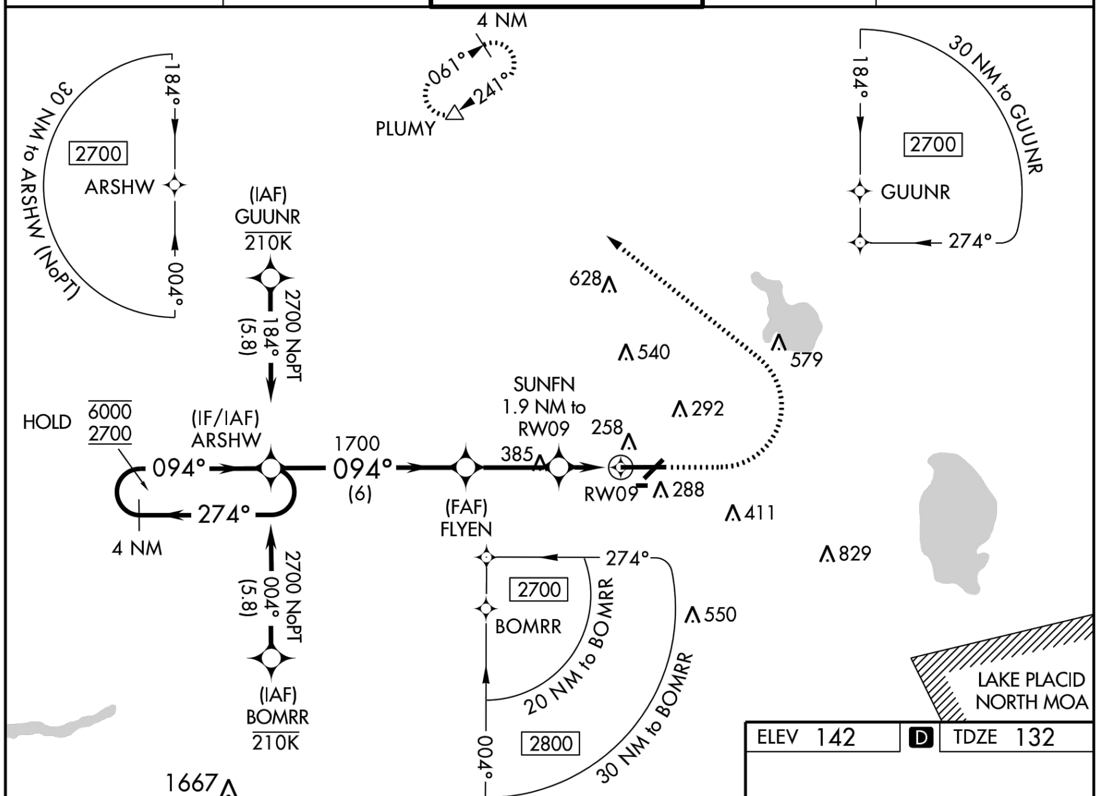
RNP APCH.

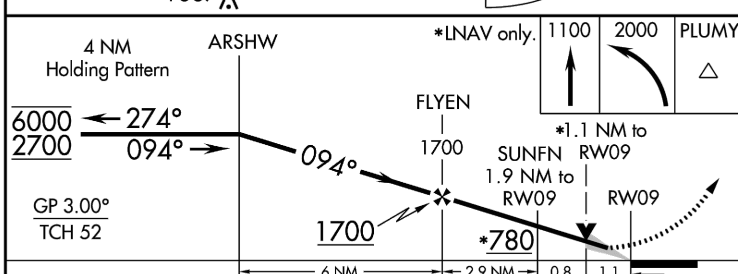
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C or above 54°C. Baro-VNAV and VDP NA when using Plant City altimeter setting. When local altimeter setting not received, use Plant City altimeter setting and increase all DA/MDA 20 feet, increase LNAV/VNAV all Cats visibility and LNAV Cats C/D visibility ⅛ SM. For inop ALS, increase LNAV Cats C/D visibility to 1⅛ SM. For inop ALS when using Plant City altimeter setting, increase LNAV/VNAV all Cats visibility to 1 SM. Circling NA to Rwys 8 and 26.

MALSR

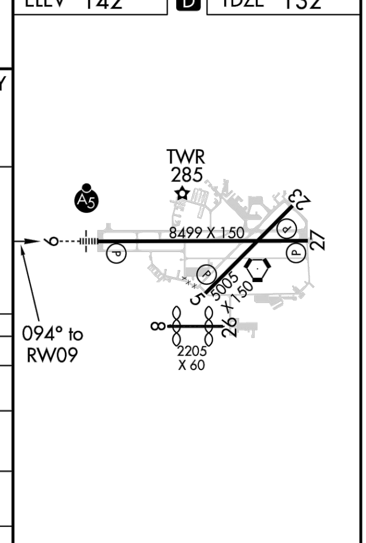
MISSED APPROACH: Climb to 1100 then climbing left turn to 2000 direct PLUMY and hold.

| ATIS | TAMPA APP CON | LAKELAND TOWER ★ | GND CON | UNICOM |
|---|---|---|---|---|
| 118.025 | 120.65 290.3 | 124.5 (CTAF) Ⓛ 236.775 | 121.4 | 122.95 |




ELEV 142 — D — TDZE 132




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| LPV DA | 332-½ 200 (200-½) | | | |
| LNAV/VNAV DA | 439-½ 307 (300-½) | | | |
| LNAV MDA | 520-½ 388 (400-½) | | 520-⅝ 388 (400-⅝) | |
| CIRCLING | 600-1 458 (500-1) | 660-1 518 (600-1) | 660-1½ 518 (600-1½) | 700-2 558 (600-2) |

HIRL Rwys 5-23 and 9-27 Ⓛ

LAKELAND, FLORIDA
Amdt 2D 28FEB19

27°59′N-82°01′W

LAKELAND LINDER INTL (LAL)
RNAV (GPS) RWY 9

SE-3, 02 JAN 2020 to 30 JAN 2020

SE-3, 02 JAN 2020 to 30 JAN 2020

LAKELAND, FLORIDA AL-939 (FAA) 19283

| WAAS CH 82605 W27A | APP CRS 274° | Rwy ldg 8499 TDZE 142 Apt Elev 142 |
|---|---|---|

# RNAV (GPS) RWY 27
LAKELAND LINDER INTL (LAL)

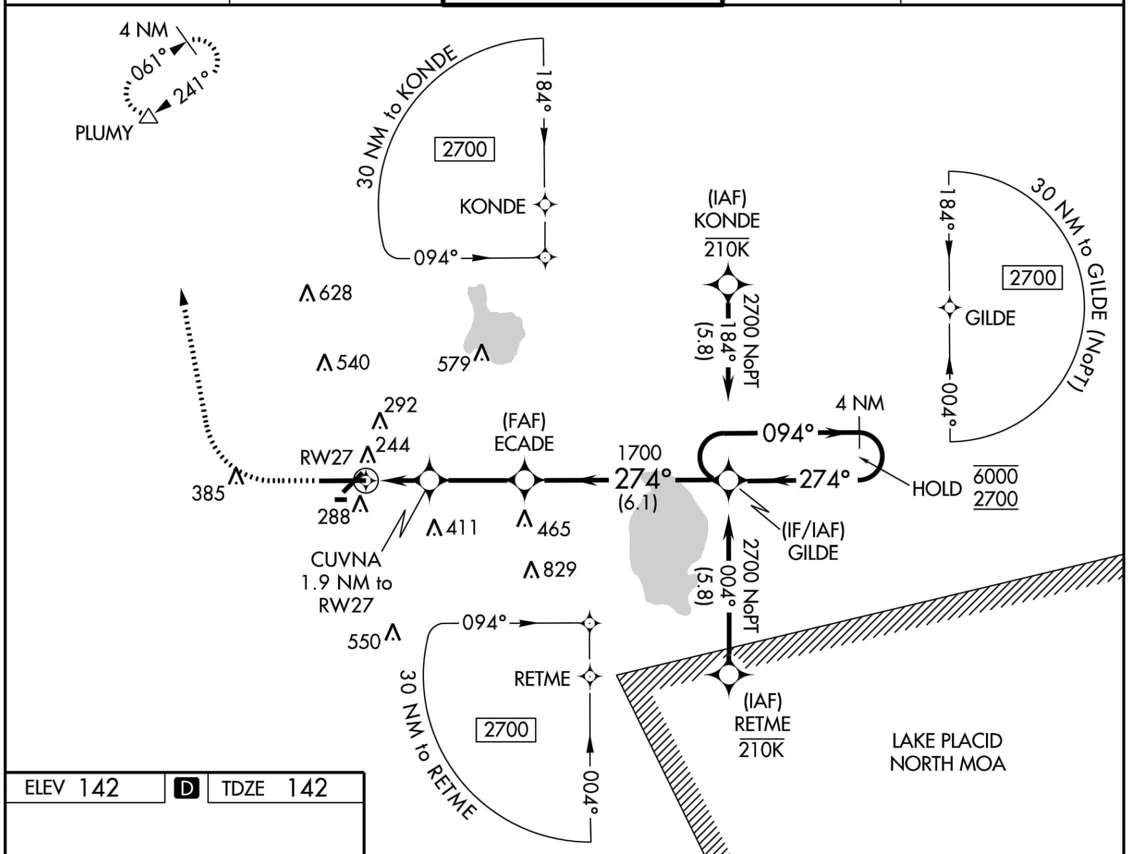
RNP APCH.

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C or above 54°C. When local altimeter setting not received, use Plant City altimeter setting and increase all DA/MDA 20 feet, and increase LNAV/VNAV all Cats and LNAV Cats C/D visibility ⅛ SM. Baro-VNAV and VDP NA when using Plant City altimeter setting. Circling NA to Rwys 8 and 26.

MISSED APPROACH: Climb to 1000 then climbing right turn to 2000 direct PLUMY and hold.

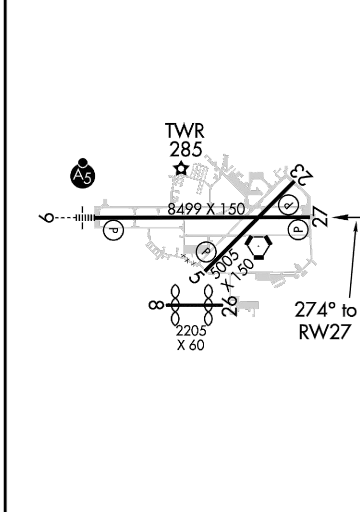
| ATIS | TAMPA APP CON | LAKELAND TOWER ★ | GND CON | UNICOM |
|---|---|---|---|---|
| 118.025 | 120.65 290.3 | 124.5 (CTAF) L 236.775 | 121.4 | 122.95 |

SE-3, 02 JAN 2020 to 30 JAN 2020

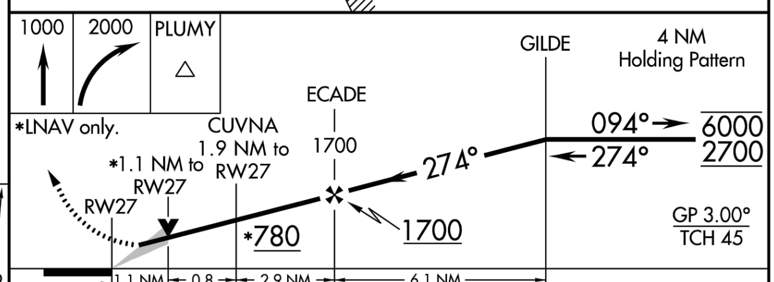



SE-3, 02 JAN 2020 to 30 JAN 2020

ELEV 142 D TDZE 142




HIRL Rwys 5-23 and 9-27 L




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| LPV DA | 342-¾ 200 (200-¾) | | | |
| LNAV/VNAV DA | 455-1 313 (400-1) | | | |
| LNAV MDA | 560-1 418 (500-1) | | 560-1⅛ 418 (500-1⅛) | |
| CIRCLING | 600-1 458 (500-1) | 660-1 518 (600-1) | 660-1½ 518 (600-1½) | 700-2 558 (600-2) |

LAKELAND, FLORIDA
Amdt 2C 28FEB19

27°59′N-82°01′W

LAKELAND LINDER INTL (LAL)
RNAV (GPS) RWY 27

ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

FlyLakeland
Lakeland Linder International Airport

Runway 27
RNAV Approach Plate

Figure. 2-8

LAKELAND, FLORIDA    AL-939 (FAA)    19283

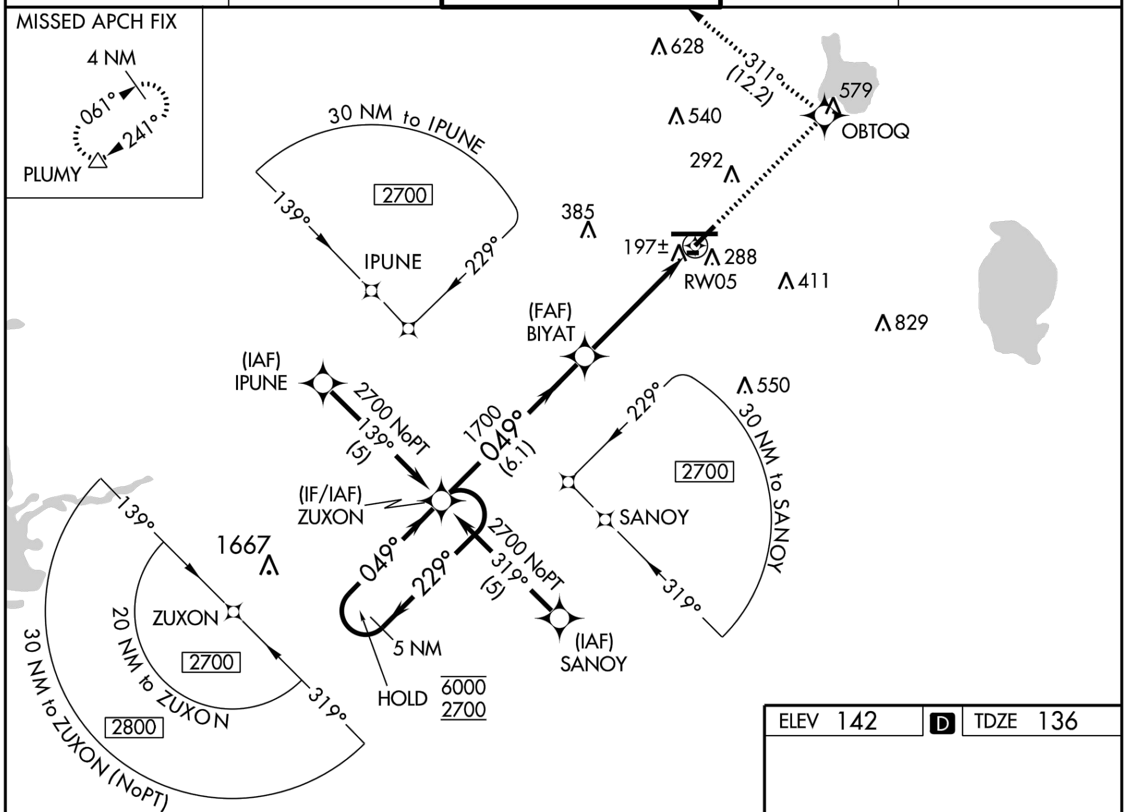
# RNAV (GPS) RWY 5
LAKELAND LINDER INTL (LAL)

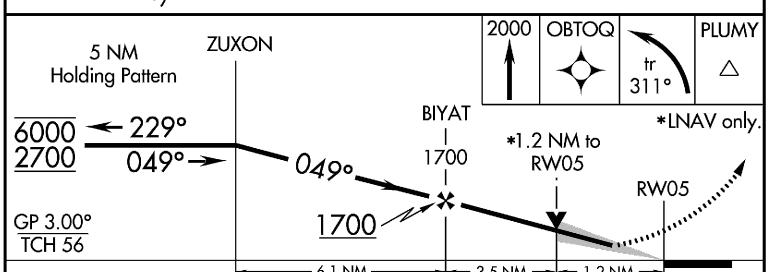
| WAAS CH **42805** **W05A** | APP CRS **049°** | Rwy ldg **5005** TDZE **136** Apt Elev **142** |
|---|---|---|

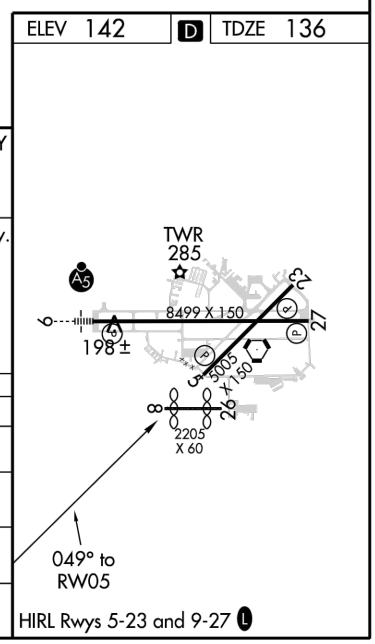
RNP APCH.

| | |
|---|---|
| For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C or above 54°C. When local altimeter setting not received, use Plant City altimeter setting and increase all DA/MDA 20 feet and LNAV Cat C/D visibility ⅛ SM. Baro-VNAV and VDP NA when using Plant City altimeter setting. Circling NA to Rwys 8, 26. | MISSED APPROACH: Climb to 2000 direct OBTOQ and left turn on track 311° to PLUMY and hold. |

| ATIS | TAMPA APP CON | LAKELAND TOWER ★ | GND CON | UNICOM |
|---|---|---|---|---|
| **118.025** | **120.65 290.3** | **124.5** (CTAF) Ⓛ **236.775** | **121.4** | **122.95** |




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| LPV DA | 336-¾ 200 (200-¾) | | | |
| LNAV/ VNAV DA | 505-1¼ 369 (400-1¼) | | | |
| LNAV MDA | 560-1 424 (500-1) | | 560-1¼ 424 (500-1¼) | |
| CIRCLING | 600-1 458 (500-1) | 660-1 518 (600-1) | 660-1½ 518 (600-1½) | 700-2 558 (600-2) |

LAKELAND, FLORIDA
Orig-F 28FEB19    27°59′N-82°01′W

LAKELAND LINDER INTL (LAL)
RNAV (GPS) RWY 5

SE-3, 02 JAN 2020 to 30 JAN 2020

SE-3, 02 JAN 2020 to 30 JAN 2020

LAKELAND, FLORIDA | AL-939 (FAA) | 19283

# RNAV (GPS) RWY 23
LAKELAND LINDER INTL (LAL)

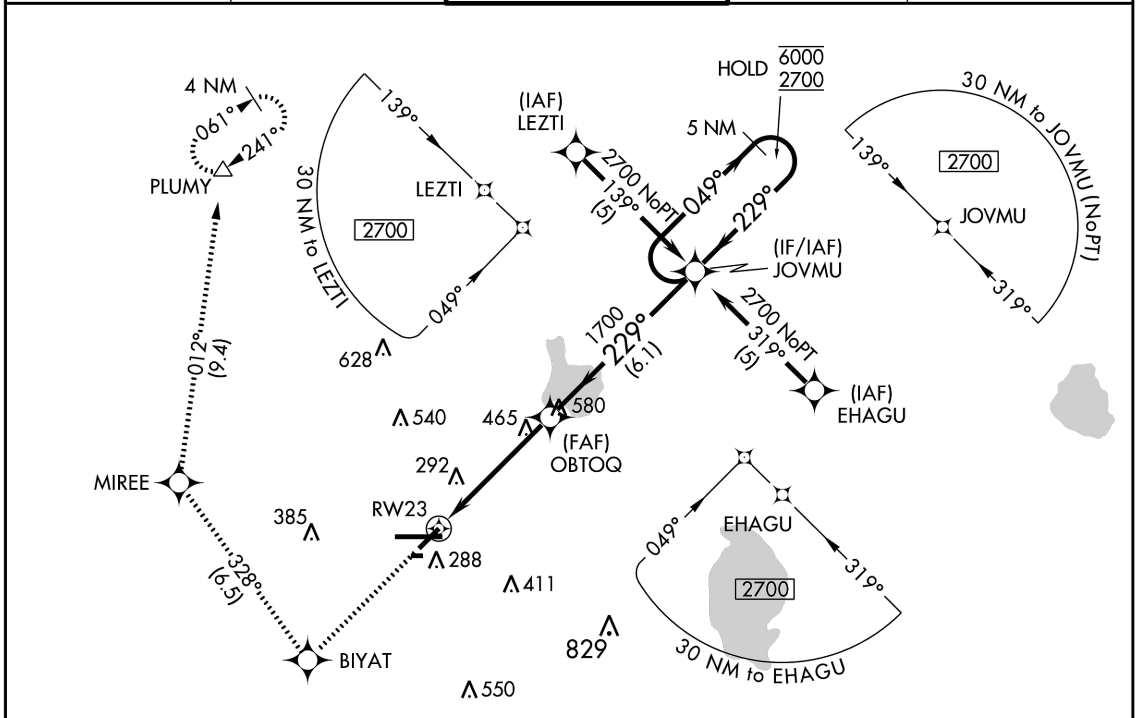
| WAAS CH 77805 W23A | APP CRS 229° | Rwy Idg 5005 TDZE 141 Apt Elev 142 |
|---|---|---|

RNP APCH.

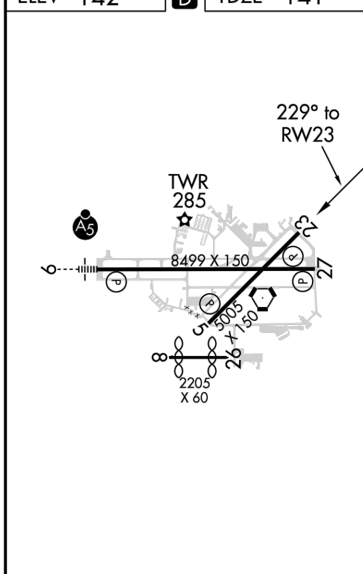
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C or above 54°C. When local altimeter setting not received, use Plant City altimeter setting and increase all DA/MDA 20 feet and increase LNAV Cat C/D and Circling Cat C visibility ⅛ SM. Baro-VNAV and VDP NA when using Plant City altimeter setting. Rwy 23 helicopter visibility reduction below ¾ SM NA. Circling NA to Rwys 8 and 26.

MISSED APPROACH: Climb to 2000 direct BIYAT and right turn on track 328° to MIREE then on track 012° to PLUMY and hold.

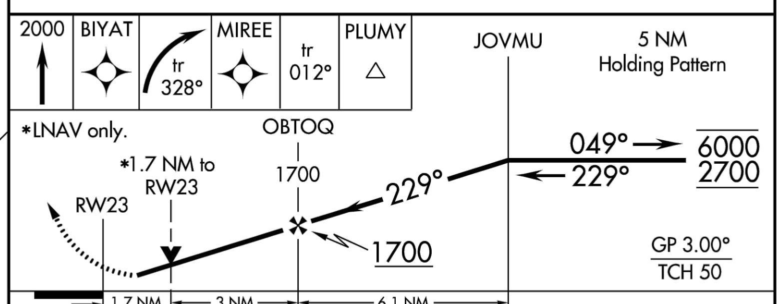
| ATIS | TAMPA APP CON | LAKELAND TOWER ★ | GND CON | UNICOM |
|---|---|---|---|---|
| 118.025 | 120.65 290.3 | 124.5 (CTAF) L 236.775 | 121.4 | 122.95 |




| ELEV 142 | D | TDZE 141 |
|---|---|---|




HIRL Rwys 5-23 and 9-27 L




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| LPV DA | 426-1 285 (300-1) | | | |
| LNAV/VNAV DA | 480-1¼ 339 (400-1¼) | | | |
| LNAV MDA | 720-1 579 (600-1) | | 720-1⅝ 579 (600-1⅝) | 720-1¾ 579 (600-1¾) |
| CIRCLING | 720-1 578 (600-1) | | 720-1⅝ 578 (600-1⅝) | 720-2 578 (600-2) |

LAKELAND, FLORIDA
Orig-D 28FEB19
27°59'N-82°01'W
LAKELAND LINDER INTL (LAL)
RNAV (GPS) RWY 23

SE-3, 02 JAN 2020 to 30 JAN 2020

SE-3, 02 JAN 2020 to 30 JAN 2020



ATKINS Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

FlyLakeland Lakeland Linder International Airport

Runway 23
RNAV Approach Plate

Figure. 2-10

SE-3, 02 JAN 2020 to 30 JAN 2020

LAKELAND, FLORIDA AL-939 (FAA) 19283

# VOR RWY 9
LAKELAND LINDER INTL (LAL)

| VORTAC LAL 116.0 Chan 107 | APP CRS 096° | Rwy ldg 8414<br>TDZE 132<br>Apt Elev 142 |
|---|---|---|

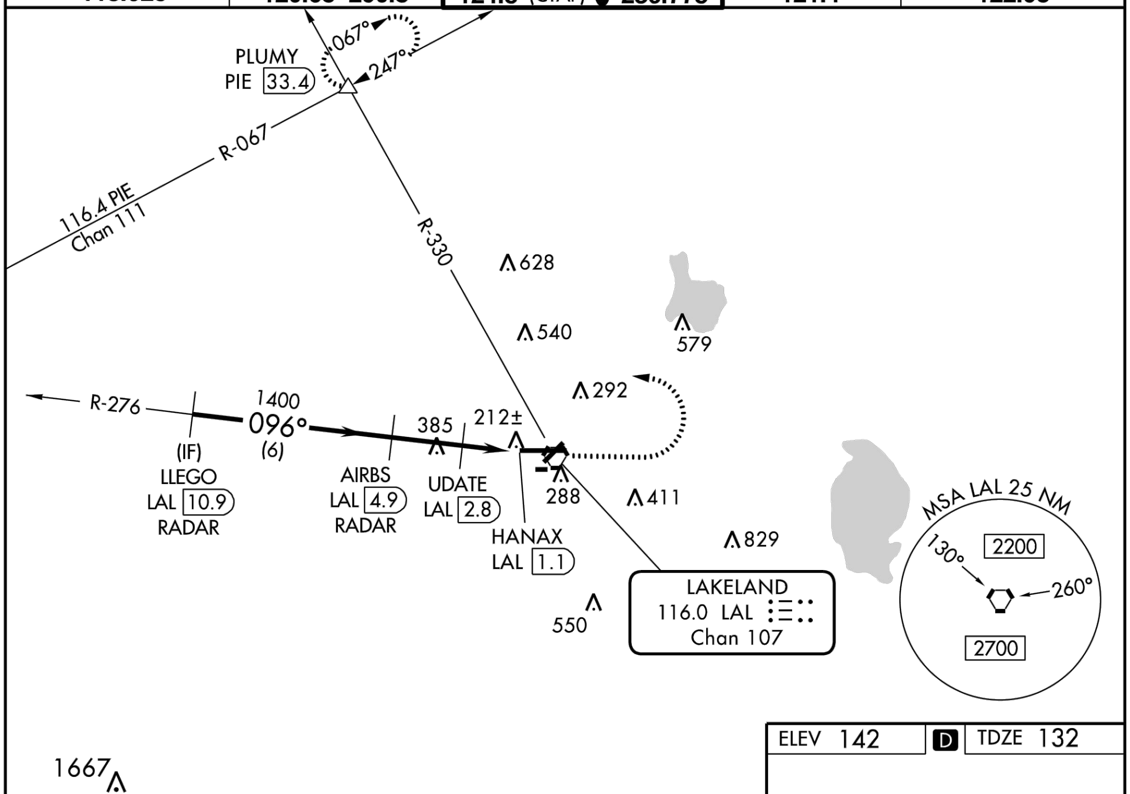
RADAR required for procedure entry. DME or RADAR required.

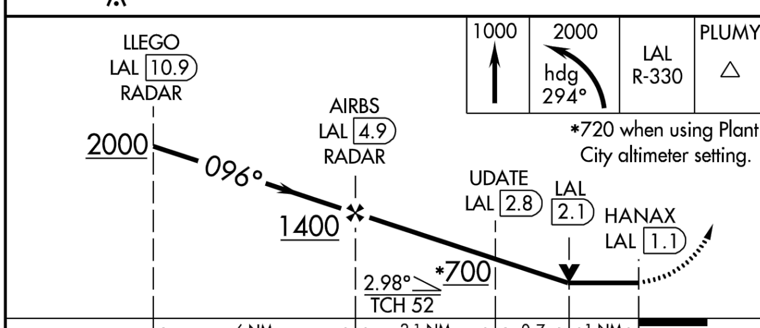
When local altimeter setting not received, use Plant City altimeter setting and increase all MDA 20 feet; increase Circling Cat C visibility ⅛ SM. VDP NA when using Plant City altimeter setting. For inop ALS, increase S-9 Cat C/D visibility to 1⅝ SM; increase UDATE Fix Minimums S-9 Cat C/D visibility to 1¾ SM. For inop ALS when using Plant City altimeter setting, increase UDATE Fix Minimums S-9 Cat C/D visibility to 1⅞ SM. Circling NA to Rwys 8 and 26.

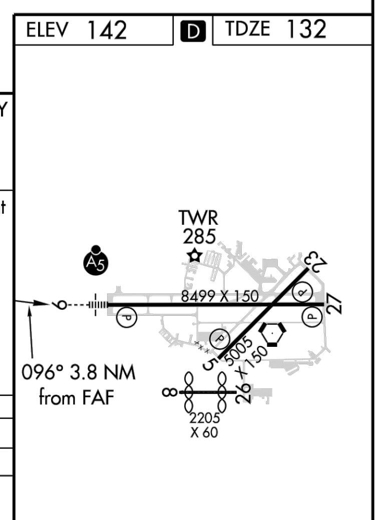
MALSR

MISSED APPROACH: Climb to 1000 then climbing left turn to 2000 on heading 294° and on LAL VORTAC R-330 to PLUMY INT/PIE 33.4 DME and hold.

| ATIS | TAMPA APP CON | LAKELAND TOWER ★ | GND CON | UNICOM |
|---|---|---|---|---|
| 118.025 | 120.65 290.3 | 124.5 (CTAF) Ⓛ 236.775 | 121.4 | 122.95 |




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| S-9 | 700-½ 568 (600-½) | | 700-1¼ 568 (600-1¼) | |
| CIRCLING | 700-1 558 (600-1) | | 700-1½ 558 (600-1½) | 700-2 558 (600-2) |
| UDATE FIX MINIMUMS | | | | |
| S-9 | 500-½ 368 (400-½) | | 500-¾ 368 (400-¾) | |
| CIRCLING | 600-1 458 (500-1) | 660-1 518 (600-1) | 660-1½ 518 (600-1½) | 700-2 558 (600-2) |

HIRL Rwys 5-23 and 9-27 Ⓛ

| FAF to MAP 3.8 NM | | | | | |
|---|---|---|---|---|---|
| Knots | 60 | 90 | 120 | 150 | 180 |
| Min:Sec | 3:48 | 2:32 | 1:54 | 1:31 | 1:16 |

LAKELAND, FLORIDA
Amdt 4E 28FEB19

27°59′N-82°01′W

LAKELAND LINDER INTL (LAL)
VOR RWY 9

SE-3, 02 JAN 2020 to 30 JAN 2020

ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

FlyLakeland
Lakeland Linder International Airport

Runway 9
VOR Approach Plate

Figure. 2-11

LAKELAND, FLORIDA AL-939 (FAA) 19283

# VOR RWY 27
LAKELAND LINDER INTL (LAL)

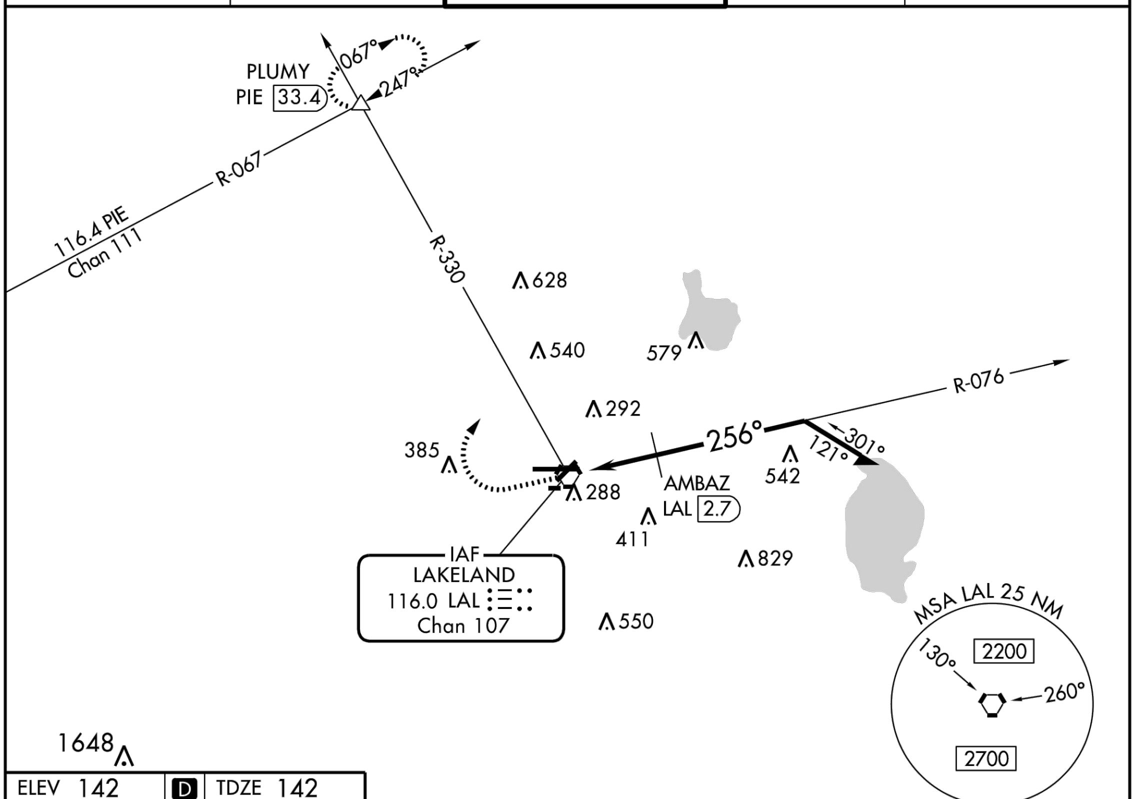
| VORTAC LAL 116.0 Chan 107 | APP CRS 256° | Rwy ldg 8499 TDZE 142 Apt Elev 142 |
|---|---|---|

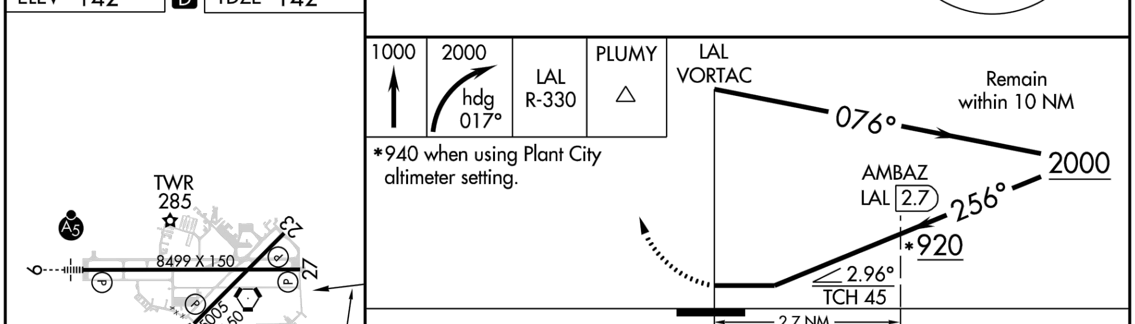
When local altimeter setting not received, use Plant City altimeter setting and increase all MDA 20 feet.
Circling NA to Rwys 8 and 26.

MISSED APPROACH: Climb to 1000 then climbing right turn to 2000 on heading 017° and on LAL VORTAC R-330 to PLUMY INT/PIE 33.4 DME and hold.

| ATIS | TAMPA APP CON | LAKELAND TOWER ★ | GND CON | UNICOM |
|---|---|---|---|---|
| 118.025 | 120.65 290.3 | 124.5 (CTAF) L 236.775 | 121.4 | 122.95 |

SE-3, 02 JAN 2020 to 30 JAN 2020




| CATEGORY | A | B | C | D |
|---|---|---|---|---|
| S-27 | 920-1 778 (800-1) | 920-1¼ 778 (800-1¼) | 920-2½ 778 (800-2½) | |
| CIRCLING | 920-1 778 (800-1) | 920-1¼ 778 (800-1¼) | 920-2½ 778 (800-2½) | |
| AMBAZ FIX MINIMUMS | | | | |
| S-27 | 540-1 398 (400-1) | | 540-1⅛ 398 (400-1⅛) | |
| CIRCLING | 600-1 458 (500-1) | 660-1 518 (600-1) | 660-1½ 518 (600-1½) | 700-2 558 (600-2) |

LAKELAND, FLORIDA
Amdt 7H 28FEB19

27°59′N-82°01′W

LAKELAND LINDER INTL (LAL)

# VOR RWY 27

SE-3, 02 JAN 2020 to 30 JAN 2020

## 2.3.3. Landside Facilities

It takes airside facilities to make an airport, but it takes landside facilities to make an airport truly viable. Landside facilities include all those assets and activities outside of the airport operating area (AOA) and comprise the most visible airport assets to the general public. This section of the inventory presents information on landside facilities such as hangars, roadways, parking, terminals, office spaces, support facilities, business parks, and other activities located outside the airfield.   The following sub-sections describe the existing conditions of LAL's landside facilities. Figure 2-13 depicts the discussed landside facilities.

### 2.3.3.1. Fixed-Base Operator

The FBO is currently owned and operated by Sheltair, which offers full aircraft service as well as various miscellaneous services. Self-serve fueling is available 24 hours a day (100LL and Jet A). On-call service for fueling is available during the FBO service hours. The FBO apron and existing facility is located off of Taxiway J. Sheltair manages three conventional hangars on the FBO apron area, where they provide aircraft storage and maintenance facilities. Situated in the middle of the two conventional hangars is an administration building which provides amenities such as wireless internet, conference rooms, breakroom, and crew cars.

### 2.3.3.2. Terminal

The existing terminal building and respective apron is located off of Taxiway K and is landside accessible via Don Emerson Drive. The existing facility is approximately 27,260 square feet.  Due to the on-going commercial service initiative at LAL, the terminal has been enhanced to have passenger vehicle parking accommodating 700 vehicles, baggage area, rental car, and a security checkpoint. The terminal houses the airport administration offices on the second floor. The on-airport restaurant is located on the second floor of the terminal and provides a sweeping view of the airfield.  A parking and turn-around facility has been constructed for rental car companies to the east of the terminal, outside of the AOA fence. Figure 2-14 shows the terminal area and the surrounding facilities.

### 2.3.3.3. Hangar Areas

Multiple hangars currently exist at LAL, which include conventional hangars, and T-hangars. The Airport and the FBO each manage specific hangars on property.

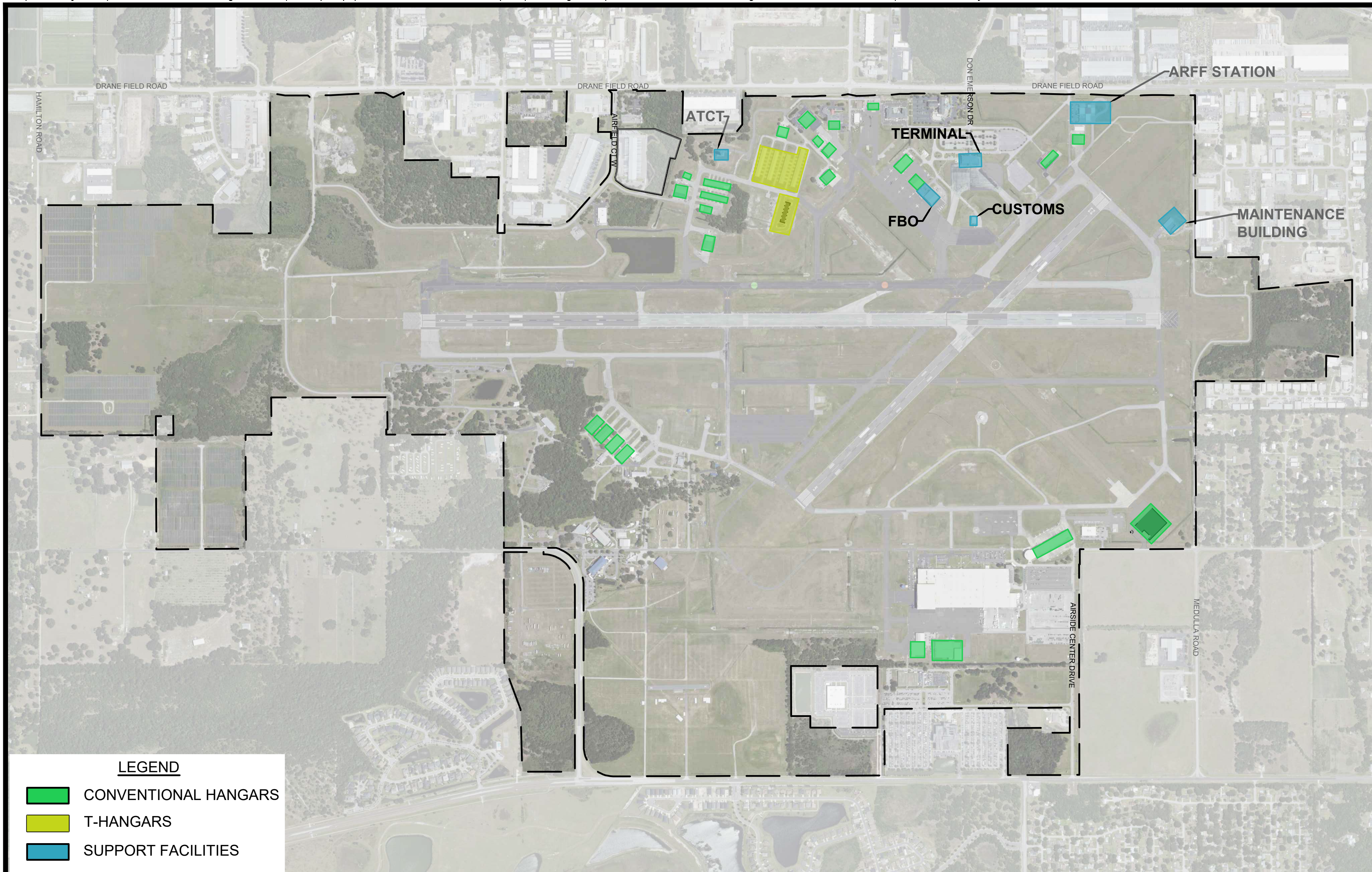
**Conventional Hangars**

A conventional hangar is typically rectangular or square in shape and can hold multiple aircraft while allowing for additional equipment to be present within the facility (based on size). There are currently 35 conventional hangars on LAL airside. **Table 2-5** depicts the current conventional hangar information.

**T-Hangars**

T-Hangars are designed to maximize aircraft storage utilization. They typically allow for the complete protection of aircraft stored inside and are often scaled for small recreational aircraft. The facilities are usually rectangular and store aircraft in a line by alternating direction of aircraft by nose and tail. There are currently five rows of T-Hangars totaling 75 units. There are currently six contacts listed on the T-Hangar waiting list. The Airport manages all T-hangars. **Table 2-6** depicts the current T-hangar information.

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-13_LAL Landside.dwg Jan23,2020 - 1:38pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

Landside Facilities

FlyLakeland
Lakeland Linder International Airport

Figure. 2-13

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-14_LAL Terminal Area.dwg Jan23,2020 - 1:51pm Plotted By: HASK8597


ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

Terminal Area

FlyLakeland
Lakeland Linder International Airport

Figure. 2-14

ATKINS

**Table 2-5 Conventional Hangar Information**

| NORTH SIDE BUILDING INFORMATION | | | |
|---|---|---|---|
| **Building #** | **Location** | **Occupied** | **Notes** |
| 05 | Taxiway B2 | Yes | My Jet Manager |
| 11 | FBO Apron | Yes | Sheltair (FBO) |
| 12 | FBO Apron | Yes | Sheltair (FBO) |
| 13 | FBO Apron | Yes | Double M Aviation |
| 13 | FBO Apron | Yes | Mac Avionics |
| 17 | North Apron | Yes | Gulf Coast Avionics |
| 18 | North Apron | Yes | Dixie Jet |
| 19 | North Apron | Yes | Gulf Coast Avionics |
| 27 | Taxilane H | Yes | Neel Aviation |
| 501 | Taxiway B | Yes | Xaiver Aviation |
| 507 | North Apron | Yes | JBS / PECU |
| 509 | North of T-Hangars | Yes | Bob Knight |
| 511 | Publix Apron | Yes | Publix |
| 525 | Taxilane H | Yes | Lakeland Executive Hangars (LEHI) |
| 527 | Taxilane H | Yes | Lakeland Executive Hangars (LEHI) |
| 531 | Taxiway A Area | Yes | Two Monies |
| 535 | Taxiway A Area | Yes | Lakeland Toyota / FWCFWC |
| 539 | Taxilane H | Yes | Champagne Investments |
| **SOUTH SIDE BUILDING INFORMATION** | | | |
| **Building #** | **Location** | **Occupied** | **Notes** |
| 102 | East Apron | Yes | |
| 103 | Southeast Apron | Yes | Sunrise Aviation / PSC |
| 104 | South Apron | | Lance Aviation (Hangar 1) |
| 104 | South Apron | Yes | IAA (Hangar 2) |
| 104 | South Apron | Yes | IAA (Hangar 3) |
| 104 | South Apron | Yes | Mauborgn/King Sky (Hangar 4) |
| 104 | South Apron | Yes | Wild Air/Cone (Hangar 5) |
| 104 | South Apron | Yes | Globe Aero (Hangar 6) |
| 104 | South Apron | Yes | Lakeland Aircraft (Hangar 7) |
| 110 | Airside Center | Yes | NOAA/Draken/PODS/Merfish/Jerue |
| 111 | South Apron | Yes | Avocet Services |
| 113 | South Apron | Yes | Lakeland Police Department |
| 114 | KTTW Ramp | Yes | KTTW |
| 600 | Sun ‘n Fun | Yes | Sun ‘n Fun / CAP Florida Wing / Lakeland Aero |

Table 2-6 T-Hangar Information

| Building Number | # of Units | Occupied % |
|---|---|---|
| 021 | 19 | 100 % |
| 022 | 14 | 100 % |
| 023 | 14 | 100 % |
| 024 | 14 | 100 % |
| 025 | 10 | 100% |

#### 2.3.3.4. Cargo Operations

Currently, there are no major cargo operations occurring at the Airport. However, development is underway for a cargo facility located to the north of Taxiway A and west of the northside retention pond. This cargo facility will include all necessary infrastructure including airside access, aircraft aprons, cargo warehouse, administration buildings, automobile parking, and landside access. Cargo operations are expected to commence in 2020. Amazon Air, a subsidiary of Amazon, will primarily operate Boeing aircraft, including the Boeing 737-800BCF, Boeing 767-200BDSF, and the Boeing 767-300BDSF.

#### 2.3.3.5. Fuel Storage

There are two self-serve fuel farms and one main bulk storage farm located at LAL. The north self-serve fuel farm contains one 12,000 gal 100LL tank and one 12,000-gal Jet-A tank. The south self-service fuel farm contains one 12,000-gal 100LL tank and one 15,000-gal Jet-A tank. The main bulk storage farm contains two 15,000-gal Jet-A tanks and one 15,000 100LL tank. In addition, Draken International, Sunrise Aviation, and International Aero Academy maintain fuel trucks to self-fuel their aircraft. Publix Flight Department and KTTW also maintains a 12,000-gal Jet-A tank on their ground lease adjacent to their hangar.

#### 2.3.3.6. Automobile Parking

There are multiple parking areas on airport property servicing both airside and landside facilities. The terminal parking lot contains approximately 700 parking spots. Other major parking lots located around the airport include Airside Center, Polk State College, and the FBO. Several areas have reached capacity and are in need of additional parking or rehabilitation of the existing parking lot to meet current and future demands. Specifically, the parking near the FBO and other airside structures is insufficient. This will be further analyzed in subsequent chapters.

#### 2.3.3.7. Airport Boundary Fence

Developed and undeveloped areas on the airside and landside need to be protected to ensure safe and secure operations at LAL. As such, perimeter fencing has been installed around appropriate areas ensuring a safe operating environment. The perimeter fence is seven feet high with three strand barbed wire on top. However, specific sections of the existing boundary fence have deficiencies (such as lower height) that need to be addressed.

#### 2.3.3.8. AOA Fence

The Aircraft Operating Area (AOA) is protected by various size chain-link fence with three strand barbed wire installed in accordance with TSR 1542. Areas around the Sun ‘n Fun ground lease are protected by eight-foot-tall chain-link fence without barbed wire to present a more inviting area for their guests. Some areas of AOA fence line are in need of rehabilitation as they are shorter than the required seven feet by TSR 1542.

#### 2.3.3.9. Industrial Sites

Currently on LAL property, there are no “site ready” industrial areas that attract tenants. The site ready industrial areas include specifics such as installed utilities, completed grading, permit approvals, etc. Even with no specific sites being present at this time, future development of industrial sites on airport owned property is feasible due to the available land.

#### 2.3.3.10. Foreign Trade Zone #79

Positioned in the Tampa Bay Area, Foreign-Trade Zone (FTZ) #79 assists companies in Tampa Bay and along the I-4 Corridor to streamline the procedure and minimize the costs linked with eligible importing, exporting, manufacturing, and distribution activities. The Airport is currently situated within FTZ #79 and gives tenants the opportunity to enhance their overall operational standpoint. An FTZ is a secured and restricted area that is located near a US port of entry outside of customs territory of the United States. Customs and Border Protection entry procedures do not apply under these areas. Companies can benefit from tax exemptions, increased efficiency, reduction of insurance costs, and many other associated benefits of the FTZ. These sites attract companies that regularly import items for the continuation of their operations.

#### 2.3.3.11. Aircraft Rescue and Firefighting (ARFF)

To meet the requirements of CFR Part 139 the airport maintains an Aircraft Rescue and Firefighting (ARFF) Station. Designed as a duel use station the building is utilized by the Lakeland Fire Department to provide not only ARFF response but also standard fire and emergency response to the surrounding community. Two ARFF trucks are stationed there allowing the airport to meet Index B and have the capability to meet Index C when required. Existing trucks include one Oshkosh 1500 and one E-One Titan. Fire services are provided 24/7/365.

#### 2.3.3.12. U.S. Customs and Border Protection Facility

LAL is classified as a User Fee airport by U.S. Customs and Border Protection requiring all aircraft to receive landing rights prior to their departure from a foreign port. Capable of accepting flights with 19 passengers or less LAL welcomed their first international arrival in 2017. The current facility operates from 11:30am-8:00pm Thursday through Monday (Closed Tuesday and Wednesday). LAL’s port code is 41881.

#### 2.3.3.13. Lakeland Police Department

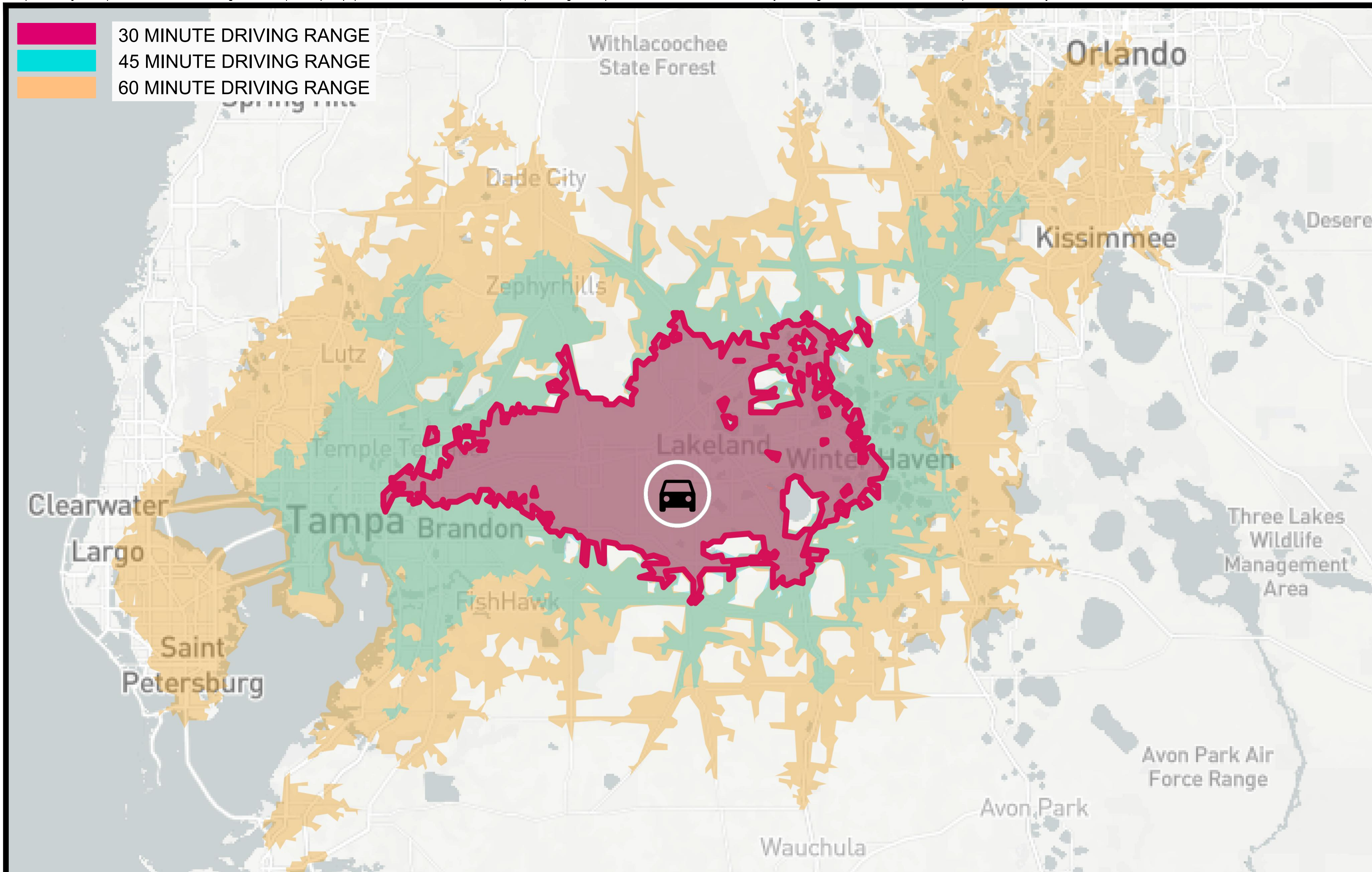
The Lakeland Police Department (LPD) provides law enforcement services for LAL. LPD occupies an on-airport hangar and building utilized for assigned officers, equipment, etc. The LPD provides immediate response if needed on airfield, as well as assistance during large events, and perimeter security.

#### 2.3.3.14. Public Road Access

There are multiple public roadways that allow for landside access to the Airport. The major transit way is the FL-570 Highway, which is located approximately two miles north of the airport property. This major highway connects to the I-4 Interstate on both ends, where I-4 runs and connects to other major highways in the State of Florida. There is a convenient route to the Airport via FL-570 (Exit 3), by taking Airport Road south, then being directly at the Airport when Drane Field Road is crossed.

County Line Road to the west of the Airport, which is connected to Drane Field Road, allows for ease of access to the southern portion of the airport property via public roadways. County Line Road then connects with West Pipkin Road, which runs directly to the south of the airport property. In addition, there are multiple public roadways that run directly along airport property to allow for the full access of all landside facilities at LAL. Figure 2-15 depicts the approximated drive-time analysis for 30, 45, and 60-minute driving ranges.

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-15_LAL Drive Time analysis.dwg Jan23,2020 - 1:55pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

LAL Drive Time Analysis

FlyLakeland Lakeland Linder International Airport

Figure. 2-15

## 2.4. Airspace Structure

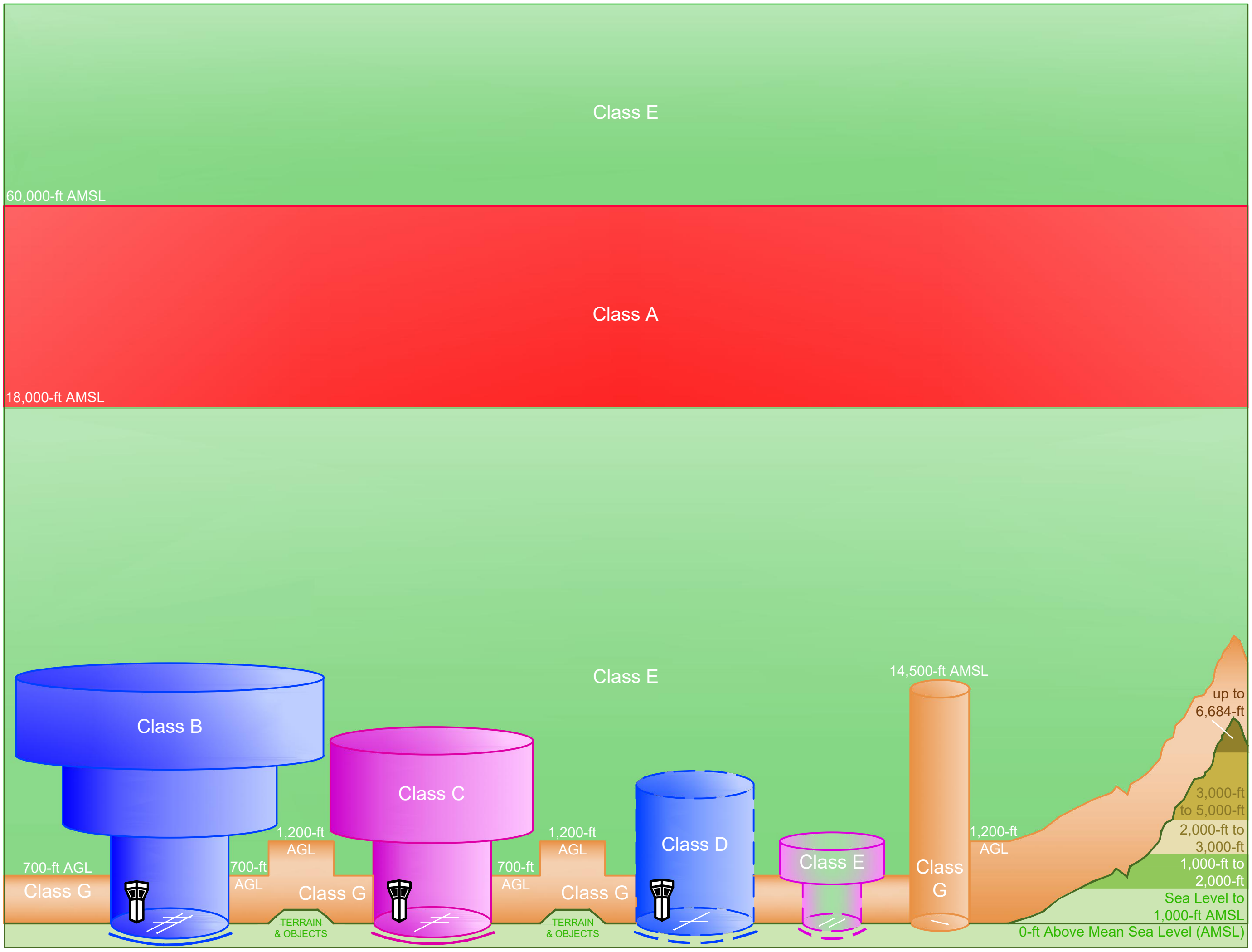
Congress granted the FAA the authority to control all airspace over the United States, via the Federal Aviation Act of 1958. The FAA then established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, 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 military are also included. Florida's airspace has high traffic capacity due to its multiple major commercial airports, as well as the countless GA airports in the state. The ideal flying conditions that occur year-round promotes GA pilots to thrive in the state and to utilize these conditions. Due to high tourism demands, the commercial traffic daily throughout the state is a large contributor to this high volume of overall air traffic.

### 2.4.1. 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 re-classified major airspace. The new classifications are graphically depicted in Figure 2-16.

The types of controlled airspace around Lakeland Linder International Airport 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 includes typically from the ground up to 10,000 feet AMSL. Class B airports are some of the busiest in the country and handle an influx of both IFR operations in addition to continuous commercial service operations. There are specific enhancements to required visibility minimums, licenses held, and more to enter into a Class B airspace. LAL is within the 30-nautical mile Mode C veil which is centered around Tampa International Airport (TPA). This requires all aircraft operating within the Mode C veil under 10,000 feet AMSL to have an operating Mode C transponder.
- Class D airspace includes all airspace between the ground up to typically 2,500 feet AGL. This airspace typically extends out 4 statute miles from the airfield. The closest public airport to LAL is Plant City (PCM). Class D airspace is typically established around an airport with an operational control tower. Two-way communication with ATC must be established before entering the Class D airspace, yet no transponder is required for entry.
- 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 air traffic control towers (ATCTs). South Lakeland Airport (X49) is located directly southwest outside of LAL airspace.
- Class G airspace, which is uncontrolled airspace.




## 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<br>VFR: Operations Prohibited | ATC Clearance | IFR: ATC Clearance<br>VFR: Two-Way Communication w/ ATC | IFR: ATC Clearance<br>VFR: Two-Way Communication w/ ATC | IFR: ATC Clearance<br>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<br>Night: 3 Statute Miles |
| VFR Cloud Clearance Below 10,000 AMSL | N/A | Clear of Clouds | 500 Below<br>1,000 Above<br>2,000 Horizontal | 500 Below<br>1,000 Above<br>2,000 Horizontal | 500 Below<br>1,000 Above<br>2,000 Horizontal | 500 Below<br>1,000 Above<br>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<br>1,000 Above<br>2,000 Horizontal | 500 Below<br>1,000 Above<br>2,000 Horizontal | 500 Below<br>1,000 Above<br>1 Statute Mile Horizontal | 1,000 Below<br>1,000 Above<br>1 Statute Mile Horizontal |
| Airport Application | N/A | • Radar<br>• Instrument Approaches<br>• Weather<br>• Control Tower<br>• High Density | • Radar<br>• Instrument Approaches<br>• Weather<br>• Control Tower | • Instrument Approaches<br>• Weather<br>• Control Tower | • Instrument Approaches<br>• 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.

ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

FlyLakeland
Lakeland Linder International Airport

Airspace Classification

Figure. 2-16

### 2.4.2. Class D

The Airport's airspace is classified as Class D, which holds the 5-nautical mile radius around the Airport and is controlled from the ground up to 2,600 Feet AMSL. There is a small section of Class D airspace removed to allow operations at South Lakeland Airport to occur without requiring two-way radio communication. To the east of the LAL Class D airspace, there is a portion of Class E Airspace which is joined with the LAL Class E which extends to the surface. This which extends from 2,600 ft. MSL to the surface to allow aircraft to transition in and out of the LAL Class D airspace effectively. Figure 2-17 depicts the Airport's surrounding airspace.

### 2.4.3. Airports in the Region

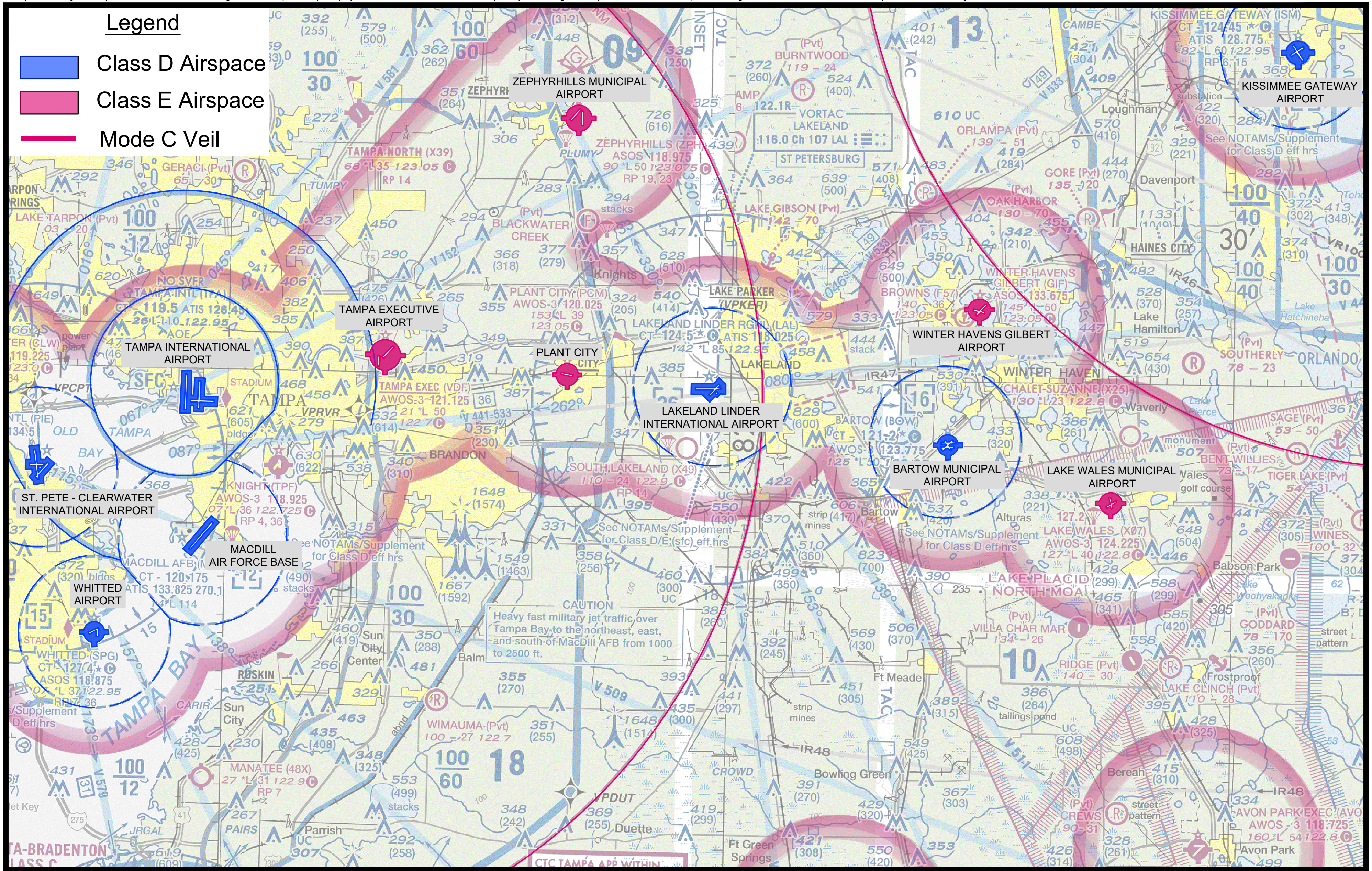
There are currently 11 public use airports and one military airport within a 30 Nautical Mile (NM) radius of LAL. The description of these 12 airports can be found in **Table 2-7**. Regarding private airports, there are numerous facilities that hold this classification within the 30 NM radius of LAL. Figure 2-18 depicts the specified airports within the proximity of LAL.

**Table 2-7 Airports Surrounding LAL**

| Airport Name (I.D.) | Location from LAL | Use (Airspace) |
|---|---|---|
| South Lakeland Airport (X49) | 4 NM SSE | Public- GA |
| Plant City Airport (PCM) | 8 NM W | Public- GA |
| Bartow Municipal Airport (BOW) | 13 NM SE | Public- GA |
| Jack Browns Airport (F57) | 14 NM NE | Public- GA (Seaplane Base) |
| Winter Haven's Gilbert Airport (GIF) | 15 NM NE | Public- GA |
| Zephyrhills Municipal Airport (ZPH) | 16 NM NNW | Public- GA |
| Tampa Executive Airport (VDF) | 17 NM W | Public- GA |
| Lake Wales Municipal (X07) | 22 NM SE | Public- GA |
| Tampa North Aeropark (X39) | 23 NM NW | Public- GA |
| Peter O' Knight Airport (TPF) | 23 NM SE | Public- GA |
| Tampa International Airport (TPA) | 27 NM W | Public- Commercial |
| MacDill Airforce Base (MCF) | 28 NM SW | Military (U.S. Air Force) |

Source: Skyvector.com, 2018. Analysis: Atkins, 2018.

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-17_LAL Airspace.dwg Jan23,2020 – 2:19pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

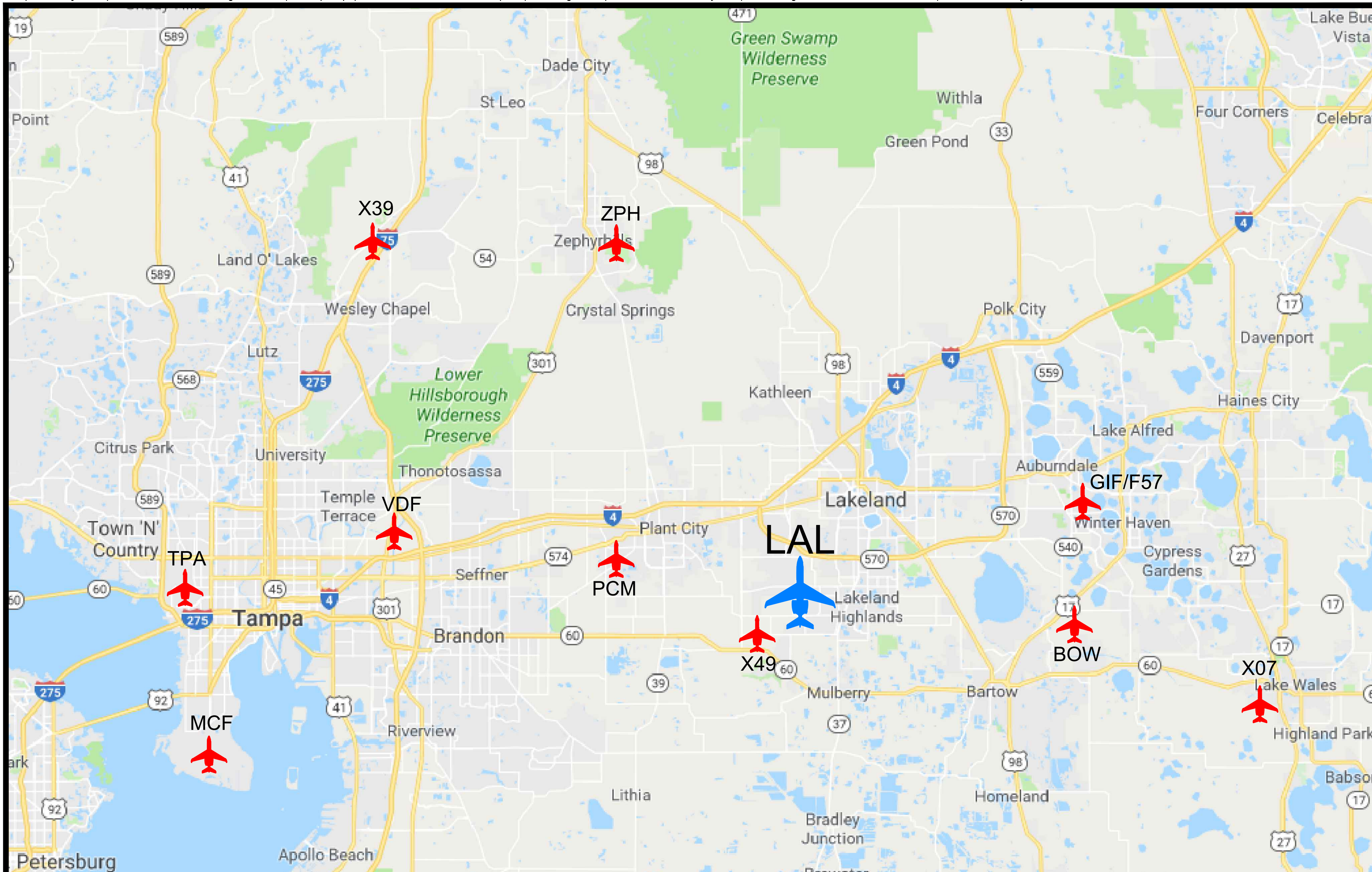
Lakeland Linder International Airport
Airport Master Plan Update

LAL Vicinity Airspace

FlyLakeland
Lakeland Linder International Airport

Figure. 2-17

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-18_LAL Nearby Airports.dwg Jan23,2020 - 2:21pm Plotted By: HASK8597




| | | | | |
|---|---|---|---|---|
| ATKINS<br>Member of the SNC-Lavalin Group | Lakeland Linder International Airport<br>Airport Master Plan Update | LAL Nearby Airports | FlyLakeland<br>Lakeland Linder International Airport | Figure.<br>2-18 |

## 2.5. **Meteorological Data**

The climatic 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, and wind direction and velocity dictate runway usage.

### 2.5.1. 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.

### 2.5.2. Ceiling & 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 LAL 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 (3) statute miles, represent most atmospheric observations.

IMC conditions, with a ceiling less than 1,000 feet and/or visibility less than three (3) miles, but ceiling equal to or greater than 200 feet and visibility equal to or greater than ½ mile, occur at the Airport approximately 7.0 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 at LAL and exist roughly <.5 percent of the time.

### 2.5.3. Wind Coverage

Local wind conditions at an airport play a large role in the runway usage since aircraft operate most efficiently when taking-off and landing 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 the direction of travel, is not excessive. Crosswind components differ slightly depending on the size of aircraft. The appropriate crosswind components for LAL's three runways were determined by the type of aircraft typically operating on those runways. The FAA requires that the wind coverage for an airport be at least 95 percent, meaning the maximum crosswind component is not exceeded more than five (5) percent of the time. **Figure 2-19** depicts the Airport's wind roses, which utilize data gathered from LAL's weather station.

The calculated wind coverage for LAL facilities shows that Runway 09/27 achieves greater than 95 percent wind coverage at each crosswind component when considering all weather conditions. The intersecting runway, Runway 05/23, achieves greater than 95 percent wind coverage for all cross-wind components. During times of inclement weather characterized by IMC, both runways Runway 09/27 and 05/23 achieve greater than 95 percent wind coverage for each crosswind component. The combined wind coverage exceeds 95 percent for all crosswind components during VMC and IMC.

## 2.6. **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 the airports ability to reach its full public value potential. The Airport has approximately 1,710 acres of land within its boundary which is zoned as a municipality and classified as well as city owned land.

According to the 2015 Business Plan, mixed use development is key in terms of providing additional lease income and to further develop the landside industrial aspect for LAL in parallel with aviation related development.

As southwest Lakeland continues to develop, and the airport operations increase, zoning of the property surrounding the Airport will become critically important. Currently there is a mixture of business park zoning and residential zoning around the airport property. The City of Lakeland Comprehensive plan recognizes that as airport activity increases, complaints from residential properties may increase, especially from any residential property within about 1 to 2 miles of the airport area. **Figure 2-20** depicts the Airport's zoning classification, as well as the surrounding parcels around the airport property.

## 2.7. Existing Utilities and Infrastructure

The availability and capacity of the utilities serving LAL are important factors to consider when evaluating future development opportunities. The primary concern is the availability of adequate power, water, and sewer sources.

### 2.7.1. Electricity

Electricity is provided from Lakeland Electric. This organization supplies power for the Airport and surrounding communities.

### 2.7.2. Wastewater

Wastewater management is provided to the Airport through Lakeland Water Utilities. This organization provides wastewater services to approximately 149 square miles of the greater Lakeland area. There are multiple force main systems located on airport property, supported by numerous sanitary lines. Those sanitary lines vary in size, from 8'' to 10'' PVC. At current, there are sanitary lines providing service to all facilities on the northern portion of airport property and select areas on the south portion of airport property. Due to the annual event, Sun 'n Fun, the southern portion of the Airport has been updated to support utilities. **Figure 2-21** depicts the existing wastewater infrastructure on LAL property, and the surrounding community.

### 2.7.3. Potable Water

Water service is provided to the Airport through Lakeland Water Utilities. This organization provides potable water services to approximately 132 square miles. Lakeland Water Utilities utilizes two water treatment plants in the area and can provide close to 59 million gallons per day in purified water to the service area. Similar to the sanitary line layout on airport property, the majority of the facilities on northern portion of airport property are supported by potable water service. There is an increase of water lines on the southern portion of airport property due to the need for proper utilities infrastructure in regard to the annual Sun 'n Fun event. **Figure 2-22** depicts the existing potable water infrastructure on LAL property, and the surrounding community.

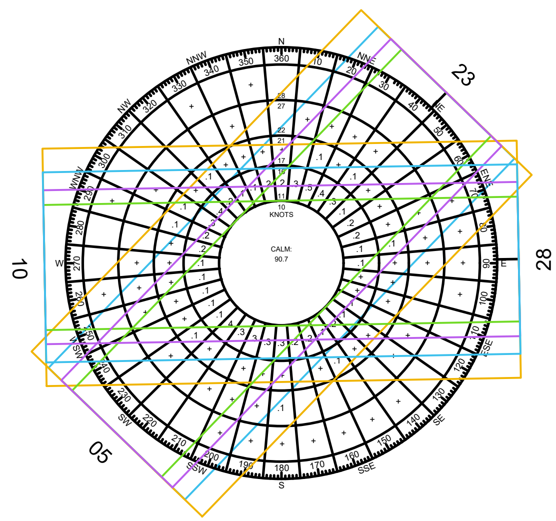
## 2.8. Tenant Activity

There are currently numerous tenants located on LAL property, both with aviation and non-aviation operations. The following sections will briefly touch on specific tenants. A master list of tenants currently residing on LAL property can be found at **Table 2-8**.

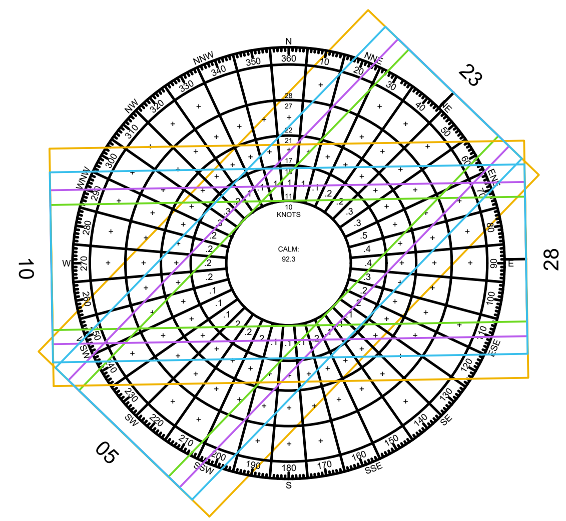
### 2.8.1. Sun 'n Fun Inc.

Sun 'n Fun is a non-profit organization which is dedicated to promoting aviation education. Sun 'n Fun leases 172 acres located in the southwest quadrant of the airfield, where it also operates the Florida Air Museum, and supports the Central Florida Aerospace Academy of Kathleen High School. In addition, the Aerospace

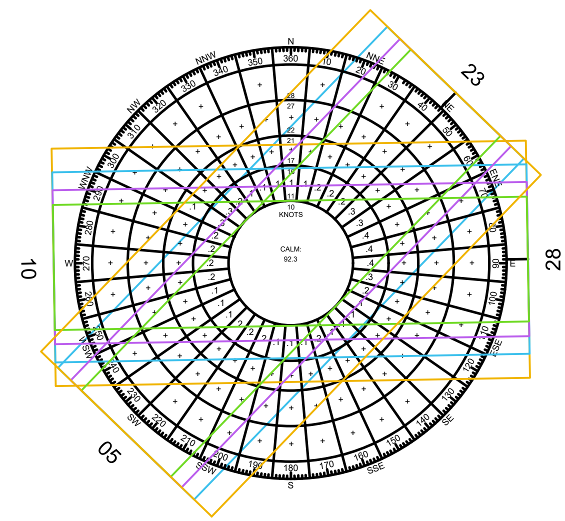
IFR WIND COVERAGE




VFR WIND COVERAGE




ALL WEATHER WIND COVERAGE



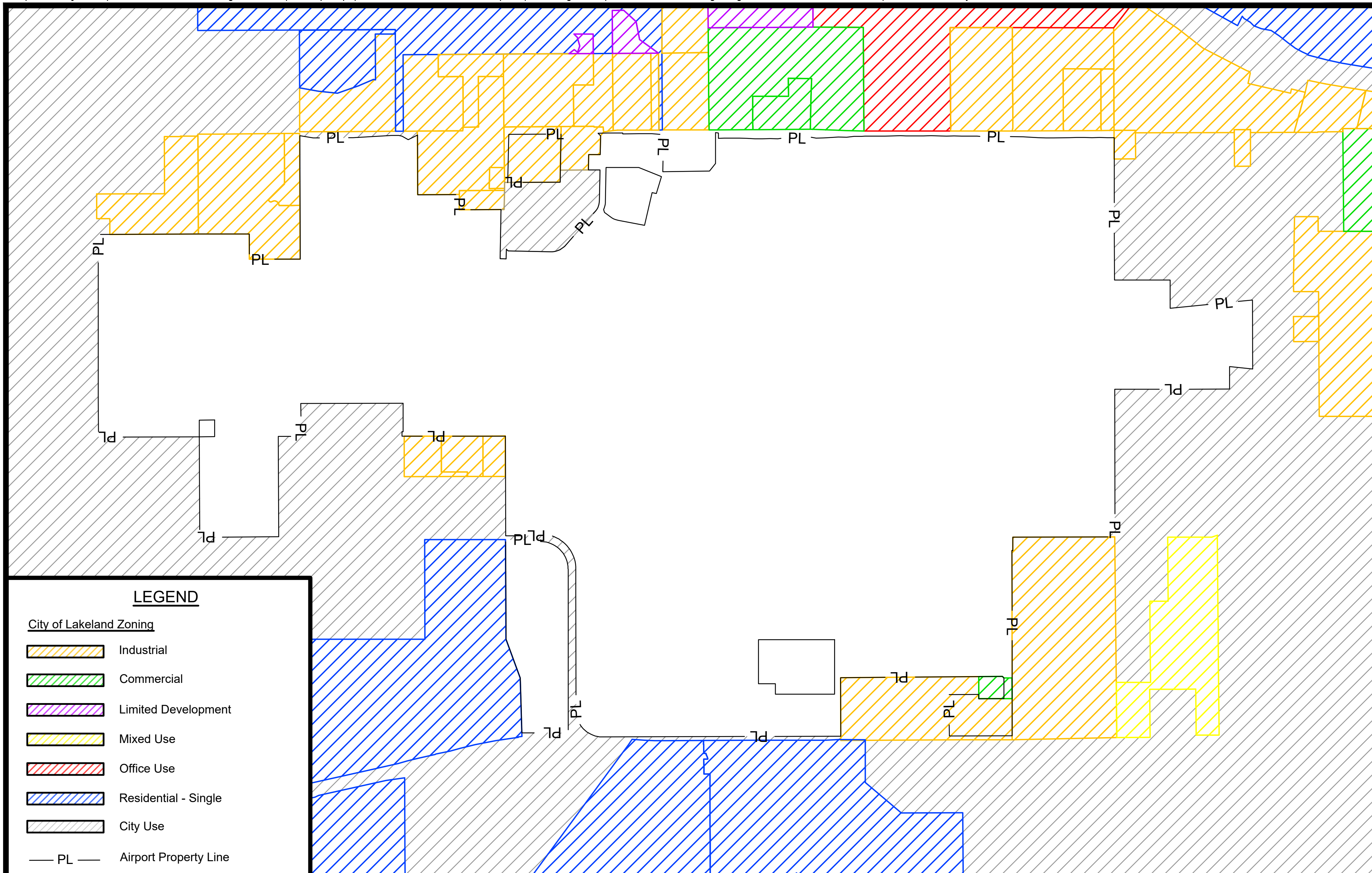

| IFR WIND COVERAGE | | | |
|---|---|---|---|
| CROSSWIND COMPONENT | RUNWAY 10/28 | RUNWAY 5/23 | COMBINED COVERAGE |
| 10.5 KTS | 94.94% | 96.11% | 98.14% |
| 13 KTS | 97.18% | 97.69% | 99.16% |
| 16 KTS | 99.11% | 99.05% | 99.66% |
| 20 KTS | 99.58% | 99.66% | 99.87% |

| VFR WIND COVERAGE | | | |
|---|---|---|---|
| CROSSWIND COMPONENT | RUNWAY 10/28 | RUNWAY 5/23 | COMBINED COVERAGE |
| 10.5 KTS | 97.47% | 96.83% | 98.94% |
| 13 KTS | 98.75% | 98.38% | 99.63% |
| 16 KTS | 99.72% | 99.62% | 99.92% |
| 20 KTS | 99.92% | 99.90% | 99.98% |

| ALL WEATHER WIND COVERAGE | | | |
|---|---|---|---|
| CROSSWIND COMPONENT | RUNWAY 10/28 | RUNWAY 5/23 | COMBINED COVERAGE |
| 10.5 KTS | 97.22% | 96.97% | 98.89% |
| 13 KTS | 98.57% | 98.43% | 99.60% |
| 16 KTS | 99.65% | 99.61% | 99.90% |
| 20 KTS | 99.89% | 99.89% | 99.97% |

NOTES:
1/ WIND DATA DERIVED FROM NOAA'S INTEGRATED SURFACE DATABASE (ISD); COVERING YEARS 2010 - 2019.
2/ WIND ANALYSIS COMPLETED JANUARY 2020.
3/ RUNWAY TRUE ORIENTATION USED FOR ANALYSIS, SEE A/C 150/5300-13A, FIGURE A-24.

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-20_LAL Zoning.dwg Jan23,2020 – 2:41pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

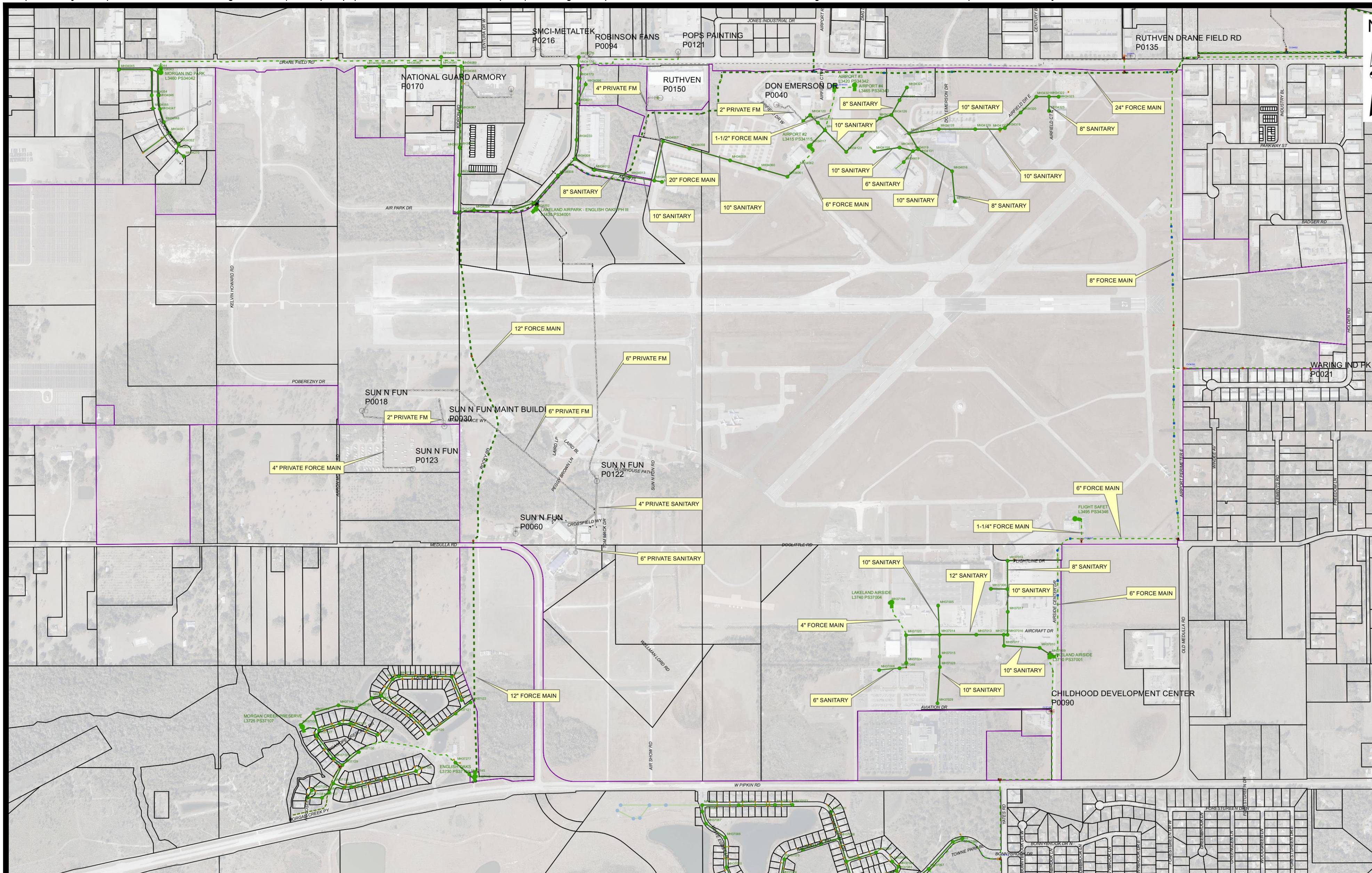
Lakeland Linder International Airport
Airport Master Plan Update

LAL Area Zoning

FlyLakeland
Lakeland Linder International Airport

Figure. 2-20

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-21_LAL Wastewater Utilities.dwg Feb25,2020 – 12:31pm Plotted By: HASK8597




Member of the SNC-Lavalin Group

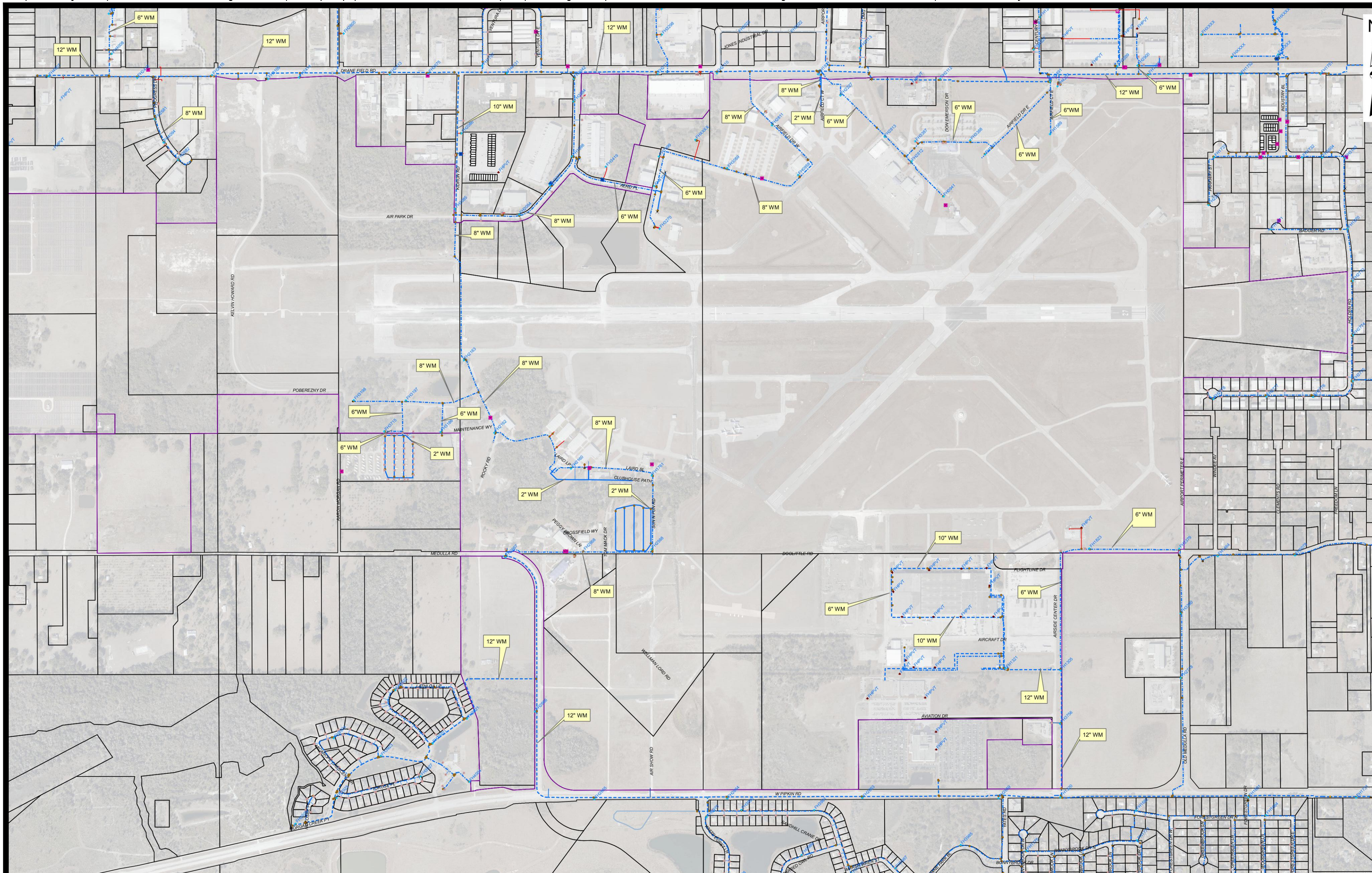
Lakeland Linder International Airport
Airport Master Plan Update

LAL Wastewater Utilities

Lakeland Linder International Airport

Figure. 2-21

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\Chapter Figures\1-22_LAL Water Utilities.dwg Feb25,2020 - 12:26pm Plotted By: HASK8597




ATKINS
Member of the SNC-Lavalin Group

Lakeland Linder International Airport
Airport Master Plan Update

LAL Potable Water Utilities

FlyLakeland
Lakeland Linder International Airport

Figure. 2-22

Center for Excellence provides year-round educational opportunities including summer camps, STEM programs, and aerospace discovery events among other activities. Each year Sun 'n Fun organizes the Sun 'n Fun Aerospace Expo a six-day fly-in event in late March or early April.

The Sun 'n Fun Fly-In started in 1974 with an attendance of 1,980 people. It now sees an attendance of nearly 220,000 people per year. In 20199 the Airport recorded nearly 8,000 take-offs and landings, not counting ultra-light operations. The event features approximately 500 aviation exhibitors, multiple educational forums, aviation demonstrations, and much more. During the event LAL becomes the busiest airport in the world. The overall mission of the event is to "preserve and enhance the future of flight through world-class events, inspiring and educating people of all ages".

During the 43rd annual 2017 event, April 4th to the 9th 2017, the following statistics were recorded:

- Approximately 200,000 guests from over 80 different countries
- Over 8,000 aircraft movements
- 510 exhibitors

The University of South Florida conducted an economic impact study of the Sun 'n Fun Fly In event in 2003. This study attempted to quantify the financial impacts to the community that could be directly related to the weeklong fly in event. For the study year it was estimated that the fly in event generated an economic impact of over 27 million dollars for the Central Florida Community.

### 2.8.2. Specialized Aviation Service Operators (SASO's)

A Specialized Aviation Service Operator (SASO) is a commercial aeronautical business that offers a single or limited commercial aeronautical service such as flight training, aircraft, airframe and powerplant repair, maintenance, aircraft charter, air taxi or air ambulance, aircraft sales or other commercial flight support business.

**Avionics**

- Gulf Coast Avionics
- Mac Avionics

**Aircraft Exporting and Ferrying**

- Neel Aviation
- Globe Aero

**Maintenance**

- Avocet Aviation Services, LLC – Heavy Aircraft Maintenance, Repair, and Overhaul (MRO)
- Aeromech Inc. – Aircraft Maintenance
- Double M Aviation – Aircraft Maintenance
- Dixie Jet & Rotor Service – Aircraft Maintenance
- Fixed Wing Aviation – Aircraft Maintenance
- Lakeland Aircraft Maintenance – Aircraft Maintenance
- Lance Aviation – Aircraft Maintenance (Helicopters)
- Onsite Weight & Balance – Weight and Balance Calculator

**Painting & Refurbishing**

- Duncan Interiors – Interior Refurbishment & Upholstery

- Foster's Aircraft Refinishing, Inc. – Aircraft Painting

**Parts & Sales**

- Aeromech, Inc. – Aircraft Parts, Service & Support
- Gulf Coast Avionics – Avionics Sales & Service and Pilot Supplies
- Pilot Mall – Aviation & Pilot Supplies

**Air Cargo**

- Amazon Air

**Transportation & Other Services**

- Draken International – DOD Contracted Air Service
- Florida Fish and Wildlife Commission – Research and Law Enforcement
- Frank Tiano Enterprises – RC Aircraft Competitions / Fly-Ins
- Ferrera Tooling Inc. – Custom Tools and Fabrication
- Hilton Garden Inn – Hotel & Conference Center
- JBS Equities, LLC – Hangar Rentals
- John J. Jerue Truck Broker, Inc. – Transportation, Logistics & Distribution
- Knight Industrial Equipment
- Lakeland Executive Hangars – Hangar Storage
- My Jet Manager – Full service corporate aircraft fleet management
- Merfish Pipe & Supply – Pipe Distribution
- NOAA OMAO AOC – Aircraft Operations Center
- PODS
- Sheltair Aviation - FBO
- Staybridge Inn & Suites – Hotel
- Tom Evans Environmental, Inc. – Environmental Engineering
- Federal Aviation Administration Technical Operations – Storage and Workshops
- Federal Aviation Administration Flight Standards District Office – Orlando Field Office
- Florida Army National Guard – 116$^{th}$ Field Artillery
- U.S. Customs and Border Protection – Customs Services
- KTTW – Hangar Rental
- Xavier Aviation – Hangar Rental
- Hieks Holdings – Part 135 Operator

**Flight Schools & Education**

In addition to corporate aviation demand, flight training is a significant component of the Airport's operations. Four flight schools are currently located at the Airport, which provide active fixed wing pilot training.

- Central Florida Aerospace Academy – Public High School CFAA operates out of a facility located on the southwest side of the Sun 'n Fun campus. The program seeks to challenge students to achieve high levels of success in science, technology, engineering and math. Students who attend the academy participate in coursework in Aerospace Engineering, Avionics, Aerospace Technologies, and Air Force JROTC as well as their general high school curriculum.

- International Aero Academy – Part 61 and 141 Flight School
- Kingsky Flight Academy – Part 61 and 141 Flight School
- Lakeland Aero Club – High School Flying Club
- Polk State College – Associates and Bachelor Programs in Aerospace Fields
- Sunrise Aviation – Part 61 and 141 Flight School, Contracted Services for Polk State College
- Traviss Technical College – A&P Programs
- Wild Air Aviation – Part 61 Flight School

**Table 2-8 Master LAL Tenant List**

| Tenant Company Name | Based Aircraft | Aviation or Non-Aviation |
|---|---|---|
| Skyspot Advertising | Yes | Aviation |
| Lakeland Aero Club | Yes | Aviation |
| RVA (Tower) | No | Aviation |
| CE Avionics | No | Aviation |
| Gulf Coast Avionics | Yes | Aviation |
| Mac Avionics | Yes | Aviation |
| Globe Aero | Yes | Aviation |
| Neel Aviation | Yes | Aviation |
| Duncan Interiors | No | Aviation |
| RDI | Yes | Aviation |
| Aeromech | No | Aviation |
| Dixie Jet & Rotor Services | Yes | Aviation |
| Double M Aviation LLC | Yes | Aviation |
| Lakeland Aircraft Maintenance | Yes | Aviation |
| Lance Aviation | No | Aviation |
| Fixed Wing Aviation Maintenance LLC | No | Aviation |
| GDS, LLC | No | Non-Aviation |
| Avocet | No | Aviation |
| On-Site Weight & Balance | No | Aviation |
| My Jet Manager | No | Aviation |
| Navigator Aircraft Management Group | No | Aviation |
| Foster's Aircraft Refinishing | No | Aviation |
| Hicks Holdings, Inc. | No | Aviation |
| EAA - Chapter 454 | No | Aviation |
| OX5 Club | No | Aviation |

| Tenant Company Name | Based Aircraft | Aviation or Non-Aviation |
|---|---|---|
| Quite Birdman | No | Aviation |
| Silver Wings | No | Aviation |
| The Ninety-Nines | No | Aviation |
| Women in Aviation - The Heart of Florida Chapter | No | Aviation |
| Pilot Mall | No | Aviation |
| Draken International | Yes | Aviation |
| A&C Drafting and Design, Inc. | No | Non-Aviation |
| Tom Evans Environmental, Inc. | No | Non-Aviation |
| Knight Aviation | Yes | Non-Aviation |
| Frank Tiano Enterprises | No | Aviation |
| Sun 'n Fun Fly-In Inc. | Yes | Aviation |
| Sheltair Aviation Services | No | Aviation |
| Doherty's Toys Second LLC | Yes | Aviation |
| King Sky Flight Academy | Yes | Aviation |
| International Aero Academy, Ltd | Yes | Aviation |
| Sunrise Aviation | Yes | Aviation |
| Wild Air Aviation | Yes | Aviation |
| COL - Airport | No | Aviation |
| COL - Telecommunications | No | Non-Aviation |
| Central Florida Aerospace Academy | No | Aviation |
| Polk State College West | No | Non-Aviation |
| Polk State College-East Aviation | No | Aviation |
| Travis Career Academy - Aviation | No | Aviation |
| FAA FSDO Orlando Field Office | No | Aviation |
| FAA Southern Region | No | Aviation |
| COL - ARFF Station 7 | No | Aviation |
| COL - LPD - Hangar | No | Non-Aviation |
| Florida Fish and Wildlife Commission | Yes | Both |
| US Customs & Border Protection | No | Aviation |
| US Army National Guard | No | Non-Aviation |
| NOAA Aircraft Operations Center | Yes | Aviation |
| Civil Air Patrol - S. Lakeland Composite Squadron | No | Aviation |
| Civil Air Patrol - Florida Wing | No | Aviation |
| JBS Equities | No | Aviation |
| Lakeland Executive Hangars | No | Aviation |
| Lakeland Wings | No | Aviation |

| Tenant Company Name | Based Aircraft | Aviation or Non-Aviation |
|---|---|---|
| Legend Health | No | Non-Aviation |
| Hilton Garden Inn | No | Non-Aviation |
| Staybridge Inn | No | Non-Aviation |
| PECU | No | Non-Aviation |
| John J. Jerue Truck Brokers | No | Non-Aviation |
| JRW Company | No | Non-Aviation |
| Ferrera Tooling, Inc. | No | Non-Aviation |
| DKS Aviation | No | Aviation |
| Hertz | No | Non-Aviation |
| Publix (Flight Department) | Yes | Aviation |
| Publix (IT) | No | Non-Aviation |
| Publix (Customer Service) | No | Non-Aviation |
| Seaplane Pilots Association | No | Aviation |
| Merfish Pipe & Supply | No | Non-Aviation |
| PODS | No | Non-Aviation |
| KTTW | Yes | Aviation |
| Xaiver | Yes | Aviation |

Source: LAL Tennant List, 2018

### 2.8.3. Aerospace Center for Excellence at the Florida Air Museum

The Florida Air Museum is located on the southwest side of the airfield adjacent to Medulla Road. The Aerospace Center for Excellence (ACE) displays a range of historic aircraft and aviation artifacts that chronicle the first century of flight. The museum operates year-round and offers educations programs, tours, aviation workshops and lectures. Sun n' Fun plays a large role in supporting the educational programs that occur at the museum. The goal of ACE is to provide a unique learning platform of educating and inspiring the next generation of aerospace professionals while honoring the past. The Museum is able to be a premier showcase for Florida's aviation history through exhibits, restoration and preservation, education and outreach and to share the passion of flight with all ages.

## 2.9. Review of Existing Studies

Multiple studies have been completed or are in progress for LAL and the surrounding area. The following subsections provide a summary of prior and current studies that were reviewed as part of the master plan process. A critical review of these studies is important to properly analyze current airport conditions and determine future airport needs. This will help ensure compatibility, efficiency, and effectiveness with local, state, and federal plans.

### 2.9.1. National Plan of Integrated Airport Systems (NPIAS) – FAA

The current National Plan of Integrated Airport Systems (NPIAS) report was submitted to Congress under 49 U.S. Code § 47103 on September 30, 2016. This plan identified 3,340 existing airports that are significant to national air transportation and estimates that $32.5 billion in infrastructure development will be needed over the next five years to meet the needs of all segments of civil aviation. The airports selected for the NPIAS are comprised of all commercial service airports, all reliever airports, and qualified GA airports. The NPIAS's primary purpose is to determine the identified airport's specific eligibility to receive grants under the Airport Improvement Program (AIP).

LAL is classified as a National Airport and Reliever Airport under the NPIAS. A National Airport is classified as one that supports the national and state system by providing communities with access to national and international markets in multiple states and throughout the United States. The FAA has designated 65 airports as relievers for primary airports. Reliever airports are designated to relieve congestion at busy commercial service airports, providing more general aviation access to local markets. LAL acts as a reliever airport to busy markets such as Tampa International Airport (TPA) and Orlando International Airport (MCO). The NPIAS report also estimates the needed development funding required in the airports 5-year capital improvement program. In the 2016 NPIAS report LAL is noted to have $32,323,834 funding requirements from 2017 to 2022.

### 2.9.2. Florida Aviation System Plan- Florida Department of Transportation

The Florida Department of Transportation (FDOT) has a statutory responsibility for promoting, planning, and administering transportation infrastructure in Florida. The Florida Aviation System Plan (FASP) is periodically renewed to provide FDOT with a planning and administrative tool which incorporates aviation statistics, regional and state-wide econometric trends, and long-term aviation forecast. The most recent comprehensive update of the FASP, FASP 2025, was completed in 2009.

FASP 2025 divides the state of Florida into nine distinct aeronautical regions. LAL is found in the Central region along with 10 other airports and seaports of varying sizes. LAL stands out in its region as the only reliever airport and is home to the largest market share of regional based general aviation (GA) aircraft, with 36 percent of the region's total. Further, the Airport supports the second highest percentage of regional GA operations with 31 percent. The FASP predicts moderate growth in operations and based aircraft for the region throughout the planning period.

The most recent airport profile completed for Lakeland Linder International Airport was dated from April 2012. During this profile, FDOT compiled the Airport's immediate needs, forecasted operations, community services, and documented the overall vision of the Airport's future. The LAL airport profile also identified challenges to airport funding to support long term development. The airport profile report indicated a 2.5 percent growth rate in both airport operations and based aircraft over the forecast period (2009-2029).

### 2.9.3. Florida Department of Transportation Economic Impact Study

The Florida Department of Transportation (FDOT) as part of the FASP process provides the estimated annual economic impact associated with selected airports in the State of Florida. The study calculates economic impacts of many on-airport and off-airport aviation associated activities with benefits expressed as direct, indirect, and induced (multiplier) impacts. This report found that aviation statewide is responsible for an estimated $175.0 billion in annual economic activity and or output each year.

At a local level, the large contributing factors that were called out during the analysis include Lakeland's classification as a reliever airport for TPA and MCO, aviation education, aircraft charters, law enforcement operations, and more. One of the largest contributors to the LAL economic impact are large events such as the annual Sun 'n Fun Fly-In. The calculated economic impact for LAL and its contributed factors is presented in **Table 2-9**.

**Table 2-9 FDOT Calculated Economic Impact – LAL**

| On-Airport Impacts | Visitor Spending Impacts | Multiplier Impact | Total Employment | Total Payroll | Total Output |
|---|---|---|---|---|---|
| $209,911,000 | $89,725,000 | $275,177,000 | 4,408 | $203,693,000 | **$574,814,000** |

Source: Statewide Aviation Economic Impact Study, 2019

### 2.9.4. LAL Airport Business Plan – MRO Feasibility Study 2015

In 2015, an Airport Business Plan was completed for Lakeland Linder International Airport by ATKINS in association with R.A. Wiedemann & Associates, Inc. During this study, primary strategic initiatives were identified by the airport staff, where a recommended plan of action was then established for each initiative. The following initiatives were identified within the 2015 study:

- Attract airline service
- Secure U.S. Customs and Border Protection (Completed)
- Attract more MRO activity
- Increase GA and military activity
- Increase intermodal use of the Airport
- Non-Aviation property development
- Airport re-branding

In addition, the business plan allowed for the identification of strengths, weaknesses, and issues that are present at LAL. By identifying these points, specific action plans can be created. A community value was calculated for the Airport at the time of the study, which analyzed the Airport's annual revenue, employment provided, current assets, and annual economic activity. The Airport's total calculated value to the community was $481.26 million.

### 2.9.5. Environmental Assessment – MRO Facility 2016

In August of 2016, a Focused Environmental Assessment (EA) was approved for proposed action towards constructing and operating up to three aircraft maintenance, repair and overhaul (MRO) facilities and one air cargo facility at LAL. The purpose of the EA was to determine whether the proposed action had significant impact to the environment. This was completed through a thorough analysis of all environmental aspects including but not limited to: Air Quality, Biological Resources, Climate Impact, Costal Resources, Farmlands, Hazardous Materials, Pollution Prevention, Historical Resources, Land Use, Noise Compatibility, Socioeconomic Impacts, Children's Environmental Health, and more.

Based on measurements set by the Federal Aviation Administration (FAA) towards measuring specific environmental impact, it was found that the proposed action of the MRO facility would have no impact. These findings were then further validated by the FAA. Through the issuance of a Finding of No Significant Impact (FONSI).

### 2.9.6. Previous Airport Master Plan Update – September 2011

The previous airport master plan update for LAL, which this document is intended to update, was completed by Amherst Consulting in 2011. This document identified numerous development initiatives for the Airport including extension of Runways 05/23 and 09/27, construction of a new ATCT, extension of Taxiways D and B, relocation of the ILS to Runway 9, additional T-hangar and conventional hangar space, and more. This master plan will consult the information in the previous master plan to gain perspective on the Airport's overall development goals. However, this master plan will conduct unique and independent analyses of future development initiatives and facility requirements to reaffirm the purpose and need for those actions and potentially present new strategies for meeting future development goals. It is important to note that many development initiatives listed in the Implementation Program of the 2011 AMPU have been completed at LAL, driving the need to initiate a fresh look to establish development goals and strategies to guide the Airport in the years ahead.

### 2.9.7. Economic Impact of Proposed New Air Service – November 2015

The completion of this Air Service study in November 2015 by Sixel Consulting Group, Inc., studied the potential estimated annual local economic impact of new air service commencing at LAL. Specifically, in 2015 dollars and data, the consulting group analyzed the commencement of scheduled service to Charlotte on American Airlines and to Fort Lauderdale on JetBlue. In addition, a visitor impact study for a daily scheduled service to New York City (JFK) was studied to quantify local economic impact. The activity was measured in the following metrics:

- Direct job creation at the Airport to support airline operations
- The employment and other economic impact from the local spending of net-new visitors to the Lakeland region due to the new air service
- The indirect and induced effect of both the on-airport job creation and the visitor spending driven job creation.

The economic impact of the air service was measured with the following metrics:

- Direct impact, economic activity occurring directly related to airline operations or visitor spending
- Indirect impact, activity resulting indirectly from airport activity or visitor spending
- Induced impact, activity driven by payroll dollars from both direct and indirect activity

The findings showed the substantial benefit towards the local economy if air service was commenced at LAL. A combination of the Charlotte and Fort Lauderdale scheduled services, in 2015 dollars, would generate $20.6 million in new total local economic impact. In addition, new air service at LAL would also significantly increase airport revenues. The potential full-time employments that could be created with the commencement of air service would be approximately 158 new jobs for the local area.

### 2.9.8. Joint Automated Capital Improvement Program (JACIP)

The JACIP report for LAL allows coordination between the Airport, state agencies, and the FAA in regard to proposed development projects and their respective funding. This report has a five-year outlook for the proposed projects. Each project has a description and approximated cost estimate to ensure that proper coordination with the Airport and regulatory agencies is established. **Table 1-11** provides an overview of the Airport's current JACIP report.

### 2.9.9. City of Lakeland, 2020 Comprehensive Land Use Plan

The City of Lakeland Comprehensive Plan was last adopted in 2010 and has been updated frequently since its adoption. That plan serves as a guide book to help city decision makers in allocating funds and approving development. It essentially reflects a ten-year blueprint for future growth of the City of Lakeland and it represents the City policies toward land use and growth. The Comprehensive Plan includes a Future Land Use Map that regulates the general type of land use that is allowed (commercial, industrial, residential etc.) and the maximum density (living units per acre) or intensity (square feet of building area) of those uses.

The City of Lakeland Comprehensive Plan is supportive of LAL and recognizes the value of the airport facility to the area. The Plan seeks to protect airport airspace through land use initiatives which discourage obstructions and incompatible land use near LAL. Furthermore, the Plan identifies LAL as an economic development target area in that the city affirms to implement an aggressive strategy to attract specific industries which deliver economic growth in the region.

## 2.10. Summary

The inventory provided in this chapter creates a summary of base year conditions (2017) and provides detailed information relating to LAL's property, airside, terminal, and landside facilities, services, location, and tenants, as well as ground access, and utilities. The next step in the planning process is to develop the environmental overview and the aviation activity forecasts for future aircraft operations 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 enhancements may be necessary at LAL throughout the planning period. A current listing of development at LAL is provided in **Table 2-10**.

**Table 2-10 LAL JACIP Overview**

| Proposed Year Start | Project Name | Approximated Cost | Description |
|---|---|---|---|
| 2018 | Construct T-Hangars | $800,000 | Due to 100% capacity with existing T-hangars, additional structures will be constructed |
| 2018 | Rehab Taxilane H | $3,157,680 | Due to poor pavement condition, Taxilane H will be rehabilitated |
| 2018 | RPZ Clearing for Safety | $350,000 | Tree clearing of RWY 09/27 approach in the RPZ area |
| 2019 | Entrance Road Realignment – Phase I | $1,198,000 | Realign terminal entrance roadway to allow for anticipated increase of traffic flow |
| 2019 | Rehab North-East Taxiways | $3,161,850 | Rehabilitate portions of Taxiways A, B, and C |
| 2019 | Rehab Taxiway E – Phase I | $1,900,000 | Rehabilitate portions of Taxiway E (including drainage) |
| 2019 | Environmental Assessment | $400,000 | Conduct EA for the Runway 09/27 extension |
| 2019 | RVR and ILS Upgrade | $2,800,000 | Upgrade the RVR and ILS systems on Runway 9 |
| 2020 | Perimeter Service Road | $3,812,500 | Construct perimeter service road outside airfield movement areas |
| 2020 | Extend Runway 09/27 | $10,025,000 | Extend Runway 09/27 (10,100 Feet Total) along with Taxiway A, and Taxiway P |
| 2021 | Additional Apron and Ramp Areas | $750,000 | Due to capacity, additional apron and ramp areas will be constructed |
| 2021 | Construct FBO Hangar | $1,500,000 | Construct FBO hangar and ramp area |
| 2021 | Construct T-Hangars | $2,750,000 | Construct additional single-engine & twin-engine t-hangars to accommodate growing demand |
| 2021 | Land Acquisition | $3,000,000 | Land acquisition in southeast corner of airport property for further aviation development |
| 2021 | Rehabilitate Runway 09/27 | $8,909,625 | Rehabilitate Runway 09/27 (Easterly 6,000 LF +/-) |
| 2022 | Construct Secure Road – Phase II | $1,178,000 | Phase II of Phase I (Entrance Road Realignment). Road within AOA to access FBO, corporate hangars, etc. |
| 2022 | Rehabilitate Taxiway P | $1,755,000 | Rehabilitate Taxiway P in distressed sections |

| Proposed Year Start | Project Name | Approximated Cost | Description |
|---|---|---|---|
| 2022 | Environmental Assessment | $425,000 | Conduct environmental assessment for Runway 9R-27L extension |
| 2023 | ARFF Equipment | $1,800,000 | Acquire ARFF Equipment (To meet Index C per Part 139 regulations) |
| 2023 | Construct Parallel Runway 9R-27L | $2,500,000 | Construct parallel runway to accommodate demand and increase overall capacity |
| 2024 | Rehabilitate and Realign Taxiway E – Phase II | $5,100,000 | Rehabilitate Taxiway E in portions of distressed sections (including drainage) |

Source: Lakeland Linder International Airport Joint Automated Capital Improvement Program 2018

This Page Intentionally Left Blank

# Environmental Overview

FlyLakeland

Lakeland Linder International Airport

ATKINS

# 3. Environmental Overview

## 3.1. Introduction

Guidance issued by the Federal Aviation Administration (FAA) encourages the review of environmental factors in airport master planning to "help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing."[1] The Florida Department of Transportation (FDOT) *2016 Guidebook for Airport Master Planning*, provides similar guidance. As a federally obligated airport, Lakeland Linder International Airport (LAL) is required to comply with the federal review process, regardless of the funding entity, if a federal action (funding, ALP approval, land release or acquisition, PFC approval, etc.) is required. Certain projects without a federal trigger that are 100 percent funded by FDOT (typically surface transportation projects) may receive approval through the FDOT Project Development and Environment (PD&E) process (state delegated DOT NEPA). However, both agencies clearly note that it is not the intent of a Master Plan to complete the federal and state environmental review processes. Instead, the information should identify and set the stage for understanding what future environmental review or actions may be needed and assist with the screening of potential alternatives.

In order to inventory the potential natural features and environmental constraints to future development at LAL, a review of publicly available environmental data, prior environmental studies and permits, aerial photography, and other geographical information systems (GIS) data was conducted. The constraint categories that have the greatest potential to affect future development projects, or require further environmental documentation and clearances include:

- Federal and State Listed Wildlife Species
- Jurisdictional Wetlands, other Surface Waters, and Waters of the U.S.

As a result of the limited scope of environmental evaluation included in this Master Plan Update (MPU) study, some environmental constraint categories were not examined in great detail. While these categories may not require specific permits, future NEPA analyses would include discussion of these, as well as other required categories. For projects identified in this MPU, impacts are anticipated to be minimal, or insignificant, for the following environmental categories:

- Air Quality
- Noise and Compatible Land Use
- Prime and Unique Farmlands
- Section 4(f) and Other Environmentally Sensitive Public Lands
- Historical, Archeological, and Cultural Resources
- Hazardous Materials and Waste Management

### 3.1.1. Federal Environmental Reviews

This chapter provides a desktop review of publicly available and known environmental resources that should be considered during the identification and evaluation of development alternatives in this Master Plan Update. The environmental resources discussed in this chapter include many of the categories delineated in FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions;* FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures;* and the President's Council on Environmental Quality (CEQ) Regulations Title 40 Code of Federal Regulations (CFR) § 1500-1508, *CEQ Regulations for Implementing the Procedural Provisions of NEPA*, however this overview is not intended to meet the NEPA requirements for any included project(s). This environmental overview does not constitute NEPA or regulatory level resource review; instead, it provides a compilation of readily available data to help screen alternatives and provide an environmental basis to identify where additional investigation or studies

1 FAA Advisory Circular 150/5070-6B, *Airport Master Plans*. Change 2. January 27, 2015.

may be required. The FAA is responsible for ensuring compliance with NEPA with respect to actions at federally-obligated airports.

The processing of Airport Improvement Program (AIP) grant applications and Airport Layout Plan (ALP) approvals are two types of "federal actions" commonly undertaken by the FAA in support of airport development projects which require environmental review under NEPA. While NEPA requires varying levels of interagency coordination, development of environmental documents under NEPA does not exempt airport development projects from compliance with other federal environmental laws (e.g., *Endangered Species Act*) or state and local environmental regulations.

For those projects that involve a federal action and therefore trigger environmental review under NEPA, the three types of documentation that are used are summarized in **Table 3-1**. Categorical Exclusions (CatEx) and Environmental Assessments (EA) are usually prepared by the Airport Sponsor and, if the documentation meets FAA requirements, they are accepted by the FAA and become federal documents. Environmental Impact Statements (EIS) are prepared by the FAA. Any future development projects recommended as part of this Master Plan update would be subject to the appropriate level of environmental review at such time that a specific project is considered "ripe" for implementation.

**Table 3-1 Types of FAA NEPA Review Documentation**

| Type | Description |
|---|---|
| **CATEX**<br>Categorical Exclusion | The FAA has identified certain actions that may be categorically excluded from a more detailed environmental review. However, extraordinary circumstances, such as wetland impacts, may preclude Categorical Exclusion (CATEX). A CATEX requires a review of impacts and completion of forms provided by the FAA. In some cases, documentation and agency coordination may be necessary to address extraordinary circumstances (see FAA ARP SOP No. 5.00). CATEXs that may apply to future airport development projects at LAL are summarized below (emphasis added). See FAA Orders 1050.1F and 5050.4B for a more detailed description of these and other categorically excluded actions that may apply to development projects at LAL.<br>1. Access and service road construction that does not reduce the level of service on local traffic systems below acceptable levels.<br>2. Construction, repair, reconstruction, resurfacing, extending, strengthening, or widening of a taxiway, apron, loading ramp, or runway safety area; or the reconstruction, resurfacing, extension, strengthening, or widening of an existing runway – *provided the action would not result in significant erosion or sedimentation and will not result in a significant noise increase over noise sensitive areas or result in significant impacts on air quality*.<br>3. Construction or limited expansion of accessory on-site structures, including storage buildings, garages, hangars, T-hangars, small parking areas, signs, fences, and other essentially similar minor development items.<br>4. Construction or expansion of facilities – such as terminal passenger handling and parking facilities or cargo buildings, or facilities for non-aeronautical uses that *do not substantially expand those facilities*.<br>5. Demolition and removal of FAA or non-FAA on-airport buildings and structures, *provided no hazardous substances or contaminated equipment are present on the site of the existing facility*. Does not apply to historic structures.<br>6. Placing fill into previously excavated land with material compatible with the natural features of the site, *provided the land is not delineated as a wetland*; or minor dredging or filling of wetlands or navigable waters for any categorically excluded action, *provided the fill is of material compatible with the natural features of the site and the dredging and filling qualifies for an U.S. Army Corps of Engineers nationwide or a regional general permit*.<br>7. Grading of land, removal of obstructions to air navigation, or erosion control measures, *provided those activities occur on and only affect airport property*. |

| Type | Description |
|---|---|
| | 8. Topping or trimming trees to meet 14 CFR Part 77 standards for removing obstructions which can adversely affect navigable airspace. |
| **EA** Environmental Assessment | An Environmental Assessment (EA) is prepared for proposed actions with expected minor or uncertain environmental impact potential. An EA requires analysis and documentation similar to that of an EIS, but with somewhat less detail and coordination. The FAA will review the EA and decide to either issue a Finding of No Significant Impact (FONSI) or prepare an Environmental Impact Statement (EIS). Future airport development projects and actions at LAL that may require an EA are summarized below (emphasis added). See FAA Orders 1050.1F and 5050.4B for more information.<br>1. Runway extensions due to possible wetland impacts, potential off-airport impacts related to aircraft noise, and potential impacts to affect listed species habitat.<br>2. Taxiway construction due to possible wetland impacts and potential to affect listed species habitat.<br>3. Aircraft parking apron; hangar and structures; and/or access road projects that may not qualify for a CATEX due to extraordinary circumstances (e.g., wetland impacts may not qualify for a nationwide or regional general permit).<br>4. Approval of operations specifications or amendments that may significantly change the character of the operational environment of an airport.<br>5. New air traffic control procedures (e.g., instrument approach procedures, departure procedures, en route procedures) and modifications to currently approved procedures that routinely route aircraft over noise sensitive areas at less than 3,000 feet above ground level. |
| **EIS** Environmental Impact Statement | An EIS is prepared for major federal actions, which are expected or known to significantly affect the quality of the human environment. At this time, no future airport development projects at LAL are expected to require the preparation of an EIS. |

Source: Compiled by ESA, 2019

The CEQ provides regulations for implementing the procedural provisions of NEPA, except where compliance would be inconsistent with other statutory requirements. These regulations are issued pursuant to NEPA; the Environmental Quality Improvement Act of 1970, as amended; Section 309 of the Clean Air Act, as amended; and Executive Order 11514, *Protection and Enhancement of Environmental Quality*.

### 3.1.2. State Environmental Reviews

In addition to compliance with NEPA, all recommended airport development must be consistent with other federal regulatory guidance, Florida Statutes (FS), growth management and concurrency requirements as well as regional and state transportation plans. For projects that require NEPA compliance, state environmental reviews typically initiate with the Florida State Clearinghouse which is administered by the Florida Department of Environmental Protection (FDEP). A primary function of the Florida State Clearinghouse is to serve as the state's single point of contact for the receipt of federal activities that require interagency review, which includes activities subject to consistency review under the Florida Coastal Management Program. Upon completion of their review, the Clearinghouse will typically issue a letter summarizing any potential concerns or inconsistencies regarding the proposed activity. The clearance letter will also include information on obtaining necessary state permits and will inform the applicant if there is a need to submit additional information to a specific state agency for review. In cases where NEPA compliance is not required, direct coordination with the relevant state and federal regulatory agencies may still be required. Information related to the specific agencies and coordination and / or permits required, is discussed in the individual resource's categories in this chapter.

### 3.1.3. Environmental Categories Considered During this Review

The following provides a list of the environmental categories considered during this review. Additional discussion for each category is provided in the respective sections that follow.

- Air Quality
- Noise and Compatible Land Use
- Prime and Unique Farmlands
- Biotic Communities and Vegetation
- Wildlife and Endangered Species
- Wetlands and Water Resources (including Floodplains)
- Section 4(f) and Other Environmentally Sensitive Public Lands
- Historical, Archeological, and Cultural Resources
- Energy Supply and Natural Resources
- Hazardous Materials and Waste Management
- Coastal Zone Management
- Construction Impacts

## 3.2. Air Quality

The federal *Clean Air Act*, as amended, required the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for principle air pollutants considered harmful to public health and the environment. Those areas where the NAAQS are not met are designated as "nonattainment." Polk County, Florida, is classified as "attainment" for all the criteria air pollutants listed in the NAAQS.[2] Typical emission sources at LAL include aircraft engines, ground support equipment, auxiliary power units, motor vehicles, temporary use of construction equipment, and various stationary sources such as fuel storage tanks.

The existing and projected number of passengers and aircraft operations at LAL, in conjunction with the County's attainment status, indicates that continued development at the airport is likely to not substantially affect air quality, exceed thresholds that require detailed air quality analyses, or require conformance with a State Implementation Plan (SIP).[3] Future airport development projects that require NEPA review will consider the project's effect on air quality. Certain projects and tenant activities, such as operating paint booths, will need to comply with applicable regulations and permit requirements.

## 3.3. Noise and Compatible Land Use

In order to understand the current noise exposure environment at LAL, noise contours were developed using the FAA's Aviation Environmental Design Tool (AEDT). Noise contours were developed for the 2018 base year of the study, which will ultimately allow comparison to those developed for the future planning horizons based on the proposed airport improvements.

The FAA uses the day-night average sound level (DNL) noise metric for the purposes of determining compatibility with aircraft noise. The DNL represents a 24-hour time weighted energy average noise level and incorporates a 10-dB weighting for activity between 10 p.m. to 7 a.m. to reflect the higher sensitivity to noise during nighttime hours. FAA land use guidance indicates that virtually all noise sensitive land uses are compatible with noise levels below the DNL 65.

The base year day-night average sound level (DNL) 65, 70 and 75 contours provided on **Figure 3-1** reflect the existing airfield configuration with the actual aircraft operational fleet mix that occurred in 2018. As shown, the noise contours remain entirely within the property envelope with the exception of a small area to the east. In the area near Holden Road and Parkway Street, the DNL 65 contour extends off airport property through a small commercial and light industrial area. Commercial and light industrial land uses are considered compatible with the DNL 65.

---

[3] Nonattainment areas are required to have a State Implementation Plan (SIP) that prescribes mitigation measures and timelines necessary to bring ambient concentrations of criteria pollutants below the NAAQS.

## 3.4. Prime and Unique Farmlands

FAA Order 1050.1F identifies “prime and unique” farmlands as those agricultural areas that are considered important and protected by federal, state, and local regulations. Those of importance include all pasturelands, croplands, and forests considered to be prime, unique, or of state or local importance. Lands of this nature that are zoned for development are also included in this designation.

Data available from the United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS) was reviewed and there does not appear to be any prime or unique farmlands in the vicinity of LAL. Additionally, LAL is located in an urban area as defined by the United States Census Bureau Urbanized Area Reference Map for Lakeland, FL (Urban Area Code: 46828). Therefore, any projects undertaken at LAL would not impact farmlands protected by the Farmland Protection Policy Act (FPPA).

Should it be determined that a prime or unique farmland of state or local importance has the potential to be impacted by a proposed action at LAL, consultation with the NCRS under the FPPA will occur. This consultation typically involves the use of the Farmland Conversion Impact Rating Form (Form AD-1006) to determine is the land in question is subject to the FPPA and if further action should be taken.

## 3.5. Biotic Communities and Vegetation

LAL covers a land area of approximately 1,710 acres. The existing land use and cover types have been mapped for LAL using the Southwest Florida Water Management District (SWFWMD) Florida Land Use and Cover Classifications Systems (FLUCCS) data for Polk County. The FLUCCS communities are listed in **Table 3-2** below and are depicted on **Figure 3-2**.

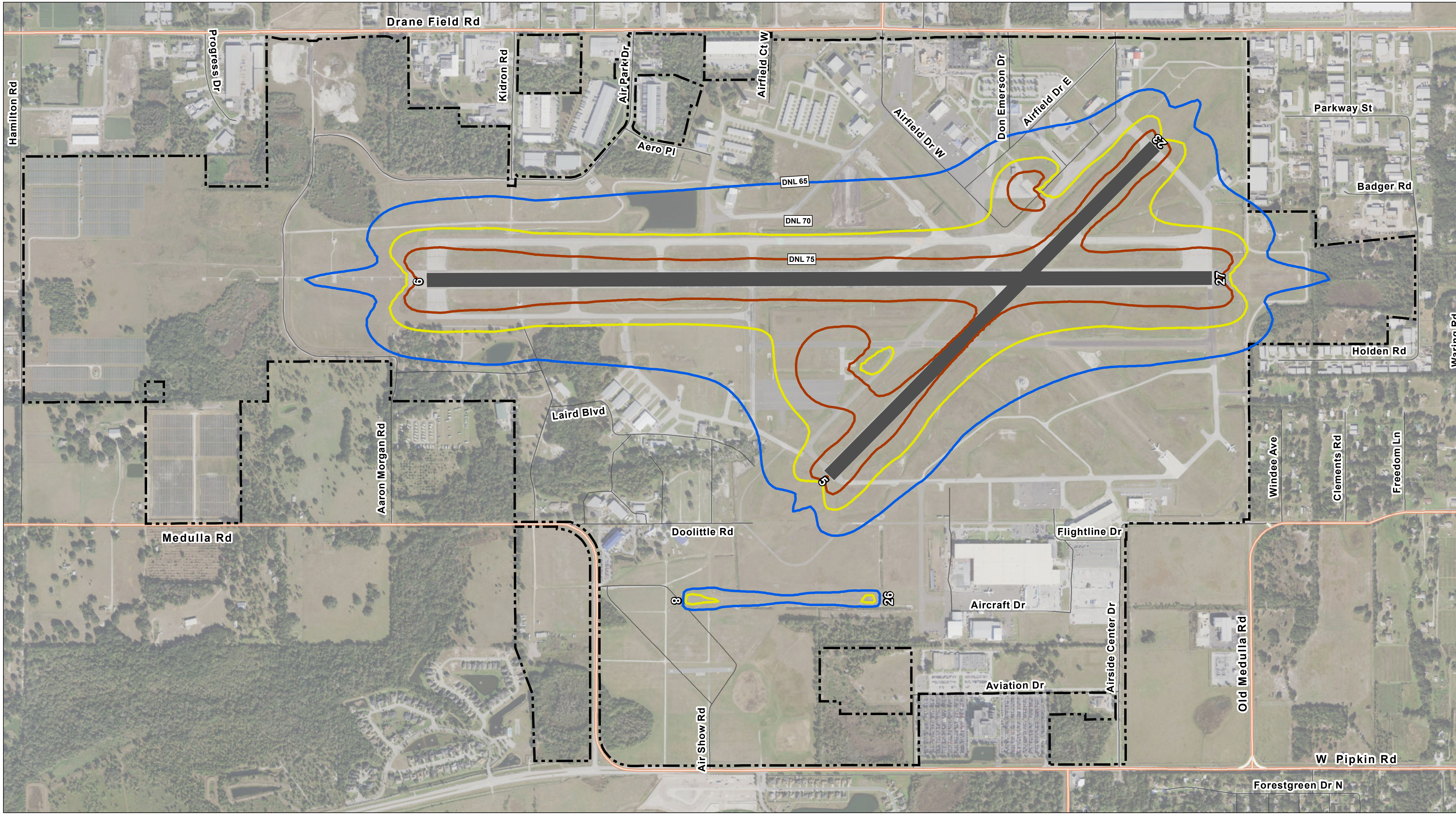
**Table 3-2 Florida Land Use and Cover Classification Systems (FLUCCS) Communities at LAL**

| Land Use Code | Description |
|---|---|
| 1500 | Industrial |
| 1900 | Open Land |
| 3200 | Shrub and Brushland |
| 4340 | Hardwood Conifer Mixed |
| 4380 | Mixed Hardwoods |
| 5100 | Streams and Waterways |
| 5300 | Reservoirs |
| 6150 | Stream and Lake Swamps (Bottomland) |
| 6170 | Mixed Wetland Hardwoods |
| 6210 | Cypress |
| 6300 | Wetland Forested Mixed |
| 6310 | Wetland Shrub |
| 6410 | Freshwater Marshes |
| 6430 | Wet Prairies |
| 7400 | Disturbed Land |
| 8110 | Airports |
| 8300 | Utilities (Solar) |
| 1500 | Industrial |
| 1900 | Open Land |
| 3200 | Shrub and Brushland |

Source: SFWMD, 2011; ESA, 2019

Potential impacts to biotic communities are regulated by a variety of agencies at the federal, state and local level depending upon the project type and community affected.

In Polk County, local agencies support development review, but it is the state and federal regulatory agencies that have jurisdiction over the resource categories discussed in this section. These agencies and the coordination typically required are discussed in the following sections related to the specific resources they govern, and include state and federal wetland regulations, water quality protection, and state and federal regulations for protected species.




FlyLakeland
Lakeland Linder International Airport

0 450 900 1,800 Feet

LAL Property Line

**2018 DNL Contours**

- 65 dB
- 70 dB
- 75 dB

SOURCE: AEDT 2d; ESA, 2019. NOTE: DNL = Day-Night Equivalent Sound Level.

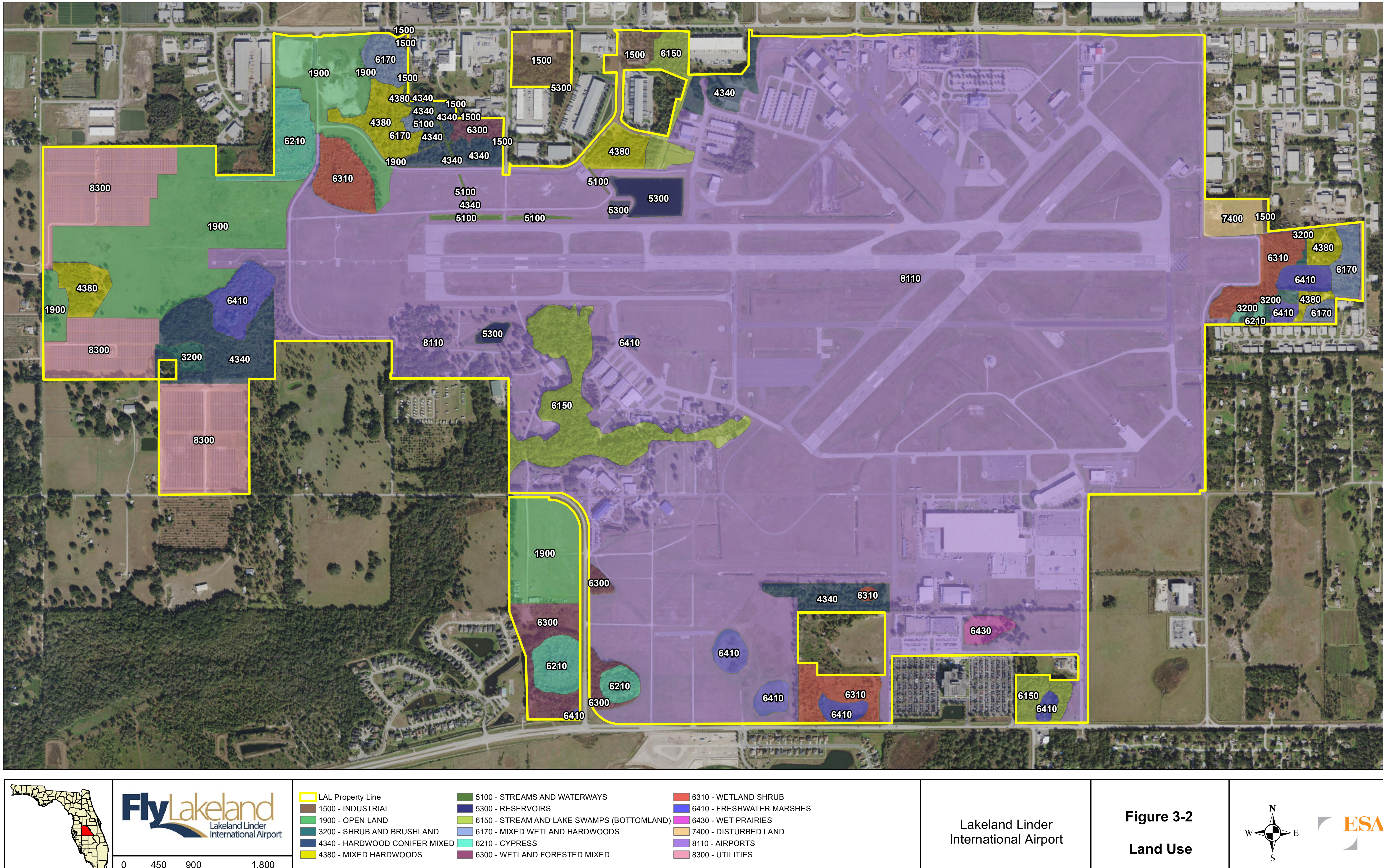
Lakeland Linder International Airport

**Figure 3-1**

**Base Year (2018) DNL Contours**

N W E S

ESA




SOURCE: Southwest Florida Water Management District, 2011; Adapted by ESA, 2019

Lakeland Linder International Airport

**Figure 3-2**

**Land Use**

## 3.6. Wildlife and Endangered Species

### Wildlife Hazard Management

A FAA compliant Wildlife Hazard Assessment (WHA) was conducted from June 2012 through June 2013. During this assessment cattle egrets, mourning doves, tree swallows, ducks, vultures and white ibis accounted for over 50 percent of all recorded observations as reported in the WHA dated October 2013. Subsequently, a Wildlife Hazard Management Plan (WHMP) was developed and recommendations within that plan are in implementation at the airport. The WHMP is included in the airport's Airport Certification Manual (ACM) and identifies actions and permits required to manage wildlife at the airport, including protected species. LAL maintains a USFWS Depredation Permit as part of these controls. Future airport development will need to consider the current WHMP and recommendations.

### Listed Species

In addition to assessing impacts under NEPA, airport development projects are subject to other federal and state laws associated with wildlife and protected species. Most notable is the federal *Endangered Species Act*, which protects and recovers imperiled species and the ecosystems upon which they depend.[4] The FAA and/or other federal agencies that may be involved with airport development projects at LAL are required to determine if their action(s) would affect listed species.[5] Depending upon the potentially impacted habitat or species affected, coordination with the US Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FFWCC) may be required. In cases where wetlands are also impacted, this coordination typically occurs in conjunction with the wetland permitting. A discussion of the most likely impacted species at the airport, and the coordination required for each, is included in this section.

A review of publically available resources (Florida Natural Areas Inventory (FNAI), etc.), previous environmental studies, WHA, surveys, and agency communication (from prior permits and NEPA reviews) identified suitable habitat at LAL for a number of federal and state-listed species. **Table 3-3** provides a list of the listed species for which suitable habitat exists, or there is a likelihood of occurrence on or near LAL.

**Table 3-3 Federal and State Listed Wildlife Species in the Vicinity of LAL**

| Common Name | Scientific Name | USFWS Listing | FFWCC Listing |
|---|---|---|---|
| **Amphibians** | | | |
| Gopher Frog | *Rana capito* | | SSC |
| **Reptiles** | | | |
| American Alligator | *Alligator mississipiensis* | T(S/A) | |
| Bluetail Mole Skink | *Eumeces egregius lividus* | T | |
| Eastern Indigo Snake | *Drymarchon corais couperi* | T | |
| Gopher Tortoise | *Gopherus polyphemus* | | T |
| Sand Skink | *Neoseps reynoldsi* | T | |
| **Birds** | | | |
| Crested Caracara | *Caracara cheriway* | T | |
| Bald Eagle | *Haliaeetus leucocephalus* | * | |
| Florida Burrowing Owl | *Athene cunicularia floridana* | | SSC |
| Florida Grasshopper Sparrow | *Ammodramus savannarum floridanus* | E | |
| Florida Sandhill Crane | *Grus canadensis pratensis* | | T |

4 *Endangered Species Act*. 16 U.S. Code § 1531-1544. December 28, 1973. As amended 1976-1982, 1984, and 1988.

5 50 CFR Part 402, *Interagency Cooperation – Endangered Species Act of 1973, as Amended*, Subpart B.

| Common Name | Scientific Name | USFWS Listing | FFWCC Listing |
|---|---|---|---|
| Florida Scrub Jay | *Aphelocoma coerulescens* | T | |
| Limpkin | *Aramus guarana* | | SSC |
| Little Blue Heron | *Egretta caerulea* | | SSC |
| Roseate Spoonbill | *Ajaja* | | SSC |
| Snail Kite | *Roshrhamus sociabilis plumbeus* | E | |
| Snowy Egret | *Egretta thula* | | SSC |
| Southeastern American Kestrel | *Falco sparverius paulus* | | T |
| Tricolored Heron | *Egretta tricolor* | | SSC |
| White Ibis | *Eudocimas albus* | | SSC |
| Wood Stork | *Mycteria americana* | T | |
| **Mammals** | | | |
| Florida Black Bear | *Ursus americanus floridanus* | | T |
| Florida Mouse | *Podomys floridanus* | | SSC |
| Sherman's Fox Squirrel | *Sciurus niger shermani* | | SSC |

This information is provided as a guide to project planning and is not a substitute for site-specific surveys. Such surveys may be needed to assess species' presence or absence, as well as the extent of project effects on listed species and/or designated critical habitat.

USFWS = United States Fish and Wildlife Service

FFWCC = Florida Fish and Wildlife Conservation Commission

E = Endangered

T = Threatened

SSC = Species of Special Concern

T(S/A) = Threatened (Similarity of Appearance to American crocodile - Crocodylus acutus

* = Protected under the BGEPA (16 U.S.C. 668-668d), as amended, and the MBTA (16 U.S.C.703-712) Source: USFWS, FFWCC

Note: Candidate species receive no statutory protection under the Endangered Species Act (ESA). The FWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA.

### Species with Suitable Habitat at LAL that May Require Regulatory Coordination

Most of the undeveloped portions of the airport property provide suitable habitat for the state-listed gopher tortoise (*Gopherus polyphemus*, Threatened) and the federally-listed eastern indigo snake (*Drymarchon couperi*, Threatened). Gopher tortoise burrows are found in most upland habitats and are protected from any type of soil disturbance by a 25-foot buffer. Previous projects undertaken at LAL have identified the presence of gopher tortoises, and if additional actions are proposed, a gopher tortoise survey using the methodology described in the FFWCC's "Available Options to Address the Presence of Gopher Tortoises on Lands Slated for Development" would be required to determine their presence or absence. If their presence is confirmed, coordination with the FFWCC and a gopher tortoise relocation permit may be required.

Eastern indigo snakes can occur within most of the existing, undeveloped habitats on-airport property. Current guidance requires that disturbance of more than 25 acres of undeveloped land triggers coordination with the USFWS. The eastern indigo snake has been known to occur in Polk County, and since it is considered a commensal species that often utilizes gopher tortoise burrows for shelter and nesting, proposed project areas that are surveyed and determined to contain gopher tortoise burrows may also contain eastern indigo snakes. Their presence would typically be determined during gopher tortoise relocation activities, and in those cases, guidelines and conditions are typically included within the gopher tortoise relocation permit. As previously mentioned, if more than 25 acres of eastern indigo snake habitat is disturbed, USFWS coordination is required and the implementation of USFWS Standard Protection

Measures for the eastern indigo snake will be required. If the indigo snake is documented within a proposed project area, USFWS coordination is required and permitting and USFWS consultation (under Section 7 of the ESA) may be required.

The federally listed wood stork (*Mycteria Americana*, Threatened) is a species that typically utilizes shallow waterbodies, including a variety of herbaceous wetlands, coastal areas, ponds, ditches, creeks, and impounded water areas, for foraging opportunities. LAL is located within a USFWS designated Wood Stork Core Foraging Area; therefore, given the extent of wetlands and man-made drainage features on-airport property, future development projects that impact appropriate wood stork foraging habitat may require USFWS coordination and possibly mitigation. This coordination is usually completed through the wetland permitting processes (USACE and SWFWMD) and, if required, wood stork habitat mitigation is typically accomplished in conjunction with state and federal permitting actions for impacting wetlands and waterbodies.

The sand skink (*Neoseps reynoldsi,* Threatened*)* and bluetail mole skink (*Eumeces egregious lividus*, Threatened) are federally listed (threatened) species endemic to xeric habitats found along Central Florida sand ridges and remnant coastal dunes. Habitat for these species includes rosemary scrub, scrubby flatwoods, sand pine and oak scrubs, and turkey oak ridge. The Florida sand skink and blue tailed mole skink is only found within 20 specific soil types in seven Central Florida counties: Osceola, Polk, Lake, Highlands, Putnam, Orange, and Marion, and is therefore highly protected with very specific survey protocols. Areas with likelihood of occurrence would require surveys and consultation with the USFWS and FFWCC and potentially mitigation if skinks are identified.

## 3.7. Wetlands and Water Resources

Prior environmental studies and reports, GIS data and other publically available data was reviewed to determine the extent of wetlands and other water resources on-airport property. The most recent FLUCCS data was utilized to approximate the limits of wetlands and other surface waters where no previously delineated wetland mapping data was available. The USACE, the Florida Department of Environmental Protection (FDEP), and the State of Florida's Water Management Districts have jurisdiction over and regulate activities that impact wetlands, surface waters, and/or stormwater management systems through the Environmental Resource Permit (ERP) Program in Florida. For wetland impacts that occur at LAL, the SWFWMD and USACOE maintains jurisdiction over these resources.

### Wetlands

In addition to review through the NEPA process, the wetlands at LAL are subject to two levels of regulatory jurisdiction: state (SFWMD) and federal (USACE/USEPA). While the agencies have similar missions, the criteria for delineation, permitting and mitigation of wetlands varies between them. While not all of the wetland areas on the airport have been field reviewed or delineated, the mapping in the MPU represents the best combination of previous wetland delineations, various database GIS information, aerial photo interpretation and available field reconnaissance. A field wetland delineation should be conducted and followed by coordination with SWFWMD and/or the USACE for new development projects that have the potential to impact wetland and surface water areas in order to determine whether permitting will be necessary. When permits are required (wetlands impacted in excess of the minimum allowances), the permitting process is completed through independent coordination with each of the agencies for which jurisdictional impacts occur. The USACE would require a permit for impacts under their jurisdiction, *Waters of the United States* under the *Clean Water Act of 1972*, as amended. The Section 404(b)(1) Clean Water Act (CWA) permitting process is typically completed concurrently with state permitting, though the two processes are separate. The state ERP process combines the environmental regulatory review with the water quality and water quantity (stormwater) review. Where impacts are significant, wetland mitigation may be required and would be determined on a case by case basis. During the permitting process the permittee must first show that steps have been taken to avoid/minimize impacts to wetlands and other aquatic resources and that compensatory mitigation will be provided for unavoidable impacts to wetland and waterbody resources.

As depicted in **Figure 3-3**, the airport property contains numerous wetlands and surface waters (ponds and ditches). These areas occur throughout LAL but are most abundant in the western portions of the airport property. The airport contains both forested and herbaceous wetland systems and a variety of habitats ranging from open water to cypress systems. The wetlands have been evaluated through a number of projects and the typical wetland quality is considered moderate with varying degrees of hydrologic impacts. Due to the limited mitigation options in the LAL drainage basin (Alafia River Drainage Basin) finding suitable mitigation for wetland impacts may be limited largely to onsite options if a Mitigation Bank is not available during the permitting process. Though not ideal, on-site mitigation has been the predominant strategy for offsetting project impacts due to the lack of an available Mitigation Bank located within the basin, therefore, several wetland mitigation areas are located on-airport property. The mitigation type and location have been developed under the WHA and WHMP and have been designed to minimize potential hazards. As offsite options for mitigation become available, LAL may permit the relocation of mitigation off-airport property to improve safety and facilitate airport development. Other Surface Waters (OSW)

LAL maintains a network of upland cut ditches and stormwater ponds associated with the airport’s drainage system. No streams or waterbodies that would be classified as “impaired” under state water quality standards are located on or immediately adjacent to LAL property.

The airport operates under stormwater management permits and implements pollution prevention plans and best management practices. LAL has a network of drainage ditches and ponds used for stormwater conveyance and storage, some of which maintain connections to other surface waters. Permitting will be required should a proposed project at LAL be determined to impact such facilities. National Pollutant Discharge Elimination System (NPDES) regulations also serve to protect water quality. In the State of Florida, the NPDES permit program is administered by the FDEP. An NPDES Generic Permit for construction is required for projects that disturb greater than 0.5 acre. Therefore, proposed construction projects at LAL that exceed this threshold would require an NPDES permit.

### Other Surface Waters (OSW)

LAL maintains a network of upland cut ditches and stormwater ponds associated with the airport’s drainage system. No streams or waterbodies that would be classified as “impaired” under state water quality standards are located on or immediately adjacent to LAL property.

The airport operates under stormwater management permits and implements pollution prevention plans and best management practices. LAL has a network of drainage ditches and ponds used for stormwater conveyance and storage, some of which maintain connections to other surface waters. Permitting will be required should a proposed project at LAL be determined to impact such facilities. National Pollutant Discharge Elimination System (NPDES) regulations also serve to protect water quality. In the State of Florida, the NPDES permit program is administered by the FDEP. An NPDES Generic Permit for construction is required for projects that disturb greater than 0.5 acre. Therefore, proposed construction projects at LAL that exceed this threshold would require an NPDES permit.

### Floodplains

Executive Order 11988, *Floodplain Management*,[6] directs federal agencies “to take actions to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the flood plains.”[7] Department of Transportation Order 5650.2, *Floodplain Management and Protection*, and FAA Orders 1050.1F and 5050.4B contain policies and procedures for implementing the Executive Order and evaluating potential floodplain impacts. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a floodplain based on a 100-year flood (7 CFR 650.25).

The Federal Emergency Management Agency (FEMA) identifies flood hazard areas that are depicted on Flood Insurance Rate Maps (FIRMs). A floodplain is defined as the lowlands and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands that are, at a minimum, prone to the 100-year flood. The 100-year floodplain is considered the base floodplain. Flood hazard areas identified on FIRMs are defined as Special Flood Hazard Area, which are assigned with various zone designations signifying their individual characteristics. Zone A is subject to inundation by the one percent

---

6 *Executive Order 11988*, “Floodplain Management”, May 24, 1977 (42 FR 26951).

7 FAA Order 1050.1F, Appendix A Section 9 9.1.

annual chance flood event, and Zone B is a moderate flood hazard area. **Figure 3-4** depicts the floodplain locations on-airport property. Designated as Zone A, these are special flood hazard areas inundated by a 100-year flood event with no base flood elevations determined. A 100-year flood event is a flood event that has a one percent chance of occurring annually.

## 3.8. Department of Transportation Act: Section 4(f) and Other Environmentally Sensitive Public Lands

Section 4(f) of the *Department of Transportation Act of 1966* (re-codified and renumbered as Section 303(c) of 49 United States Code) states that the Secretary of Transportation will not approve any program or project that requires the use of publicly-owned land of a public park, recreation area; or wildlife and waterfowl refuge of national, state, or local significance; or land of an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless:

1. There is no feasible and prudent alternative to use of such land and such program, and
2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

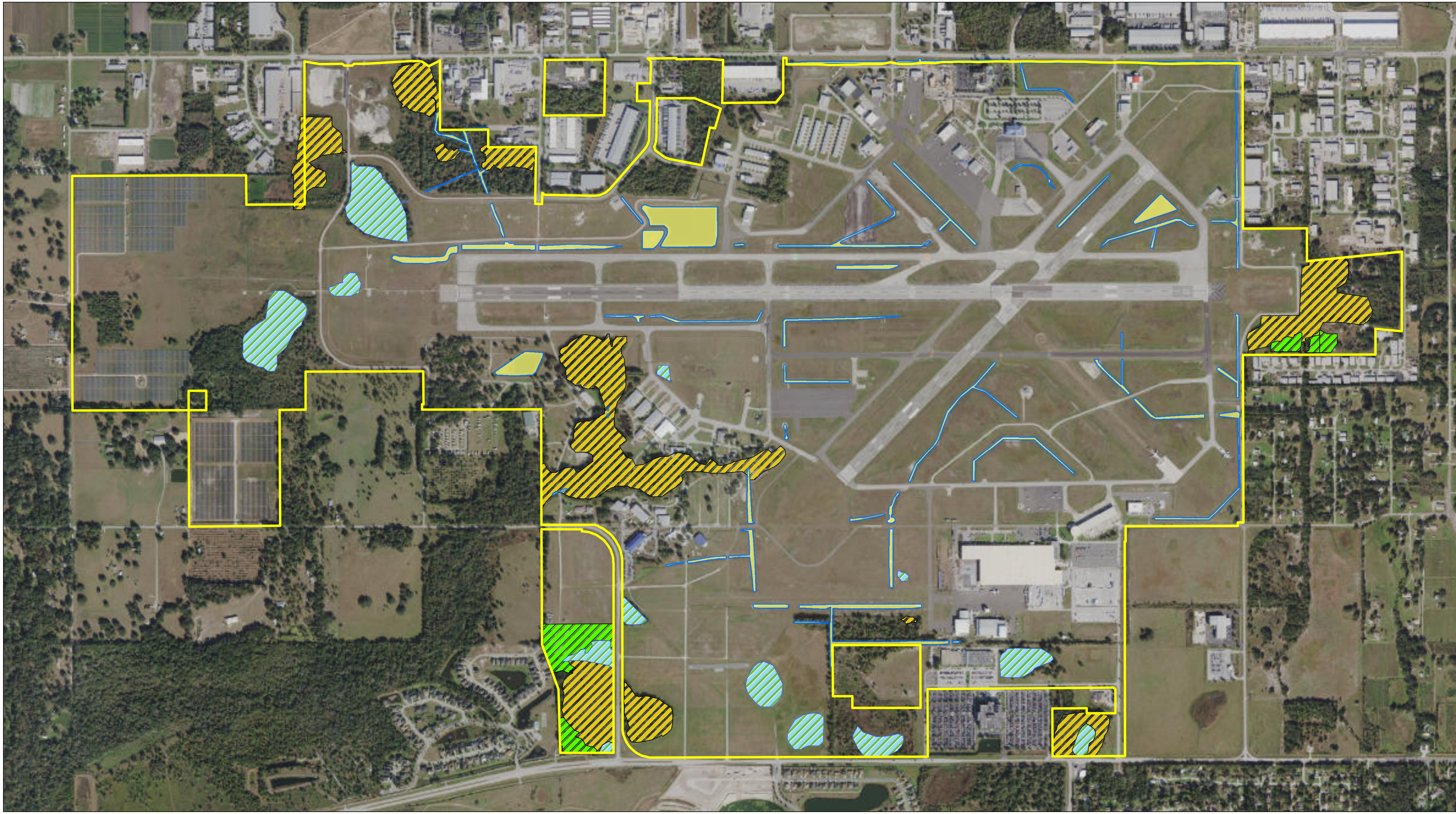
No sites listed in, or eligible for listing in the National Register of Historic Places (NRHP) were identified on or adjacent to the airport. There are no Section 4(f) resources located within the immediate vicinity of LAL.

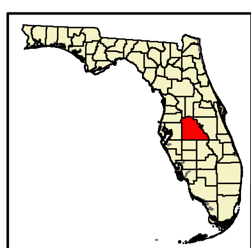
If a proposed project is anticipated to result in impacts to a Section 4(f) resource, coordination with applicable agencies (US Department of the Interior (DOI), USDA, or Housing and Urban Development (HUD)), in addition to any state/local officials with jurisdiction over and Section 4(f) property that may be potentially impacted by a proposed airport action, would typically be conducted as part of the NEPA process.

## 3.9. Historical, Archaeological, and Cultural Resources

NEPA requires Federal agencies to consider the potential effect of their actions on “the human environment,” which includes cultural as well as natural aspects of the environment. NEPA regulations (40 CFR 1502.25) encourage integration of the NEPA review process with other environmental laws. Several laws and regulations require that possible effects on historic, archaeological, and cultural resources be considered during the planning and execution of federal undertakings. The primary laws that pertain to the treatment of historic, architectural, archaeological, and cultural resources during environmental analyses are the *National Historic Preservation Act* (NHPA), the *Archaeological Resources Protection Act*, and the *Native Graves Protection and Repatriation Act*. Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* and the Presidential Memorandum of April 29, 1994, *Government-to-Government Relations with Native American Tribal Governments,* require that the FAA consult directly with tribal governments on federal undertakings that may affect federally-recognized Native American Indian tribes.

A review of the EPA’s NEPAssist database and the NRHP did not reveal any sites that are listed in or are eligible for listing in the NRHP in the vicinity of LAL. Prior studies at LAL that required coordination with the Florida State Historic Preservation Office (SHPO) indicate that there are no known historic, archeological, or cultural resources located within airport property.





FlyLakeland
Lakeland Linder International Airport

0 500 1,000 2,000 Feet

LAL Property Line
Other Surface Waters (41.50 Acres)
Forested Wetlands (89.87 Acres)
Non-Forested Wetlands (38.13 Acres)
Wetland Mitigation Areas (11.60 Acres)

SOURCE: Southwest Florida Water Management District, 2011; ESA, 2018
NOTE: ESA Wetlands and surface waters were field delineated and photo interpreted from various projects from 2013 - 2018.

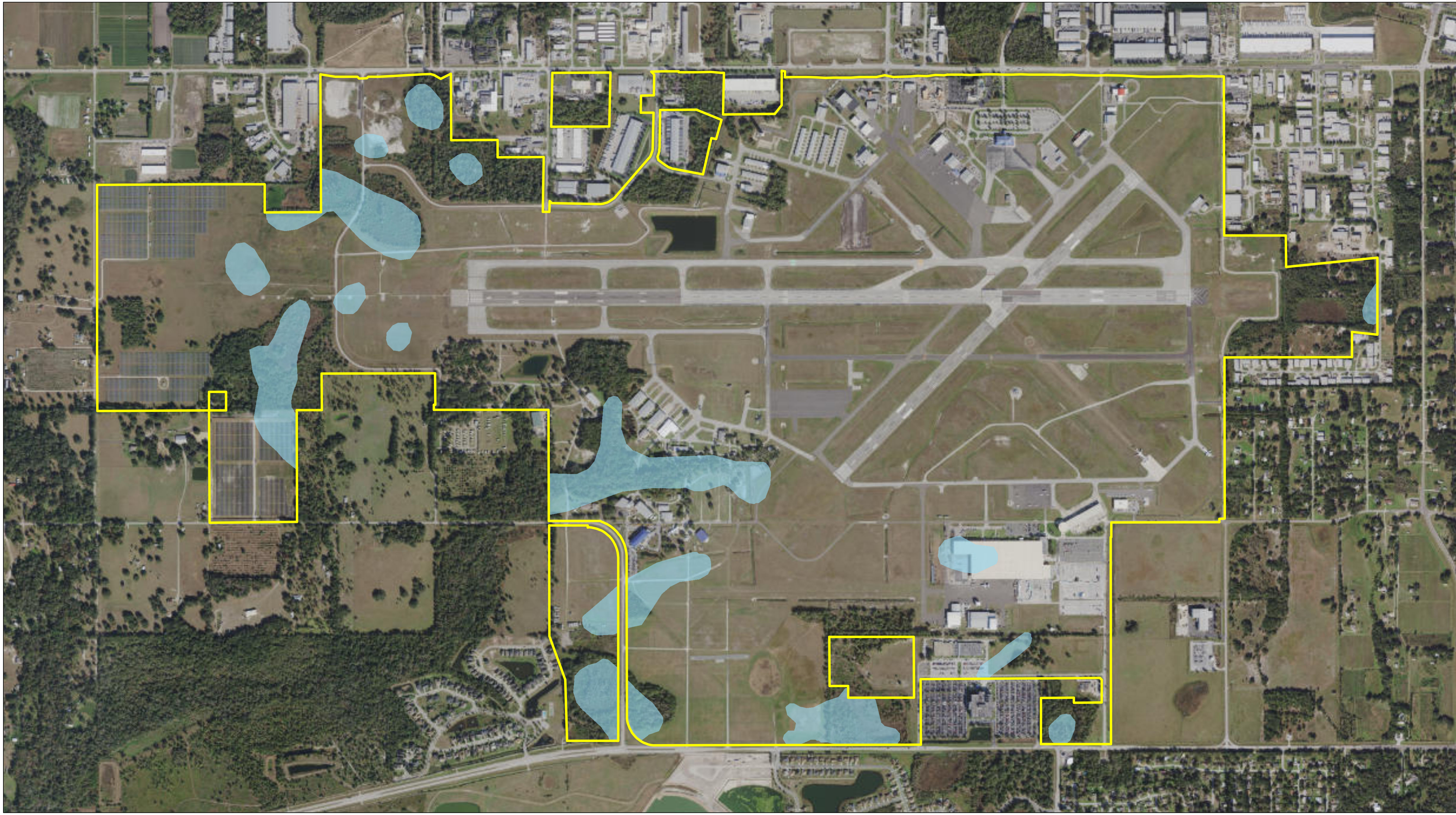
Lakeland Linder International Airport

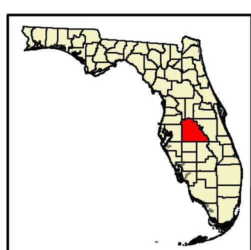
**Figure 3-3**

**Wetlands and Surface Waters**

N
W E
S

ESA





FlyLakeland
Lakeland Linder International Airport

0 500 1,000 2,000 Feet

LAL Property Line FEMA Floodplain Zone A

SOURCE: FEMA Flood Insurance Rate Map, Panel 1202610475D, 1996

Lakeland Linder International Airport

**Figure 3-4**

**FEMA Floodplains**

N S E W

ESA

# 3.10. Energy Supply and Natural Resource Use

Lakeland Electric is responsible for providing electrical service to LAL and maintains a network capable of serving existing and prospective future tenants at the airport. Any proposed airport improvements projects would require lighting; power for specialized equipment, tools, and processes; office equipment; and air conditioning. Local power utility requirements would include the need for electric service. Any additional improvements proposed at LAL will require an evaluation of the energy needs to determine the steps necessary to make such accommodations.

Although a threshold has not been specifically identified by the FAA, it is not anticipated that future airport improvements or development projects would have a significant impact on natural resources and energy supplies.

# 3.11. Hazardous Materials and Waste Management

## 3.11.1. Hazardous Materials

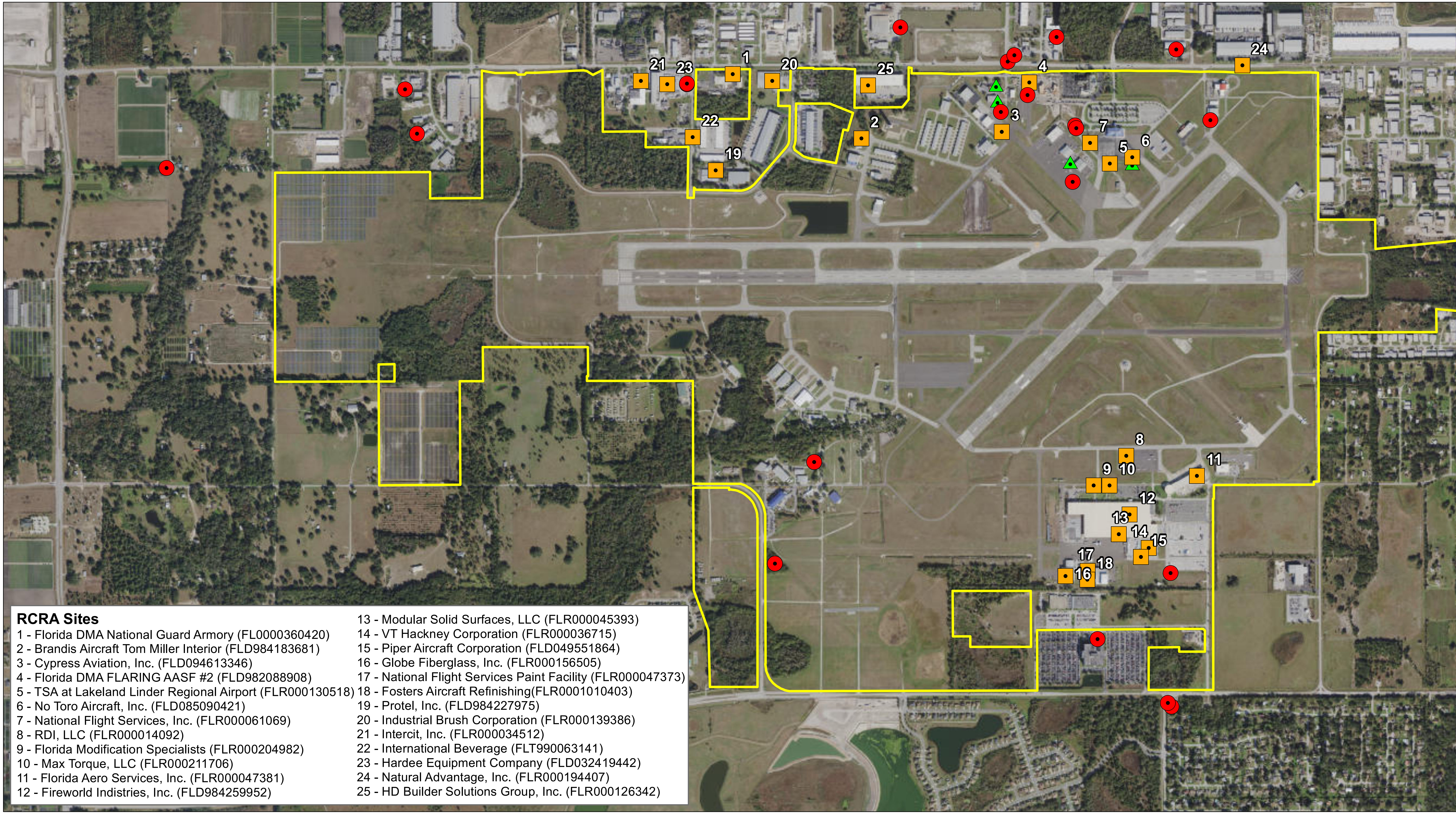
Federal, state, and local laws regulate hazardous materials use, storage, transport, or disposal. Major laws and issue areas include:

- Resources Conservation and Recovery Act (RCRA) - hazardous waste management.
- Hazardous and Solid Waste Amendments Act - hazardous waste management.
- Comprehensive Environmental Response, Compensation, and Liability Act - cleanup of contamination.
- Superfund Amendments and Reauthorization Act (SARA) - cleanup of contamination.
- Emergency Planning and Community Right-to-Know (SARA Title 111) - business inventories and emergency response planning.

According to the Florida Department of Environmental Protection (DEP) Contamination Locator Map (CLM)[8], there are four cleanup sites located on-airport property, of which there are two active and one pending petroleum cleanup sites. The remaining site is classified as "other" (non-petroleum) and also listed as active. Two of the sites are located off of Airfield Drive West, west of the main airport entrance. The remaining sites are located south of the main terminal building. Available data indicates the contamination is the result of the discharge of petroleum-based products from either above or below ground storage tank systems at the three petroleum cleanup sites and the result of the discharge of Volatile Organic Compounds (VOCs) at the site classified as "other". No other hazardous cleanup sites are located on-airport property.

The RCRA on-line database lists facilities that store, generate, transport, treat, and dispose of hazardous wastes (items such as waste oils, paint solvents, and other hazardous materials). It should be noted that sites included in this database do not necessarily involve contamination. There are multiple RCRA sites located on LAL property which are summarized in **Table 3-4** and shown on **Figure 3-5**.

8 Available at: http://prodenv.dep.state.fl.us/DepClnup/welcome.do. Accessed March 2018.




FlyLakeland Lakeland Linder International Airport

0 550 1,100 2,200 Feet

LAL Property Line
Fuel Storage Tanks
Petroleum Cleanup Sites
RCRA Sites

SOURCE: Florida Department of Environmental Protection, 2018; Environmental Protection Agency, 2018

Lakeland Linder International Airport

**Figure 3-5**

**Contamination Sites**

N W E S

ESA

**Table 3-4 Resources Conservation and Recovery Act (RCRA) Sites**

| Handler ID | Name | Generator Type | Compliance / Enforcement Issues |
|---|---|---|---|
| FLR000110403 | Fosters Aircraft Refinishing, Inc. | Small Quantity Generator | None |
| FLR000156505 | Globe Fiberglass, Inc. | Conditionally Exempt Small Quantity Generator | None |
| FLR000047381 | Florida Aero Services, Inc. | Conditionally Exempt Small Quantity Generator | None |
| FLR000204982 | Florida Modification Specialists, Inc. | Conditionally Exempt Small Quantity Generator | None |
| FLR000211706 | Max Torque, LLC | Small Quantity Generator | None |
| FLR000045393 | Modular Solid Surfaces, LLC | Conditionally Exempt Small Quantity Generator | None |
| FLR000014092 | RDI, LLC | Conditionally Exempt Small Quantity Generator | None |
| FL0000360420 | Florida DMA National Guard Armory | Conditionally Exempt Small Quantity Generator | None |
| FLR000130518 | TSA at Lakeland Linder Regional Airport | Small Quantity Generator | None |
| FLR000061069 | National Flight Services, Inc. | Conditionally Exempt Small Quantity Generator | None |

1. Compliance and enforcement information available in the EPA ECHO report only available for previous 5-year period.
2. Generator type unavailable from EPA at time of search (November 2017).

Source: EPA, 2020

### 3.11.2. Waste Management

The *FAA Modernization and Reform Act of 2012* included a new requirement for airport master plans to address recycling by:

- Assessing the feasibility of solid waste recycling at the airport;
- Minimizing the generation of waste at the airport;
- Identifying operations and maintenance requirements;
- Reviewing waste management contracts; and
- Identifying the potential for cost savings or generation of revenue.

The LAL Recycling, Reuse, and Waste Reduction Plan (RRWRP) includes a review of the airport's waste management and recycling operations throughout the terminal and airfield, as well as a review of tenant practices. The RRWRP prepared as part of this master plan is included in **9.2.2.Appendix B:**.

## 3.12. Coastal Zone Management

The Coastal Zone Management Act (CZMA) aims to preserve, protect, develop, and where possible, restore and enhance the resources of the nation's coastal zone. The DEP, Office of Intergovernmental Programs, FSC is responsible for directing the implementation of the Florida Coastal Management Program (FCMP) and coordinating review of Federal actions under the following authorities: *Presidential Executive Order 12372*; Section 403.061 (42), Florida Statutes; *Coastal Zone Management Act*, 16 U.S.C. Sections 1451-1464, as amended; and, *National Environmental Policy Act*, 42 U.S.C. Sections 4321-4347, as amended. The program is implemented through a network of programs and 24 statutes administered by agencies including the FDEP, the FFWCC, the Department of State (DOS), the Division of Emergency Management, the Department of Transportation (DOT), the Department of Health (DOH), the Division of Historical Resources (DHR), the Department of Economic Opportunity, the Florida Building Commission and the Department of Agriculture and Consumer Services (DACS). SWFWMD is also a cooperating member in the consistency review process for the area in which the Airport is located. The Airport is located within the coastal zone; therefore, coastal zone consistency would be required for new development at the Airport. The coastal zone consistency determination is a part of the ERP application process. It is anticipated that coastal zone consistency would be obtainable for the projects that are under consideration for development at the Airport. The FWS maintains Coastal Barrier Resources System (CBRS) maps for the State of Florida. These maps designate which lands are within coastal areas regulated by the Coastal Barrier Resource Act (CBRA).[9] LAL has no lands within the CBRS.

## 3.13. Construction Impacts

Impacts resulting from the construction of a proposed project are generally short-term in nature and temporary at any one location and would vary depending on the nature of the projects that are implemented. The construction required for any improvement or proposed developments could have the potential to impact air quality, surface transportation, water quality, and noise through the use of heavy equipment and vehicle trips generated from construction workers traveling to and from the project site. Each project will be required to adhere to the applicable Stormwater Pollution Prevention Plan (SWPPP) in place at LAL. For projects that would result in construction taking place in proximity to residential areas, those construction activities would be subject to local noise ordinances. LAL is bounded by both major and minor arterial roadways; therefore, there is the potential for construction traffic to travel in proximity to residential areas. The evaluation of potential construction impacts would be required as part of any NEPA analysis conducted prior to the commencement of construction activities for any proposed project(s) at LAL.

[9] Official CBRS map for the state of Florida can be viewed at: https://www.fws.gov/CBRA/Maps/Mapper.html

## 3.14. Summary

As discussed in the introduction, this overview does not constitute a NEPA evaluation. Instead, it is intended to help prepare the airport for any NEPA review that may be required by the FAA for future projects by identifying the resource categories that that are likely to be involved. Additional review, verification, and evaluation of environmental resources will be conducted during the NEPA evaluation process. Based on the results of the research conducted and documented in this chapter, **Table 3-5** provides a summary of the likelihood that each resource category may require further evaluation or mitigation.

**Table 3-5 Potential for Environmental Impacts**

| Resource Category | Impact Likelihood | Additional Information |
|---|---|---|
| Air Quality | Unlikely | LAL is located in an attainment area. |
| Noise and Compatible Land Use | None | Existing DNL exposure is considered compatible. |
| Prime and Unique Farmlands | Unlikely | There are no prime or unique farmlands located near LAL, and the airport is located within a designated urban area. |
| Vegetative, Wildlife, and Endangered Species | Potential | Previous projects at LAL have identified the existence of state and federally listed species |
| Water Resources, Drainage, and Hydrology | Potential | Consideration should be given to the avoidance and minimization of impacts to wetlands and floodplains |
| Section 4(f) and Other Environmentally Sensitive Public Lands | Unlikely | No known properties located on or near airport property. |
| Historical, Archaeological, and Cultural Resources | Unlikely | No known sites on or near airport property. |
| Energy Supply and Natural Resources | Unlikely | Future projects at LAL would be unlikely to have a significant impact on natural resources and energy supplies. |
| Hazardous Materials | Unlikely | Laws governing hazardous materials use and Best Management Practices make it unlikely to result in foreseeable impacts. |

Source: ESA, 2019

This Page Intentionally Left Blank

# Aviation Activity Forecasts

Lakeland Linder International Airport

# 4. Aviation Activity Forecasts

This chapter presents projections of aviation activity that form the basis of future development needs for the Lakeland Linder International Airport (LAL). Previous activity forecasts, industry trends, socioeconomic conditions, and historic data were analyzed and applied to methodologies accepted by both the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT) to develop these forecasts.

The standard planning period for an airport master plan is 20 years and the key planning periods include the five, ten, and 20-year horizons. Since this study was largely conducted in 2018, the forecasts are presented for 2023, 2028, and 2038. The forecasts primarily use data obtained through calendar year 2017, although in a few cases, the most recent 12 months of data were also considered. For a complete picture of operational activities and emerging opportunities at LAL, interviews were also conducted with the airport tenants, users of the airfield's facilities, airport businesses, and industry groups, as well as airport and air traffic control management.

## 4.1. Recent Projections of Aircraft Activity

The most recent local, state, and national forecasts for LAL include those prepared for the 1997 Airport Master Plan Update, FDOT's Florida Aviation System Plan (FASP), and the FAA's 2017 Terminal Area Forecast (TAF). Each forecast projects different levels of based aircraft and annual operations for the airport as summarized in the following sections. As required by the FAA, a direct comparison of the recommended forecasts must be made relative to the FAA TAF. This comparison is included at the end of this chapter.

### 4.1.1. 2011 Airport Master Plan Update

The 2011 Airport Master Plan Update included forecasts which were projected over a 20-year planning period using 2009 as the base year. The expected number of based aircraft and annual operations for the key planning horizons of that study are included in **Table 4-1**. These figures have also been extrapolated out to 2038 to provide a basis of comparison with the forecasts generated in this study.

**Table 4-1 2011 Airport Master Plan Update**

| | Based Aircraft | Annual Operations |
|---|---|---|
| **Base** | | |
| 2009 | 165 | 101,966 |
| **Forecast** | | |
| 2014 | 185 | 108,420 |
| 2019 | 203 | 118,000 |
| 2024 | 223 | 126,980 |
| 2029 | 245 | 140,370 |
| 2038 (extrapolated) | 293 | 162,085 |
| **Average Annual Growth Rate (2009 – 2029)** | 2.0% | 1.6% |

Source: 2011 Airport Master Plan Update.

### 4.1.2. Florida Aviation System Plan

The Florida Aviation System Plan (FASP) provides a comprehensive planning and development guide for the state's public airports. The FASP ensures that Florida has an effective statewide aviation transportation system. In support of these goals, FDOT's Aviation and Spaceports Office provides annual updates to historic aviation data and prepares forecasts of the based aircraft, annual operations, and passenger enplanements (as applicable) for each public airport in the state. The FASP information is included as part of the Florida Aviation Database with the most recent update providing historic data through 2015 and projections out to 2035. **Table 4-2** shows the FASP data for the key forecast horizons of this study, including an extrapolation to 2038. The FASP does not include any passenger enplanements for LAL.

**Table 4-2 Florida Aviation System Plan**

| | Based Aircraft | Annual Operations |
|---|---|---|
| **Base** | | |
| 2015 | 253 | 106,339 |
| **Forecast** | | |
| 2023 | 301 | 120,738 |
| 2028 | 336 | 130,711 |
| 2038 (extrapolated) | 417 | 153,196 |
| **Average Annual Growth Rate (2015 – 2035)** | 2.2% | 1.6% |

Source: Florida Aviation Database, February 2018 and ESA analysis, 2018.

### 4.1.3. FAA Terminal Area Forecast

The Terminal Area Forecast (TAF) is prepared annually by the FAA to meet the budget and planning needs of the agency, as well as to provide information for use by state agencies, local authorities, the aviation industry, and the public. Projections in the FAA TAF are prepared for each airport in the National Plan of Integrated Airport Systems (NPIAS). The TAF projections detailed in **Table 4-3** are based on the federal fiscal year, which ends on September 30th. The 2017 TAF (issued in January 2018) utilizes a 2016 base year for based aircraft and a 2017 base year for annual operations. Projections of passenger enplanements in the 2017 TAF are not included in **Table 4-3** as they are flatlined at only 297 from 2017 to 2045.

**Table 4-3 FAA 2016 Terminal Area Forecast**

| | Based Aircraft | Annual Operations |
|---|---|---|
| **Base** | | |
| 2016 | 232 | 114,198 |
| **Forecast** | | |
| 2017 | 234 | 111,116[a] |
| 2023 | 249 | 111,773 |
| 2028 | 259 | 112,168 |
| 2038 | 279 | 112,963 |
| **Average Annual Growth Rate (2016 – 2038)** | 0.8% | 0.1% |

[a] Actual base year for annual operations.

Source: 2017 FAA Terminal Area Forecast, issued January 2018.

## 4.2. Factors Influencing Forecast Approach

To guide the forecasting effort, an understanding of the relationship between industry trends and the airport operating environment is essential. Using historic information and data, it is possible to compare the effect changes in the general aviation industry and local area economics may have had on activity at LAL. The analysis of recent trends also allows educated assumptions to be made as to how the airport's service area and activity will be affected in the future.

National, regional, and local trends with the potential to impact existing or generate new general aviation activity were identified from several sources. In addition to the historic data and recent activity forecasts, information was collected from a number of reports, studies, and industry articles including, but not limited to:

- FAA Aerospace Forecast (2018 – 2038)
- FAA Annual Business Jet Reports (2009 – 2017)
- Environmental Assessment for the LAL Aircraft Maintenance, Repair, and Overhaul Hangars and Air Cargo Facility (August 30, 2016)
- General Aviation Manufacturers Association (GAMA) Annual Aircraft Shipment Reports (2001 – 2017)
- Florida Statewide Aviation Economic Impact Study Update and Individual Airport Summary Reports (August 2014)

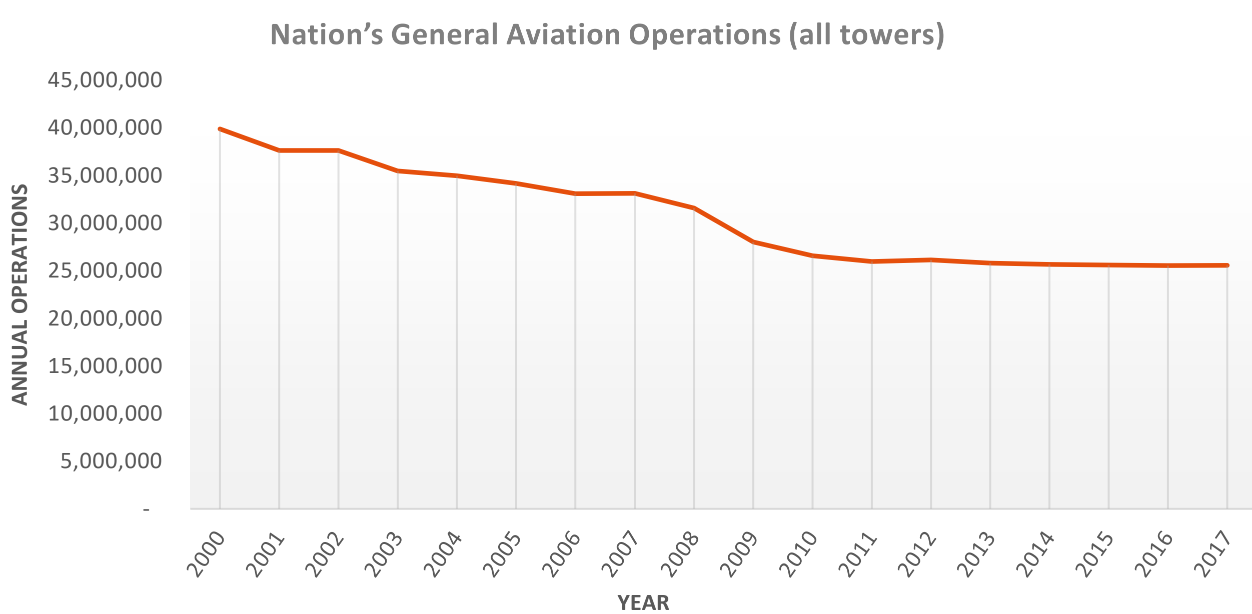
The information gathered frames LAL's role in the national air transportation network and provides insight into how activity at the airport may change over time.

### 4.2.1. State of the General Aviation Industry

General aviation encompasses all segments of the aviation industry, except for activity that is conducted by commercial airlines or the military. Examples include pilot training, law enforcement flights, medical transportation, aerial surveys, aerial photography, agricultural spraying, advertising, and various forms of recreation, not to mention business, corporate, and personal travel.

Historically, the general aviation industry has experienced some very significant fluctuations, both positive and negative. Looking back over the past two decades, the industry was severely impacted by the September 11th, 2001 terrorist attacks and the Great Recession from 2007 to 2009. Nationally, general aviation activity declined every year through 2006.

**Figure 4-1 Annual Operations at All Towered Airports Nationwide**



Between 2003 and 2007, the industry experienced major advances in aircraft and navigation technologies, which created new product offerings and services during a period with an overall good economy. These included widespread use of Global Positioning Satellite (GPS) technology, the emergence of very light jet aircraft, and the introduction of an entirely new category; the light sport aircraft. These new product offerings and services bolstered most every segment of the general aviation industry. In spite of this, there was only limited growth in 2007.

By the end of 2008, most segments of the industry experienced losses as the overall national economy declined during the Great Recession. The very light jet industry was hit hardest as many manufacturers delayed development plans and/or went bankrupt. Data from the General Aviation Manufacturer's Association (GAMA) showed that general aviation aircraft manufactured in the U.S. fell from a high of 3,279 aircraft in 2007 to 1,334 in 2010. It was not until 2011 that GAMA reported the first increase in new general aviation shipments since 2007. While manufacturing has increased most every year since 2011, 2017 levels were still less than half of those before the Great Recession. Compounding this issue, the 2018 FAA Aerospace Forecast documents the decline in the number of aircraft in the nation's overall active general aviation fleet between 2007 and 2013. It is interesting to note that the greatest decline between 2011 and 2013 was attributed to the 2010 Rule for Re-Registration and Renewal of Aircraft Registration. According to the FAA, implementation of this rule removed cancelled, expired, or revoked records from the national database.

Overall, the 2018 FAA Aerospace Forecast projects general aviation growth over the next 20 years, despite the industry fluctuations that are likely to continue. While the number of active general aviation aircraft is only expected to increase slightly (less than a tenth of a percent annually) through 2038, this growth is not consistent across all segments of activity. The most common single-engine piston aircraft are expected to decline 1.0 percent annually for the period while jet aircraft are forecast to grow 2.2 percent each year. The number of hours flown by all general aviation aircraft is projected to increase at a rate of 0.8 percent each year. Similar to the fleet projections, the hours flown by turbine aircraft are forecast to grow 2.7 percent annually while the single-engine piston aircraft show a decline in activity of 1.1 percent each year. These turbine aircraft projections are supported by figures in the FAA's monthly Business Jet Reports which shows that operations conducted by general aviation jet aircraft have consistently increased since the low in 2009. They are however, still just below the level recorded for 2007, prior to the negative press during the 2008 and 2009 corporate bailouts, which resulted in a 20 percent decrease in total business jet activity by the end of 2009.

### 4.2.2. Local Socioeconomic Factors

A number of socioeconomic indicators were evaluated that typically have a direct relationship to the use of aviation and therefore to airport activity. Overall and average annual growth rates for Polk County, the State of Florida, and the U.S. are presented based on data obtained from Woods & Poole Economics, Inc. It should be noted that the Lakeland-Winter Haven Metropolitan Statistical Area (MSA) incorporates the same data as that for Polk County.

The Woods & Poole projections are updated annually, utilizing models which take into account specific local conditions based on historic data back to 1969. While the historic Woods & Poole data sets obtained in March 2018 for this study cover the period from 1969 to 2015, only data back to 2006 are shown in the tables that follow; reflecting the general trends over the past 10 years. Historic socioeconomic data prior to 2006 was utilized in the various analyses of aviation activity, especially as part of the regression models evaluated.

#### 4.2.2.1. Population

Polk County had overall and average annual population growth rates greater than Florida's and the nation's (**Table 4-4**). For Polk County, this higher growth highlights the historic and ongoing development that has occurred along the Interstate 4 corridor. While large portions of northwest, southwest, and southeast Polk County remain undeveloped, it ranked 12th in the state for the percent of population change between 2010 and 2017. This is based on the University of Florida Bureau of Economic and Business Research's evaluation of data for all 67 counties. Continued growth for Polk County, albeit at a slightly lower rate, is expected to continue through 2038, outpacing the related rate for the nation.

**Table 4-4 Total Population**

| | Polk County | State of Florida | United States |
|---|---|---|---|
| **Historical** | | | |
| 2006 | 568,324 | 18,166,990 | 298,379,873 |
| 2007 | 585,982 | 18,367,842 | 301,231,161 |
| 2008 | 594,801 | 18,527,305 | 304,093,924 |
| 2009 | 598,683 | 18,652,644 | 306,771,487 |
| 2010 | 603,192 | 18,849,890 | 309,346,806 |
| 2011 | 609,544 | 19,105,533 | 311,718,780 |
| 2012 | 615,584 | 19,352,021 | 314,102,549 |
| 2013 | 622,895 | 19,594,467 | 316,427,327 |
| 2014 | 635,264 | 19,905,569 | 318,906,933 |
| 2015 | 650,092 | 20,271,272 | 321,420,589 |
| **Overall Growth** | 14.4% | 11.6% | 7.7% |
| **Average Annual Growth Rate (2006 – 2015)** | 1.5% | 1.2% | 0.8% |
| | | | |
| **Forecast** | | | |
| 2023 | 710,805 | 22,756,779 | 345,864,633 |
| 2028 | 750,378 | 24,446,562 | 362,086,877 |
| 2038 | 826,024 | 27,929,895 | 393,507,447 |
| **Average Annual Growth Rate (2015 – 2038)** | 1.0% | 1.4% | 0.9% |

Source: Woods & Poole Economics, Inc., March 2018.

### 4.2.2.2. Employment

Employment data can provide an indication of the economic stability of a geographic area. As shown in **Table 4-5**, Polk County employment has had slightly lower growth relative to the state and nation. However, as Polk County continues to expand its population base, so too will the employment levels to support the area's growth initially (such as real estate, banking, and construction) as well as afterwards (to include retail, health care, education, etc.). Woods & Poole's projections not only show employment levels for Polk County, the state, and nation continuing to increase, but at a higher rate for each over the course of the planning period, especially for Polk County.

**Table 4-5 Total Employment (number of jobs, in thousands)**

| | Polk County | State of Florida | United States |
|---|---|---|---|
| **Historical** | | | |
| 2006 | 275,332 | 10,400,600 | 176,123,566 |
| 2007 | 277,098 | 10,557,493 | 179,885,663 |
| 2008 | 268,991 | 10,296,804 | 179,639,868 |
| 2009 | 259,023 | 9,879,404 | 174,233,663 |
| 2010 | 255,794 | 9,813,714 | 173,034,686 |
| 2011 | 258,397 | 10,048,434 | 176,278,692 |
| 2012 | 261,774 | 10,255,578 | 179,081,672 |
| 2013 | 266,910 | 10,544,028 | 182,408,047 |
| 2014 | 273,527 | 10,930,490 | 186,168,101 |
| 2015 | 281,099 | 11,287,609 | 190,195,370 |
| **Overall Growth** | 2.1% | 8.5% | 8.0% |
| **Average Annual Growth Rate (2006 – 2015)** | 0.2% | 0.9% | 0.9% |
| | | | |
| **Forecast** | | | |
| 2023 | 315,062 | 12,997,884 | 212,627,009 |
| 2028 | 337,088 | 14,091,999 | 226,668,566 |
| 2038 | 379,948 | 16,269,775 | 253,386,160 |
| **Average Annual Growth Rate (2015 – 2038)** | 1.3% | 1.6% | 1.3% |

Source: Woods & Poole Economics, Inc., March 2018.

### 4.2.2.3. Income

Personal income per capita represents the ratio of total personal income, before income taxes, to the total resident population. Adjustments are made if the income was earned in a different area than where the person resides. While Polk County has had the same growth as the state (**Table 4-6)**, the nation as a whole has had the most growth in personal per capita income over the last ten years. However, Polk County's personal income per capita is expected to have a higher average annual growth rate than the state and nation. For all three, the projected average annual growth rates through 2038 are significantly higher than the historic rates.

**Table 4-6 Total Personal Income per Capita (in current dollars)**

| | Polk County | State of Florida | United States |
|---|---|---|---|
| **Historical** | | | |
| 2006 | 29,532 | 38,738 | 38,144 |
| 2007 | 29,738 | 39,788 | 39,821 |
| 2008 | 30,352 | 39,655 | 41,082 |
| 2009 | 29,010 | 37,065 | 39,376 |
| 2010 | 30,686 | 38,624 | 40,277 |
| 2011 | 32,386 | 40,476 | 42,453 |
| 2012 | 32,050 | 40,983 | 44,267 |
| 2013 | 32,030 | 40,771 | 44,462 |
| 2014 | 32,959 | 42,868 | 46,414 |
| 2015 | 33,723 | 44,429 | 46,414 |
| **Overall Growth** | 14.2% | 14.7% | 26.1% |
| **Average Annual Growth Rate (2006 – 2015)** | 1.5% | 1.5% | 2.6% |
| | | | |
| **Forecast** | | | |
| 2023 | 44,800 | 58,537 | 62,813 |
| 2028 | 56,879 | 73,729 | 78,738 |
| 2038 | 93,345 | 119,968 | 127,307 |
| **Average Annual Growth Rate (2015 – 2038)** | 4.5% | 4.4% | 4.3% |

Source: Woods & Poole Economics, Inc., March 2018.

### 4.2.2.4. Households

Households represent the number of occupied housing units, which include homes, apartments, a group of rooms, or single rooms occupied as separate living quarters. The number of households does not include facilities such as retirement homes, college dormitories, military barracks, or prisons. The overall and average annual growth in the number of households for Polk County has been slightly higher than that for the state and nation (**Table 4-7**). Over the next 20 years, the number of households in Polk County will continue to increase, but at a lower average annual rate. A similar decrease is expected for the nation, while the rate for the state is expected increase.

**Table 4-7 Total Number of Households**

| | Polk County | State of Florida | United States |
|---|---|---|---|
| **Historical** | | | |
| 2006 | 219,151 | 7,300,146 | 114,486,122 |
| 2007 | 225,867 | 7,389,493 | 115,939,528 |
| 2008 | 227,372 | 7,408,025 | 116,538,673 |
| 2009 | 226,776 | 7,393,209 | 116,761,870 |
| 2010 | 227,814 | 7,435,801 | 116,938,345 |
| 2011 | 233,248 | 7,617,373 | 119,315,163 |
| 2012 | 235,615 | 7,724,395 | 120,466,242 |
| 2013 | 238,413 | 7,845,644 | 121,834,231 |
| 2014 | 240,300 | 7,926,134 | 122,600,297 |
| 2015 | 243,310 | 8,047,925 | 123,951,413 |
| **Overall Growth** | 11.0% | 10.2% | 8.3% |
| **Average Annual Growth Rate (2006 – 2015)** | 1.2% | 1.1% | 0.9% |
| | | | |
| **Forecast** | | | |
| 2023 | 268,310 | 9,183,357 | 135,939,466 |
| 2028 | 278,535 | 9,745,715 | 140,818,385 |
| 2038 | 293,960 | 10,768,076 | 148,472,937 |
| **Average Annual Growth Rate (2015 – 2038)** | 0.8% | 1.3% | 0.8% |

Source: Woods & Poole Economics, Inc., March 2018.

### 4.2.2.5. Gross Regional Product

Gross Regional Product (GRP) is based on the U.S. Bureau of Economic Analysis gross domestic product data for each state. The nation's figures represent a total for all states while the individual county data has been estimated by Woods & Poole (**Table 4-8**). For the county data, this is done by allocating the state GRP to the counties based on the proportion of total state earnings by employees originating from a particular county. It is interesting to note that the GRP for Polk County has been relatively flat over the past ten years. However, much like employment, that trend is projected to change over the course of the planning period, with GRP for the county not only expected to grow, but at a significant average annual rate and in pace with both the state and nation.

**Table 4-8 Gross Regional Product (in millions of 2009 dollars)**

| | Polk County | State of Florida | United States |
|---|---|---|---|
| **Historical** | | | |
| 2006 | 18,513,323 | 787,689,093 | 14,539,609,803 |
| 2007 | 18,578,211 | 792,792,112 | 14,820,650,448 |
| 2008 | 17,881,559 | 747,833,911 | 14,617,094,886 |
| 2009 | 17,569,386 | 721,755,001 | 14,320,115,008 |
| 2010 | 17,312,475 | 723,144,421 | 14,618,132,273 |
| 2011 | 16,912,587 | 711,917,545 | 14,792,271,661 |
| 2012 | 17,246,085 | 720,061,061 | 15,115,991,200 |
| 2013 | 17,731,765 | 737,537,661 | 15,415,697,651 |
| 2014 | 17,835,597 | 763,508,019 | 15,829,180,020 |
| 2015 | 18,561,241 | 809,155,373 | 16,501,907,789 |
| **Overall Growth** | 0.3% | 2.7% | 13.5% |
| **Average Annual Growth Rate (2006 – 2015)** | 0.0% | 0.3% | 1.4% |
| | | | |
| **Forecast** | | | |
| 2023 | 22,181,021 | 985,688,168 | 19,622,540,113 |
| 2028 | 24,637,449 | 1,103,966,014 | 21,688,340,142 |
| 2038 | 29,913,111 | 1,358,881,337 | 26,096,052,547 |
| **Average Annual Growth Rate (2015 – 2038)** | 2.1% | 2.3% | 2.0% |

Source: Woods & Poole Economics, Inc., March 2018.

### 4.2.3. Aviation Fuel Prices

As noted previously, the general aviation industry was significantly impacted by both September 11th, 2001 and the Great Recession. This general period was also marked by dramatic increases in both Jet A and 100LL (AvGas) fuel prices, especially between 2003 and 2008. During this five-year period, Jet A prices increased an average of nearly 30 percent each year while 100LL increased nearly 17 percent each year. Since that time aviation fuel prices have fluctuated and overall, the general aviation industry has enjoyed lower Jet A fuel costs since 2012. For 100LL the lowest prices were prior to 2012 but have increased at much lower rates than in the past.

IHS Global Insight believes oil prices are at the bottom of their latest cycle and projects prices to increase as a result of growing demand and the higher costs of extraction. Using data from IHS Global Insight, the 2018 FAA Aerospace Forecast documents that the acquisition costs (dollars per barrel) for the crude oil required for aviation fuels will increase at an average annual rate of 4.4 percent through 2038.

In addition, the eventual phasing out of 100LL fuel will have an undetermined impact on every aircraft engine built from the 1920s until today that uses this leaded gasoline. Excluding experimental and light sport aircraft, many of which can use every day unleaded automobile gas (MoGas), the FAA's figures for 2017 show that nearly 70 percent of the 213,000 active general aviation aircraft are piston and use 100LL. While the costs to retrofit piston aircraft could be substantial, the ultimate cost of an unleaded aviation fuel has the potential to be much less than the current 100LL.

### 4.2.4. Potential for Commercial Passenger Service

Currently there is no regularly scheduled commercial passenger service at LAL. Regardless, the airport maintains its Title 14, Code of Federal Regulations (CFR), Part 139 Airport Operating Certificate required to accommodate scheduled and unscheduled air carrier operations. Because of this, the history of passenger service at the airport, and the existing terminal building facilities, airport management has had independent analyses conducted on the potential market for and economic impact of commercial passenger service at LAL. These included the following two studies:

- True Market / Leakage Study – August 2014
- Economic Impact of Proposed New Air Service – November 2015

These studies outlined the commercial passenger catchment area for LAL, how those passengers are currently being served, the challenges of securing scheduled commercial service, and the types of commercial passenger activity that could occur at LAL. A summary of these studies is included in **Appendix 1** as a reference to help ensure that the master plan considers and includes the flexibility to accommodate future commercial passenger service opportunities. However, passenger enplanements and the resulting commercial airline operations are not included as a part of the aviation activity forecasts being submitted to both FAA and FDOT for approval.

## 4.3. Forecast of Based Aircraft

Based aircraft are those aircraft that are operational, airworthy, and kept at the airport for a majority of the year (more than six months). Therefore, the number of aircraft owners projected to base their aircraft at LAL is an important consideration for airfield planning since it is a key indicator of the demand for facilities. Projections of based aircraft also provide an indication of the anticipated growth in general aviation activity.

Information on the aircraft based at general aviation airports is uploaded to the FAA's National Based Aircraft Inventory Program. The FAA determines if all of the aircraft reported have a current registration, then a check is made to see if any of the aircraft have been reported by another airport. This creates a validated number of based aircraft for a given airport. This validated count goes back to 2008 and includes a break out of single-engine, multi-engine, jet, and rotorcraft models. As shown in **Table 4-9**, the FAA's National Based Aircraft Inventory Program documents 247 aircraft based at LAL in 2017.

It is worth noting that the National Based Aircraft Inventory Program does not count glider, military, or ultralight aircraft since these may not always have a tail number for registration. These categories of aircraft are included as part of the FAA Airport Master Record (Form 5010); however, only one glider has been included on the most recent 5010 forms for LAL. Also, while the nine National Oceanic and Atmospheric Administration (NOAA) based aircraft are recorded as military flights for operational counts, they each have a "N" number registration and are included in the count of validated based aircraft. Therefore, the historic level of based aircraft from the National Based Aircraft Inventory Program will be utilized to project future levels of based aircraft.

**Table 4-9 Historic Based Aircraft**

| | Single-Engine | Multi-Engine | Jet | Rotorcraft | Total |
|---|---|---|---|---|---|
| 2008 | 106 | 19 | 12 | 8 | **145** |
| 2009 | 121 | 23 | 12 | 8 | **164** |
| 2010 | 130 | 27 | 10 | 11 | **178** |
| 2011 | 130 | 26 | 10 | 11 | **177** |
| 2012 | 116 | 19 | 5 | 8 | **148** |
| 2013 | 144 | 25 | 20 | 8 | **197** |
| 2014 | 154 | 26 | 20 | 7 | **207** |
| 2015 | 151 | 24 | 32 | 6 | **213** |
| 2016 | 165 | 23 | 36 | 6 | **230** |
| 2017 | 162 | 34 | 42 | 9 | **247** |
| | | | | **Average Annual Growth Rate (2008 – 2017)** | 6.1% |

Source: FAA's National Based Aircraft Inventory Program, 2018.

## 4.3.1. Historic Growth

Given the cyclical nature of the general aviation industry, it is important to analyze the overall changes that have occurred at the airport. Despite the challenges the industry has faced over the last decade, there has been an overall increase in the number of based aircraft since 2008. For any aviation forecast, such historic data should be considered when analyzing potential growth. However, in this case the average annual growth since 2008 (6.1 percent) is considered overly optimistic since it does not fully account for the cyclical nature of the industry, especially given the economic conditions that occurred prior to 2008. When applied to the current level of based aircraft, this historic average annual growth results in a projection of 856 based aircraft by 2038. Therefore, the historic growth was not considered as a reasonable forecast option.

## 4.3.2. Previous Growth Projections

As shown in **Table 4-1**, the 2011 Airport Master Plan Update projected 245 based aircraft by 2029, almost matching the current 2017 count of 247. While the FAA's national inventory program does not have data prior to 2008, historic data in the FASP and 2017 FAA TAF indicate that there were upwards of 30 based aircraft lost around the time of the Great Recession. As noted previously, the 2018 FAA Aerospace Forecast documents the decrease in the nation's overall general aviation fleet between 2007 and 2013. Regardless, the number of based aircraft at LAL recovered very quickly, increasing by just over 100 in the last decade. Even though this surpassed the projected growth in the previous master plan, that study's expected average annual growth rate (2.0 percent) is still considered reasonable for use and comparison purposes in this study. Applying this rate to the 247 documented in 2017 results in an estimate of 374 based aircraft at LAL by the end of the 20-year planning period (**Table 4-10**).

As mentioned, the FASP is updated each year, and therefore incorporates changes in the industry that can ultimately affect the level of based aircraft. The most recent data for the system plan projects an average annual growth of 2.2 percent for the based aircraft at LAL. Applied to the 2017 count, this would result in 390 based aircraft by 2038 (**Table 4-10**).

The current TAF projects a much lower average growth rate of 0.8 percent for the based aircraft at LAL. When applied to the current 2017 level, this would result in a projection of 292 based aircraft by 2038 (**Table 4-10**).

## 4.3.3. National Active Fleet Forecasts

Each year the FAA provides a long-term projection for the active general aviation fleet, with active being defined as any aircraft flying at least one hour during the year. Decreases in the nation's total active fleet occurred between 2007 and 2013. Since that period, there has been a four-year increase through 2017. In the 2018 FAA Aerospace Forecast, a slight increase is projected for 2018 and 2019, but then, a slow decline in the nation's total active general aviation fleet is projected through 2028. Afterwards very limited growth is expected with the current 2017 level not being re-achieved until 2036. This is primarily attributed to the fact that new aircraft deliveries are not keeping pace with the retirement of the aging general aviation fleet, especially in the single-engine piston category. Overall, there is little change expected by the FAA in the size of the nation's active general aviation fleet over the next 20 years. Given that LAL has experienced growth in the number of based aircraft since the last master plan and additional based aircraft are expected during the 20-year horizon of this study, the FAA's national active fleet projections were not utilized to create a based aircraft forecast.

## 4.3.4. Regression Analysis

Regression forecasting methodologies were also employed to estimate the future number of based aircraft. The regression models developed and tested incorporated three types of independent variables to identify correlations with historic based aircraft counts. The first independent variables included a number of the socioeconomic datasets previously summarized, which were applied based on assumptions made for each as to their potential correlation to based aircraft. For example, it was assumed that the tendency for aircraft to be based at LAL has a relationship to the number of people in the surrounding area. The FAA's data on fuel costs was also included as an independent variable, since this is such an important element of owning and operating any general aviation aircraft. In addition, an indicator independent variable was introduced to take into consideration the impacts associated with the Great Recession on the level of based aircraft at LAL. Indicator variables are used in regression models for events such as the recession that cannot be easily quantified.

A variety of models were evaluated using the different independent variables against the historic based aircraft data for LAL. Initially, simple regression analyses were conducted using the local socioeconomic and FAA fuel cost datasets, to verify the relationship between each variable and historic based aircraft levels. Multiple regression models where then evaluated using different combinations of the independent variables, including the Great Recession indicator variable. The $R^2$ calculated for the simple regression analyses is utilized as the coefficient of determination, while the models with multiple independent variables utilize an adjusted $R^2$, which corrects the coefficient of determination for additional variables. Both $R^2$ and an adjusted $R^2$ value of zero shows no relationship while values approaching 1.0 show a strong relationship and overall fit between the estimated regression equation and the sample data.

Typically, values of 0.95 or higher indicate a significant relationship. However, other statistics from the various regression models were also considered in addition to the adjusted $R^2$ value. These included the individual t-stats and P-values of the independent variables as well as the overall standard error of the equation (ability of the model to project accurately). Of the various multiple regression models analyzed, none showed very significant correlation. However, the simple regression analysis using population not only had the highest $R^2$ value at 0.85, the model results also showed the independent variable as being statistically significant and the resulting equation having a low standard error. Therefore, this simple linear regression model was used to estimate the future level of based aircraft. The result is 442 based aircraft by 2038 which represents an average annual growth rate of 2.8 percent (**Table 4-10**).

## 4.3.5. Selected Based Aircraft Forecast

For the recommended based aircraft projection, the average annual growth rate of 2.2 percent projected by FDOT for LAL was adopted. This growth rate, which significantly exceeds the 2017 FAA TAF, is supported by the fact that the airport currently has a 100 percent occupancy rate for its hangar facilities and that there are 35 confirmed on the airport's hangar wait list (as of March 2018). In addition to the airport's list, interviews with Sheltair and Lakeland Executive Hangars revealed similar capacity shortages. Polk State College also acknowledged that they would be increasing their current based aircraft fleet from 16 to 20 over the next year, to accommodate the Fall 2018 enrollment in their flight training program and they plan for continued growth in the future.

**Table 4-10 Comparison of Based Aircraft Projections**

| | Previous Master Plan[a] | Florida Aviation System Plan[a] (recommended) | 2017 FAA TAF[a] | Regression Analysis |
|---|---|---|---|---|
| **Base** | | | | |
| 2017 | 247 | 247 | 247 | 247 |
| **Forecast** | | | | |
| 2023 | 278 | 281 | 259 | 298 |
| 2028 | 307 | 314 | 270 | 347 |
| 2038 | 374 | 390 | 292 | 442 |
| **Average Annual Growth Rate (2017 – 2038)** | 2.0% | 2.2% | 0.8% | 2.8% |

[a] Applies previous master plan, FASP, and TAF growth projection to the current based aircraft count for 2017.

Source: ESA, 2018.

## 4.4. Forecast of Based Aircraft Fleet Mix

Projecting the types of based aircraft is necessary since different aircraft require different facilities. Overall, the future based aircraft fleet mix was determined by studying the projections of the national fleet, then comparing those to the current aircraft types at LAL. While the overall growth in the nation's active fleet was not utilized to forecast based aircraft, the individual projections of aircraft types are useful in predicting the future based aircraft fleet mix. Information obtained from interviews with the various airport tenants, as well as the current types on the hangar waiting list were also applied to determine the future mix of based aircraft.

### 4.4.1. The Nation's Active General Aviation Fleet

Every year, the nation's active general aviation fleet is published as part of the FAA Aerospace Forecast. In 2017, there were 213,050 active general aviation aircraft. As noted previously, this figure was on a decline between 2007 and 2013; however, has recovered some since. Even though the 2018 FAA Aerospace Forecast may only project limited growth in the overall active aircraft through 2038, their forecast provides insight on how the individual aircraft categories are expected to evolve over the next 20 years.

While the FAA provides counts for a number of aircraft categories, they have been simplified into the five major categories shown in **Table 4-11**. Within the single-engine grouping are the single-engine piston, experimental, and light sport aircraft categories. The multi-engine group contains both piston and turboprop models, and the rotorcraft group contains both piston and turbine models. The jet category covers all ranges of turbojet general aviation aircraft, from the very light jets to the heaviest business jets.

The FAA projects considerable growth in the jet category. While the use of business aircraft fell after 2007, jet aircraft usage by smaller companies continues to increase as various charter, lease, time-share, partnership, and fractional ownership agreements provide more cost-effective options for these aircraft users resulting in higher utilization rates. More businesses also rely on general aviation because it provides safe, efficient, flexible, and reliable transportation. Fractional ownership offers consumers a more efficient use of time by providing faster point-to-point travel, the ability to conduct business while flying, and more convenient enplaning and deplaning of flights (when compared to the airlines). While none of the current based aircraft at LAL are fractional aircraft, different fractional aircraft do conduct a number of operations at the airport.

Table 4-11 FAA Forecast of National Active General Aviation Fleet

| | 2017 Fleet Mix | 2038 Fleet Mix | Average Annual Growth Rate |
|---|---|---|---|
| Single-Engine | 75.5% | 68.4% | -0.4% |
| Multi-Engine (piston & turboprop) | 10.5% | 11.5% | 0.5% |
| Jet | 6.6% | 10.4% | 2.2% |
| Rotorcraft | 5.1% | 7.4% | 1.8% |
| Other (Gliders, Balloons, etc.) | 2.3% | 2.3% | 0.0% |

Source: FAA 2018 Aerospace Forecasts.

The continuing popularity of travel by general aviation aircraft is also due to the ability to use smaller, less-congested airports which are more convenient to the final destination. A large part of this is the result of the expanded application of GPS technologies in navigation, but more specifically, the myriad of new runway specific instrument approach procedures that have been established at even the smallest airports. In the FAA's projections, jet aircraft models (including the very light jets) are expected to replace a number of the piston aircraft in the future. This is just one of the reasons the single-engine (piston) category is on a decline and the multi-engine group shows limited growth. In all, jets are expected to represent over 10 percent of the active general aviation fleet by 2038.

### 4.4.2. Current and Future Based Aircraft Fleet Mix

The 2017 based aircraft fleet mix at LAL is comprised of 65.6 percent single-engine, 13.8 percent multi-engine, 17.0 percent jet, and 3.6 percent rotorcraft. Throughout the planning period, the mix of aircraft is expected to remain predominately single-engine, but they will account for a lower overall percentage of the based aircraft. The more significant changes are expected to occur in the number of jets based at the airport. This is reasonable considering that the FAA has predicted that turbojet technology is at the point where it is truly feasible as a replacement to the more traditional piston-powered fleet. The future based aircraft types shown in **Table 4-12** have been based on the national trends and tenant interviews, as well as the types of aircraft included on the airport's current hangar waiting list and Polk State College's future fleet plans.

Table 4-12 Forecast of Based Aircraft Fleet Mix

| | 2017 | 2023 | 2028 | 2038 |
|---|---|---|---|---|
| Single-Engine | 162 | 179 | 193 | 223 |
| Multi-Engine (piston & turboprop) | 34 | 39 | 44 | 62 |
| Jet | 42 | 51 | 60 | 82 |
| Rotorcraft | 9 | 12 | 17 | 23 |
| **Total** | **247** | **281** | **314** | **390** |

Source: FAA's National Based Aircraft Inventory Program and ESA analysis, 2018.

As with most airports, the single-engine category is predominantly comprised of Beech, Cessna, and Piper models, as well as others such as Cirrus and Mooney. Multi-engine aircraft tend to include the Beech King Air and Baron series; Cessna models, such as the 310 and 414 Chancellor; or Piper Aztec and Seneca aircraft. The multi-engine category also includes eight of NOAA's aircraft: two Lockheed WP-3D Orion Hurricane Hunters (Kermit and Ms. Piggy), four DeHaviland DHC-6-300 Twin Otters, one Beechcraft King Air 350, and one Gulfstream 695A Turbo (Jet Prop) Commander. As indicated previously, the national fleet of single-engine aircraft is expected to decline slightly while the multi-engine group is only anticipated to increase slightly in the future. While many of the additional single-engine aircraft are expected to be similar to those currently at LAL, additional aircraft in the multi-engine category are expected to be mostly turboprops.

Approximately 75 percent of the based jets at LAL are tactical ex-military aircraft operated by Draken International. These primarily include a mix of the Aero Vodochody L-159, Douglas A-4 Skyhawk, Aermacchi

MB-339, and Aero L-39 Albatross aircraft. There is also NOAA's Gulfstream IV-SP (Gonzo) included in the count of based jets. The future based jets will continue to include a range of the business jet aircraft flying today. As with most of the current private jets based at LAL, the future small to medium-sized business jet aircraft will continue to include popular models from the Embraer, Bombardier Learjet, Cessna Citation, and Dassault Falcon series. Larger jet aircraft models will include those from the Beechcraft Hawker, Bombardier Challenger, Dassault Falcon, Bombardier Global, and Gulfstream series. Overall, the number of based jets at LAL is expected to nearly double over the course of the 20-year planning horizon. This increase is primarily based on additional private based jets, but also takes into consideration an expansion of Draken International's fleet, as well as the dedicated air cargo operator at LAL, which is described in a following section.

More than half of the based rotorcraft include Bell OH-58 Kiowas operated by Lance Aviation. There is also a Bell 206 Jet Ranger operated by the Florida Fish and Wildlife Conservation Commission. Future rotorcraft will include both piston and turbine powered models, such as the popular Bell, Eurocopter, and Robinson models.

While approximately 2.3 percent of the nation's active fleet fall within the "Other" category (gliders, balloons, and ultralights), as noted previously there has only been one glider included on the most recent FAA 5010 forms for the airport. While it is possible additional aircraft in this category could be based at the airport, none are included in the figures shown in **Table 4-12**, as the analysis was derived from the FAA's National Based Aircraft Inventory Program.

## 4.5. Forecast of Annual Operations

The FAA defines an aircraft operation as either a single aircraft landing or takeoff. Further, a touch and go operation is counted as two operations, since the aircraft technically lands and immediately takes off. The FAA's Operations Network (OPSNET) data provides the official activity counts based on the actual airport traffic control tower (ATCT) activity logs. The FAA classifies aircraft operations into four different categories for OPSNET as well as for their other datasets, airport traffic control tower logs, and Aerospace Forecast. These categories, which include air carrier, air taxi, general aviation, and military, are defined by the FAA as:

- Air Carrier - an aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation.
- Air Taxi - an aircraft designed to have a maximum seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less carrying passengers or cargo for hire or compensation.
- General Aviation - all civil aircraft, except those classified as air carriers or air taxis.
- Military - all classes of military aircraft.

It was stated previously that general aviation encompasses all segments of the aviation industry except for the activity that is conducted by commercial airlines or the military. As such, general aviation also includes the air taxi operations. Additionally, it should be noted that the OPSNET data further details local versus itinerant general aviation and military operations. These categories will be described and analyzed in a later section. For now, **Table 4-13** reflects all of the general aviation and military counts, as well as the air carrier activity documented in the FAA's OPSNET database over the past 20 years.

Since 1998, there have only been a few air carrier operations recorded, with most occurring from mid-2011 to early 2012 when Direct Air was conducting flights at LAL. Previous studies have documented the commercial passenger activity that is generated from the areas surrounding the airport and how that market could be served out of LAL. These are summarized in **9.2.2.Appendix A:**.

Air taxi operations have only averaged 1.6 percent of the activity at LAL since 1998. As confirmed by ATCT management, the air taxi figures primarily reflect those operations that are being conducted by aircraft with an approved air taxi call sign. These typically include flights conducted by fractional aircraft or air charter operators. Even with the establishment of a U.S. Customs and Border Protection facility at LAL in November of 2017, it is not likely that the number of general aviation operations recorded in the air taxi category will increase. In fact, since air taxi call signs are only recognized in the U.S., any operator flying out of the country must utilize their registered tail or "N" number for the flight and would therefore be recorded as an itinerate general aviation operation.

Military operations have fluctuated between a high of 5,792 operations in 2002 and a low of 1,562 in 2015. And while recent military activity averaged about 1,600 operations each year between 2013 and 2016, 2017 saw an increase of more than 1,000 additional operations, most of which are associated with NOAA beginning operations out of their new facility at LAL on May 15, 2017. Interviews with the top officials at NOAA's new Aircraft Operations Center at the airport confirmed that estimating changes in the number of annual operations is difficult. For one, while NOAA's nine aircraft are based, maintained, and managed at LAL, the missions they conduct occur around the nation and other parts of the world. For the Hurricane Hunters, aircraft operations certainly depend on the activity of the Atlantic hurricane season. Similarly, the overall ability to accurately forecast military aircraft operations is complicated by a number of factors. Essentially, operational levels can fluctuate annually as they are dependent on unpredictable variables such as annual defense budgets, national security threats, global military needs, and even natural disasters.

**Table 4-13 Past 20 Years of Aircraft Operations**

| | Air Carrier | General Aviation | Military | Annual Operations | Change over Prior Year |
|---|---|---|---|---|---|
| 1998 | 4 | 197,925 | 3,515 | 201,444 | 2.8% |
| 1999 | - | 216,149 | 3,564 | 219,713 | 9.1% |
| 2000 | 8 | 188,715 | 4,820 | 193,543 | -11.9% |
| 2001 | 4 | 201,567 | 2,985 | 204,556 | 5.7% |
| 2002 | 3 | 132,672 | 5,792 | 138,467 | -32.3% |
| 2003 | 4 | 138,715 | 2,648 | 141,367 | 2.1% |
| 2004 | 6 | 124,116 | 3,283 | 127,405 | -9.9% |
| 2005 | - | 98,968 | 2,393 | 101,361 | -20.4% |
| 2006 | - | 115,620 | 3,093 | 118,713 | 17.1% |
| 2007 | 34 | 131,837 | 2,128 | 133,999 | 12.9% |
| 2008 | 4 | 114,487 | 2,746 | 117,237 | -12.5% |
| 2009 | 16 | 86,011 | 4,186 | 90,213 | -23.1% |
| 2010 | 18 | 63,764 | 4,056 | 67,838 | -24.8% |
| 2011 | 453 | 60,375 | 3,332 | 64,160 | -5.4% |
| 2012 | 289 | 72,676 | 2,343 | 75,308 | 17.4% |
| 2013 | 109 | 82,849 | 1,690 | 84,648 | 12.4% |
| 2014 | 29 | 103,774 | 1,656 | 105,459 | 24.6% |
| 2015 | 24 | 104,753 | 1,562 | 106,339 | 0.8% |
| 2016 | 31 | 113,922 | 1,618 | 115,571 | 8.7% |
| 2017 | 14 | 113,940 | 2,699 | 116,653 | 0.9% |
| **Average Annual Growth Rate (1998 – 2017)** | | | | | -2.8% |

Source: FAA OPSNET Database, 2018.

Given the information above, the future annual operations for LAL have been analyzed as a whole, since the only the military activity is not truly general aviation and can be accounted for within the overall projections given the future levels anticipated.

### 4.5.1. Historic Activity

As with based aircraft, the historic data should be considered when analyzing the potential growth in aviation activity for an airport. **Table 4-13** shows the level of annual operations at LAL has fluctuated over the past 20 years. When reviewing the historic data, these changes are quite dynamic and can increase or decrease significantly in short periods of time. While general aviation activity is certainly linked to the local area economy, major impacts to the overall industry have had the most significant impact.

A direct result of the events of September 11th, 2001, nearly a third of the airport's activity was lost the following year. In fact, 1999, 2001, and 1998 were the top three years, respectively, for total operations documented by the FAA in their entire OPSNET database for LAL. After 2001, activity remained between 100,000 and 140,000 annual operations until 2008 when another major decline in activity began as a result of the Great Recession. Between 2007 and 2011, over half of the annual operations were lost, resulting in the airport's lowest recorded operations level of 64,160. Since, activity has increased every year to nearly double the record low; however, the current level is still below what it was before the Great Recession. In order to create a projection based on historic levels, the period between 2005 and 2017 was selected. This removes 2004 and previous years where the level of operations were much higher than 2017, so that the overall trend is not negative. This period, which includes the Great Recession, reflects an average annual growth of 1.2 percent. When applied to the current base year level, this rate results in a projection of 149,860 annual operations by 2038 (see **Table 4-14**).

### 4.5.2. Previous Growth Projections

Overall annual operations in the 2011 Airport Master Plan Update were projected to have an average growth rate of 1.6 percent through 2029 (**Table 4-1**). The previous master plan utilized tower records but was based on the FAA's fiscal year (October 1 through September 31), hence the difference in activity levels for the study's base year of 2009 with that in **Table 4-13** for the same year. Regardless, the previous master plan forecasts did reflect the first years of decline that had occurred as a result of the Great Recession. And while the forecasts did not predict the ultimate decline through 2011, it is interesting to note that after 2011, the previous projections were within two to four percent of the actual recorded operations between 2014 and 2017. Therefore, the study's expected average annual growth rate (1.6 percent) is considered reasonable for use and comparison purposes in this study. Applying this rate results in an estimate of 162,804 annual operations at LAL by the end of the 20-year planning period (**Table 4-14**).

As with based aircraft, projections of annual operations in the FASP benefit from being updated on an annual basis. Not only does this help account for industry fluctuations, it also allows adjustments to be made to accommodate any local or regional changes. The most recent system plan forecast uses 2015 as the base year. General aviation operations are projected by FDOT to grow at 1.6 percent each year after 2015. Interestingly, this is the same average annual rate described above from the 2011 Airport Master Plan Update. Therefore, **Table 4-14** reflects the application of this rate from two different sources in order to provide an updated projection.

The annual operations in the 2017 TAF are based on the FAA's fiscal year (October 1 through September 31), which explains the difference with the calendar year data from the FAA's OPSNET in **Table 4-13**. Regardless, while the 2017 TAF documents the consistent year to year growth since 2010, the average annual growth through 2038 is limited to 0.1 percent. This rate results in a relatively flat overall projection, and only results in 119,127 annual operations by 2038. Because this 20-year projection only reflects an additional 2,500 annual operations by 2038, it was not considered realistic. This is addressed further in the direct comparison of the FAA TAF with the recommended forecasts at the end of this chapter.

### 4.5.3. Utilization of the General Aviation Fleet

Each year as part of their Aerospace Forecast, the FAA provides historic data and projections on the number of hours flown by general aviation aircraft. In the 2018 Aerospace Forecast, the FAA anticipates the utilization of the fleet to increase at an average annual rate of 0.8 percent between 2017 and 2038. This fairly limited growth is partly related to the long-term costs associated with aviation fuels, which the FAA documents as increasing 4.4 percent each year through 2038. As noted before, the most active aircraft types (and therefore higher utilization rates) will be those in the turbine fleet (both aircraft and rotorcraft) versus a number of piston aircraft which are not expected to be utilized as much.

The FAA's overall expectation on the general aviation hours to be flown have been applied to the current operations for LAL to create another forecast scenario. As shown in **Table 4-14**, this results in nearly 138,000 annual operations by the end of the planning period.

### 4.5.4. Market Share

A common methodology for forecasting aviation activity is the use of market share analysis. This approach allows a comparison to be made of the annual operations LAL has supported against a defined data set. In the 2018 Aerospace Forecast, the FAA documents and projects the operations conducted at all of the towered airports in the nation. A separate count and forecast for the general aviation operations are also included in the FAA data sets. It is important to note that just like LAL's historic data, the nation's level of general aviation operations also experienced double digit losses after the Great Recession. However, unlike the nation, LAL has recorded increases every year since 2011. At the national level, general aviation operations have been down for all but two years since 2011.

The aircraft operations for LAL since 2005 (prior to the Great Recession) were evaluated against the same general aviation data for the nation. Since the lowest point in 2011, LAL's share of the nation's general aviation activity has increased significantly each year. In fact, while the total number of operations have not recovered to the 2001 level, LAL's increased market share has nearly reached the highest share calculated since 2011. When historic increases in the annual market share were applied to estimate the future potential, the result is that by the end of the 20-year planning period, LAL will continue to outpace the nation. For the nation, the FAA expects general aviation activity to increase every year through 2038. When the expected local market share is combined with the FAA's projected increase, approximately 265,000 of those operations (**Table 4-14**) would be accommodated at LAL by the end of the planning period. This represents an average growth of 4.0 percent each year.

### 4.5.5. Regression Analysis

Regression modeling was applied to forecast the annual aircraft activity at LAL. As with the based aircraft, a variety of models were evaluated using the different independent variables against the historic annual operations data. The same methodology included simple regression analyses to first analyze the relationship between each variable and historic activity levels. Then multiple regression models where created using different combinations of the independent variables, including the Great Recession indicator variable.

Of the various multiple regression models analyzed, a number showed some significant correlations. With an adjusted $R^2$ of 0.93, the model selected also resulted in the most statistically significant independent variables and a low standard error for the final equation. The regression model selected utilized the independent variables of employment, households, GRP, and the Great Recession indicator variable. Using the final regression equation, the annual operations at LAL are forecasted to increase to 223,218 by 2038, resulting in an average annual growth rate of 3.1 percent (**Table 4-14**).

### 4.5.6. Selected Forecast of Aircraft Operations

Each of the projections shown in **Table 4-14** were generated using commonly accepted methods. Therefore, selection of a preferred forecast largely depends on the potential of the airport's existing and future users, as well as the associated assumptions on future airport activity. In addition, the selection of a preferred forecast also needs to take into account the airport improvements that have occurred and will continue to occur. Finally, no future projection should be selected if it does not account for past and future changes in the aviation industry.

Between 2000 and 2017, general aviation operations at the nation's towered airports decreased an average of 2.6 percent each year. Activity for Florida's towered airports over the same period only had an average annual decrease of 0.7 percent. <u>Since 2010, the nation's general aviation activity at towered airports has declined 0.3 percent annually while Florida's has increased 1.6 percent. What is important to note is that for the same period, LAL has had an average annual growth of 10.5 percent</u>. This demonstrates that Florida's general aviation industry, LAL's in particular, has been recovering each year since 2011, reversing the national trend. This creates an optimistic outlook when coupled with the population and economic growth expected in Polk County, as demonstrated in the different local socioeconomic factors.

While each of the new projections utilized methods accepted by the FAA and FDOT, most have limited ability to reliably incorporate local conditions and trends. Since it is anticipated that aircraft activity in Florida will continue to exceed the national average, the projection based on utilization of the national fleet, the most conservative forecast, does not reasonably reflect the future potential for LAL. The historic growth, previous master plan, and FASP projections did reflect greater growth rates but are still considered constrained with respect to the airport's recovery over the past six years and its future potential. While the market share approach does capture the more recent growth, it results in the highest projection of activity and does so only using an overall general trend that is not directly tied to the local market drivers.

The regression model methodology was selected as the preferred annual operations forecast since it is based on estimating future aircraft activity using local variables with a demonstrated correlation to historic operations. In addition to the statistical relationships, the regression model projection reflects growth that is aligned with all of the facts supporting the assumption that the airport's varied aircraft activity levels will continue to increase. This is reinforced by all of the information obtained during interviews with a number of the tenants and users of the airport, to include the Aerospace Center of Excellence/Sun 'n Fun, Sheltair, NOAA, Polk State College, private aircraft operators, and aviation businesses. In addition, there is the current construction of aircraft maintenance, repair, and overhaul (MRO) hangars and the Amazon air cargo facility. And finally, the opening of the on-airport U.S. Customs facility in November of 2017 expands the services provided to both existing and future users of the airport.

**Table 4-14 Comparison of Projections for Annual Aircraft Operations**

| | Historic Growth (2005 – 2017) | Previous Master Plan and Florida Aviation System Plan[a] | Utilization of National Fleet | Market Share Analysis | Regression Analysis (recommended) |
|---|---|---|---|---|---|
| **Base** | | | | | |
| 2017 | 116,653 | 116,653 | 116,653 | 116,653 | 116,653 |
| **Forecast** | | | | | |
| 2023 | 125,308 | 128,309 | 122,366 | 148,045 | 151,699 |
| 2028 | 133,009 | 138,908 | 127,339 | 179,647 | 177,925 |
| 2038 | 149,860 | 162,804 | 137,901 | 264,718 | 223,218 |
| **Average Annual Growth Rate (2017 – 2038)** | 1.2% | 1.6% | 0.8% | 4.0% | 3.1% |

[a] Applies previous master plan and FASP growth projection to the 2017 annual operations count.

Source: ESA, 2018

## 4.6. Types of Aircraft Operations

The following sections present different categories or types of activity that will make up the forecasted operations. This includes a break out of the local, itinerant, and instrument operations. Further analyses include determining the operational aircraft fleet mix and estimates of activity peaks. For each section, the total recommended annual operations from **Table 4-14** have been rounded to the nearest hundred.

### 4.6.1. Local versus Itinerant Operations

The FAA categorizes aircraft operations as either local or itinerant. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern or are within sight of the ATCT. Local operations are most often associated with training activity and flight instruction. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft. Itinerant operations are generated by a wide range of recreational, business/corporate, and air charter/taxi flights.

Over the past 20 years, the historic split between operations has averaged 43 percent local and 57 percent itinerant. In 2013 and the years that followed, there was an increase in the percent of local activity. This is primarily the result of Polk State College's use of LAL for flight training, which began in 2013. As the only Florida public college to offer a Bachelor's Degrees in Aerospace, they opened the on-airport flight training facility in 2014. Since 2013, the split of operations has average 46 percent local and 54 percent itinerant.

Based on interviews with the Program Director from Polk State College, as well as the Lakeland Aero Club and other facilities conducting flight training operations, it is expected that the share of local operations will continue to increase over the planning period; however, this shift is estimated to peak at 50/50 split as shown in **Table 4-15**. In addition to the expected increases in flight training, growth in the number of local operations is also supported by the newer turf runway (Runway 08/26) which was activated in November 2016.

Finally, it should be noted that while the share of local operations is expected to increase, the airport is also expected to serve an increasing number of itinerant operations given the overall growth in activity expected during the 20-year planning horizon. Increases in the number of itinerant operations is supported by the surrounding area growth, the increased utilization of business/corporate aviation, and the additional activity from the new MRO and Amazon air cargo facilities.

**Table 4-15 Forecast of Local versus Itinerant Operations**

| | Local Operations | | Itinerant Operations | | Total |
|---|---|---|---|---|---|
| **Base** | | | | | |
| 2017 | 51,307 | 44% | 65,346 | 56% | 116,653 |
| **Forecast** | | | | | |
| 2023 | 71,300 | 47% | 80,400 | 53% | 151,700 |
| 2028 | 85,400 | 48% | 92,500 | 52% | 177,900 |
| 2038 | 111,600 | 50% | 111,600 | 50% | 223,200 |

Source: FAA OPSNET database and ESA analysis, 2018.

### 4.6.2. Instrument Operations

A separate estimate of the instrument operations conducted is important when evaluating future facility requirements. Using FAA OPSNET data, the number of operations at LAL under instrument flight rules (IFR) was reviewed. Over the past 20 years, instrument operations have averaged 12 percent of the overall operations conducted. In 2008, the lowest level of five percent was recorded and likely the result of the significant drop in business/corporate aviation that occurred around that time. However, since the Great Recession, the airport has recorded its highest shares of IFR operations (17 percent) for multiple years, including most recently in 2017.

While the record number of operations conducted under IFR are related to the significant recovery the airport has experienced since 2011, this increasing trend is expected to be the norm in the future. This assumption is based on the expected growth in business/corporate aviation, increasing activity at LAL by fractional, charter, and other aircraft management operators, and the addition of new activity by MRO and dedicated air cargo operators. It is also related to the fact that even the smallest of general aviation aircraft now have fairly sophisticated instrument capability and conduct more IFR operations than they have in the past. Even though additional IFR operations are expected over the course of the planning period, the share has been limited to 20 percent of the total operations. The resulting estimate of future instrument operations are included in **Table 4-19**.

It should be noted that the percent of instrument operations is different from the actual percentage of the year that the airport experiences IFR conditions. Unlike the meteorological conditions documented in Chapter 2, Inventory of Existing Conditions, (instrument meteorological conditions occur approximately 7.0 percent of the time), the count and subsequent estimate of instrument operations include those conducted during actual instrument meteorological conditions as well as the ones simply under an IFR flight plan.

### 4.6.3. Military Aircraft Activity

Military operations are those conducted by aircraft from one of the U.S. military service branches. While there are no military aviation units based at LAL, the airport does accommodate some military aircraft as is documented in the historic FAA OPSNET (**Table 4-13**). As noted previously, since May of 2017 this activity includes the operations conducted by NOAA's current fleet of nine aircraft based at the airport. However, the military counts do not include the operations conducted by Draken International, even though their fleet consists of ex-military tactical aircraft. Aircraft operations generated by Draken International are counted as civil, general aviation operations.

The ability to accurately forecast military operations (even for a military air base) is complicated by a number of facts. This is even more difficult for the activity at a public airport like LAL. As noted previously, military activity can fluctuate annually due to a number of factors and even the NOAA aircraft based at the airport have varied missions and for part of their operation, are dependent on how active the Atlantic hurricane season is each year. While the future level of military activity has been accounted for in the overall airport projection of annual operations, the overall number each year is expected to increase somewhat. This is due to LAL being the home for NOAA's nine aircraft. Even after only a partial year of operations by NOAA, total annual military operations at LAL in 2017 were up 1,000 over the 1,600 average annual count recorded between 2013 and 2016.

### 4.6.4. Operational Fleet Mix

Operational fleet mix is an important factor in determining the needs for airfield improvements. However, even at airports with an ATCT, it is difficult to estimate the type of aircraft conducting operations since this information is not recorded by tower staff. Instead, the current operational fleet mix percentages were based on a combination of the 2017 calendar year operational counts, the FAA's Traffic Flow Management System Counts (TFMSC), FlightAware data, and interviews conducted with the users of the airport.

Information from the user interviews was also utilized with data from the 2018 FAA Aerospace Forecast to predict how the operational fleet mix would change over the next 20 years. In addition, current as well as future operational fleet mix data was obtained from the Aircraft Maintenance, Repair, and Overhaul Hangars and Air Cargo Facility Environmental Assessment (EA). Estimates of the existing and future operational fleet mix are provided in **Table 4-16**.

**Table 4-16 Estimated Operational Fleet Mix**

| | 2017 | 2023 | 2028 | 2038 |
|---|---|---|---|---|
| Single-Engine | 86,323 | 104,700 | 121,000 | 149,500 |
| Multi-Engine (piston & turboprop) | 19,830 | 26,500 | 29,400 | 35,700 |
| Jet | 7,000 | 15,200 | 19,600 | 27,900 |
| Rotorcraft | 3,500 | 5,300 | 7,900 | 10,100 |
| **Total** | **116,653** | **151,700** | **177,900** | **223,200** |

Source: FAA OPSNET, FAA Traffic Flow Management System Counts, FAA 2017 Aerospace Forecast, and ESA analysis, 2018.

As documented in the 2018 Aerospace Forecast, the FAA anticipates growth and increased utilization for every aircraft category with the exception of the single-engine piston and multi-engine piston types. The most significant growth and utilization is expected to occur in the jet and rotorcraft categories. Even though the overall percent of operations is expected to decrease for the single- and multi-engine categories, the total annual operations is still expected to increase given the large number of these aircraft at LAL and the expected increases in flight training at the airport. The significant growth shown for jet aircraft operations takes into consideration the expected level of based jets, as well as expected increases in the activity by corporate/business, air taxi, and fractional aircraft operators. Jet operations are also expected to increase as a result of the future MRO and air cargo facilities.

Overall, the general aviation jet activity will continue to include nearly every type of business jet aircraft flying in the nation. In the light to medium-sized business jets (maximum allowable takeoff weight between 10,000 and 60,000 pounds) this activity includes the Embraer Phenom and Legacy aircraft, Beechcraft Hawker, Bombardier Learjet, Cessna Citation, and Dassault Falcon type jet aircraft. For the larger and heavier business jet fleet over 60,000 pounds, typical examples include the Bombardier Global, larger Dassault Falcon, and Gulfstream series of aircraft. As described below, the future MRO hangars will be sized to primarily accommodate commercial aircraft in the Airbus and Boeing narrow-body fleets, while the air cargo facility is being planned for the operation of Boeing 767 sized aircraft. It is believed the initial activity documented in the recently approved EA for the Aircraft MRO Hangars and Air Cargo Facility could also be exceeded at some point within the 20-year planning period.

## 4.6.5. Critical Design Aircraft

The airport planning criteria and design standards for various airfield elements are based on the critical design aircraft that makes regular use of the airport. Regular use is defined as 500 annual operations, including both itinerant and local operations, but excluding touch and go operations. These aircraft classify airport facilities based on Approach Reference Codes, Departure Reference Codes, Runway Design Codes, and Taxiway Design Groups defined in FAA Advisory Circular (AC) 150/5300-13A, Change 1, Airport Design. These classifications and their associated standards will be addressed in the following chapter of the study.

Due to their size, weight, and performance requirements, jet aircraft are typically the design aircraft for most airfield facilities; however, there are also a number of large multi-engine turboprop aircraft that can also be very demanding and therefore representative of the critical aircraft group. The most recent year (July 2016 to June 2017) of the FAA's TFMSC data, the 2015 FlightAware data (utilized for the MRO and Air Cargo Facility EA), and information from the ATCT at LAL were applied to determine the current, most demanding group of aircraft with similar characteristics. These sources documented a wide range of large jet and turboprop aircraft that utilize LAL on a regular basis. These predominantly include the Airbus A319, Airbus A320, Boeing 727, Boeing 737, Boeing 757, and McDonnell Douglas MD-80 series commercial aircraft. Large military aircraft utilizing LAL on a regular basis included the Lockheed C-130 Hercules, Lockheed WP-3D Orion (NOAA's), and the Boeing P-8 Poseidon (Boeing 737 airframe) aircraft. As documented in the recent FONSI and ROD for the Aircraft MRO Hangars and Air Cargo Facility EA, this grouping of aircraft currently conducts more than 500 annual operations at LAL. With respect to the current critical aircraft, the Boeing 737-700 has been selected to represent the grouping of aircraft with similar characteristics which make regular use of the airport.

For the future critical design aircraft, it is expected that the same grouping of commercial and large military aircraft will continue to use the airport on a regular basis. However, slightly larger aircraft are also expected as described in the approved EA addressing the future MRO hangars and air cargo facilities at LAL. The EA documents that 100 commercial, 96 general aviation, and 5,840 air cargo aircraft operations are anticipated to be generated annually within the short-term planning period of this master plan. According to the approved EA, the new MRO hangars would service a variety of commercial aircraft, including the Airbus A321, Boeing 737, and Boeing 767, while the air cargo facility is being designed to accommodate an operator with Boeing 767 aircraft. The EA also documented that the airport was approached by an air cargo operator that will establish daily air cargo operations at LAL once suitable facilities are available. While it is now known that this operator is Amazon; the EA estimated that there would be 5,840 annual Boeing 767-300 Freighter operations at LAL by 2023. Therefore, this aircraft is considered to be the most critical future design aircraft for the airport in the short-term planning horizon.

## 4.6.6. Peak Activity Estimates

Annual projections provide a good overview of the activity at an airport but may not reflect certain operational characteristics of the facility. In many cases, facility requirements are not driven by annual demand, but rather by the capacity shortfalls and delays experienced during peak times. Therefore, estimates of the peak month, the average day in the peak month, and the peak hour demand for aircraft operations are needed.

Review of the monthly FAA OPSNET data reveals that since 2009, operations have peaked in April for every year except 2012, when Sun 'n Fun was held mostly in March (March 27th to April 1st). The average of these Sun 'n Fun peak months was 14.4 percent of the annual operations. However, for the purposes of this study, the second busiest month each year was considered, since Sun 'n Fun is a unique event and therefore does not reflect how the airfield or its facilities operate on most any other given time of the year.

Therefore, the second busiest month was evaluated, with many occurring in March, prior to Sun 'n Fun, or later in the fall (October and November timeframe). Since 2009, the second busiest month each year averaged 9.5 percent of the overall operations. In 2017, the second busiest month was November and accounted for 9.7 percent of the annual operations that year. To estimate the future peak month activity, the more recent 9.7 percent was applied. For the average day of the peak month operations, the peak month figures for 2017 and each future year were simply divided by 30.

For master plans, the evaluation of peak hour demand is based on the peak hour of the average day of the peak month. As noted in the FAA master planning criteria for design hour demand, this approach provides sufficient facility capacity for most days of the year but recognizes there will be busier days with more congestion and/or delays, and that it is important that facilities are neither under nor overbuilt. The peak hour of the average day was based on the ATCT hourly traffic count report for November 29, 2017, when 102 operations were recorded in the busiest hour. This activity represented 17 percent of the total 611 operations conducted at LAL that day. Therefore, 17 percent was applied to the average day peak month operations to determine the peak hour of the average day operations for the base and future forecast years. With the exception of the peak hour of the average day, the resulting estimates in **Table 4-17** have been rounded to the nearest ten for the forecast years.

**Table 4-17 Forecast of Peak Activity**

| | Total Annual Operations | Peak Month | Average Day Peak Month | Peak Hour of Average Day |
|---|---|---|---|---|
| **Base** | | | | |
| 2017 | 116,653 | 11,358 | 379 | 64 |
| **Forecast** | | | | |
| 2023 | 151,700 | 14,710 | 490 | 83 |
| 2028 | 177,900 | 17,260 | 580 | 98 |
| 2038 | 223,200 | 21,650 | 720 | 123 |

Source: FAA OPSNET database, LAL ATCT Hourly Traffic Count Reports, and ESA analysis, 2018.

## 4.7. FAA Terminal Area Forecast Comparison

If an airport is included in the FAA TAF, any new forecasts need to be reviewed and approved by the agency before they can be applied to further analyses. During this review for general aviation airports, the FAA looks to see if the annual operations or based aircraft forecasts differ from the TAF by more than ten percent in the five year and/or 15 percent in the ten-year planning periods.

In reference to the review, the FAA Airport Planning and Programming division published a guidance paper entitled, Review and Approval of Aviation Forecasts. This guidance states: “If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor’s submitted forecasts, adjustments to the TAF, or both. FAA decision-making includes key environmental issues (e.g. purpose and need, air quality, noise, land use), noise compatibility planning (14 CFR Part 150), approval of development on an airport layout plan, and initial financial decisions including issuance of LOI’s and calculation of BCA’s.”

As shown in **Table 4-18**, the recommended forecasts for based aircraft are slightly higher than the FAA’s review criteria for consistency with the TAF. The base year level of aircraft recorded for calendar year 2017 were already 5.6 percent greater than the fiscal year 2017 count used in the TAF. If this difference is taken into consideration (adjustment shown in **Table 4-18**), then both the five and ten year recommended based aircraft forecast of this master plan are within the FAA’s review criteria for consistency with the TAF.

**Table 4-18** also shows that the recommended forecasts for annual operations are much higher than the FAA’s review criteria for consistency with the TAF. Similar to the based aircraft, part of this has to do with the fact that annual operations recorded for calendar year 2017 were already 5.0 percent greater than the fiscal year 2017 count used in the TAF. If this difference is taken into consideration (adjustment shown in **Table 4-18**), then both the five and ten year recommended annual operations forecast are closer to the FAA’s review criteria for consistency with the TAF. However, there is still a significant difference, which has to do with the fact that the 2017 TAF only projects an average annual growth of 0.1 percent for aircraft operations at LAL over the next 20 years. This is considered unrealistic, not only because of the double-digit growth that has been recorded every year since 2011, but also due to the projections of the various economic indicators and the activity by the different airport tenants and users documented in this chapter and specifically addressed in Section 3.5.6.

As a point of reference, the 10-year level of operations projected in the TAF by 2028 has been exceeded a number of times at the airport, as documented in the historic OPSNET data. It should also be noted that the 2018 year to date figures (through July) in OPSNET are already 10,522 operations, or 15.5 percent, over the same period in 2017, further highlighting the continued growth in activity at LAL.

**Table 4-18 Comparison of Forecasts to 2017 FAA TAF**

| | Recommended Forecasts | 2017 FAA TAF[a] | Difference | Adjusted TAF for CY[b] | Adjusted Difference |
|---|---|---|---|---|---|
| **Based Aircraft** | | | | | |
| Base Year (2017) | 247 | 234 | 5.6% | 247 | 0.0% |
| 5 Year (2023) | 281 | 249 | 13.0% | 263 | 7.1% |
| 10 Year (2028) | 314 | 259 | 21.2% | 273 | 14.8% |
| **Annual Aircraft Operations** | | | | | |
| Base Year (2017) | 116,653 | 111,116 | 5.0% | 116,653 | 0.0% |
| 5 Year (2023) | 151,700 | 111,773 | 35.7% | 117,343 | 29.3% |
| 10 Year (2028) | 177,900 | 112,168 | 58.6% | 117,757 | 51.1% |

[a] Issued January 2018 with data based on FAA fiscal year which ends September 30th.

[b] TAF based aircraft data for fiscal year FY2017 is 5.6 percent less than actual calendar year CY2017 data used for forecasting. Similarly, the annual operations data for fiscal year FY2017 is 5.0 percent less than actual calendar year CY2017 data.

Source: 2017 FAA TAF and ESA Analysis, 2018.

## 4.8. Aviation Activity Forecast Summary

**Table 4-19** presents an overview of the recommended forecasts. The data and methods used to forecast aviation demand for the airport are consistent with those used by the FAA, FDOT, and other airports around the nation. These forecasts are considered to reasonably reflect the activity anticipated at LAL through 2038 given the information available during this study.

**Table 4-19 Summary of Aviation Activity Forecasts**

| | 2017 | 2023 | 2028 | 2038 |
|---|---|---|---|---|
| **Based Aircraft (Table 3-12)** | | | | |
| Single-Engine | 162 | 179 | 193 | 223 |
| Multi-Engine (piston & turboprop) | 34 | 39 | 44 | 62 |
| Jet | 42 | 51 | 60 | 82 |
| Rotorcraft | 9 | 12 | 17 | 23 |
| **Total** | **247** | **281** | **314** | **390** |
| | | | | |
| **Operations (Table 3-15)** | | | | |
| Local | 51,307 | 71,300 | 85,400 | 111,600 |
| Itinerant | 65,346 | 80,400 | 92,500 | 111,600 |
| **Total** | **116,653** | **151,700** | **177,900** | **223,200** |
| | | | | |
| Instrument | 19,277 | 27,300 | 33,800 | 44,600 |
| | | | | |
| **Operational Fleet Mix (Table 3-16)** | | | | |
| Single-Engine | 86,323 | 104,700 | 121,000 | 149,500 |
| Multi-Engine (piston & turboprop) | 19,830 | 26,500 | 29,400 | 35,700 |
| Jet | 7,000 | 15,200 | 19,600 | 27,900 |
| Rotorcraft | 3,500 | 5,300 | 7,900 | 10,100 |
| | | | | |
| **Peak Operations (Table 3-17)** | | | | |
| Peak Month | 11,358 | 14,710 | 17,260 | 21,650 |
| Average Day of Peak Month | 379 | 490 | 580 | 720 |
| Peak Hour of Average Day | 64 | 83 | 98 | 123 |

Source: FAA's National Based Aircraft Inventory Program, FAA OPSNET database, and ESA analyses, 2018.

# Design Criteria and Facility Requirements

Lakeland Linder International Airport

# 5. Design Criteria and Facility Requirements

## 5.1. Introduction

This chapter presents design criteria that will be used for airport-specific planning and serve as the basis of the demand/capacity and facility requirements analysis for Lakeland Linder International Airport (LAL). All design standards presented in this section have been established by the Federal Aviation Administration (FAA) and industry best practices for developing airport facilities to meet existing and forecast levels of activity.

This chapter compares the projected aviation demand to the existing capacity of the facilities at LAL. This comparison is then used to determine future facility requirements over the 20-year planning period. The facility improvements are directly related to the forecasted aviation activity and will allow LAL and the surrounding community to be adequately prepared to accommodate the potential demand over the 20-year-planning period. This chapter examines how anticipated activity levels translate into LAL's ability to serve forecasted traffic, focusing on the following distinct elements:

- Demand and Capacity Calculations
- Airside Facility Requirements
- Landside Facility Requirements
- Support Facility Requirements

Any shortcomings in the ability to serve the forecasted demand, or meet FAA design standards are identified, and recommendations are made regarding physical improvements that may be needed to mitigate recognized deficiencies.

## 5.2. Design Criteria

Airport design standards, as established by the Federal Aviation Administration (FAA), were employed in this Master Plan for developing airport facilities capable of meeting existing and forecast levels of aviation activity.

### 5.2.1. Critical Aircraft and Design Standards

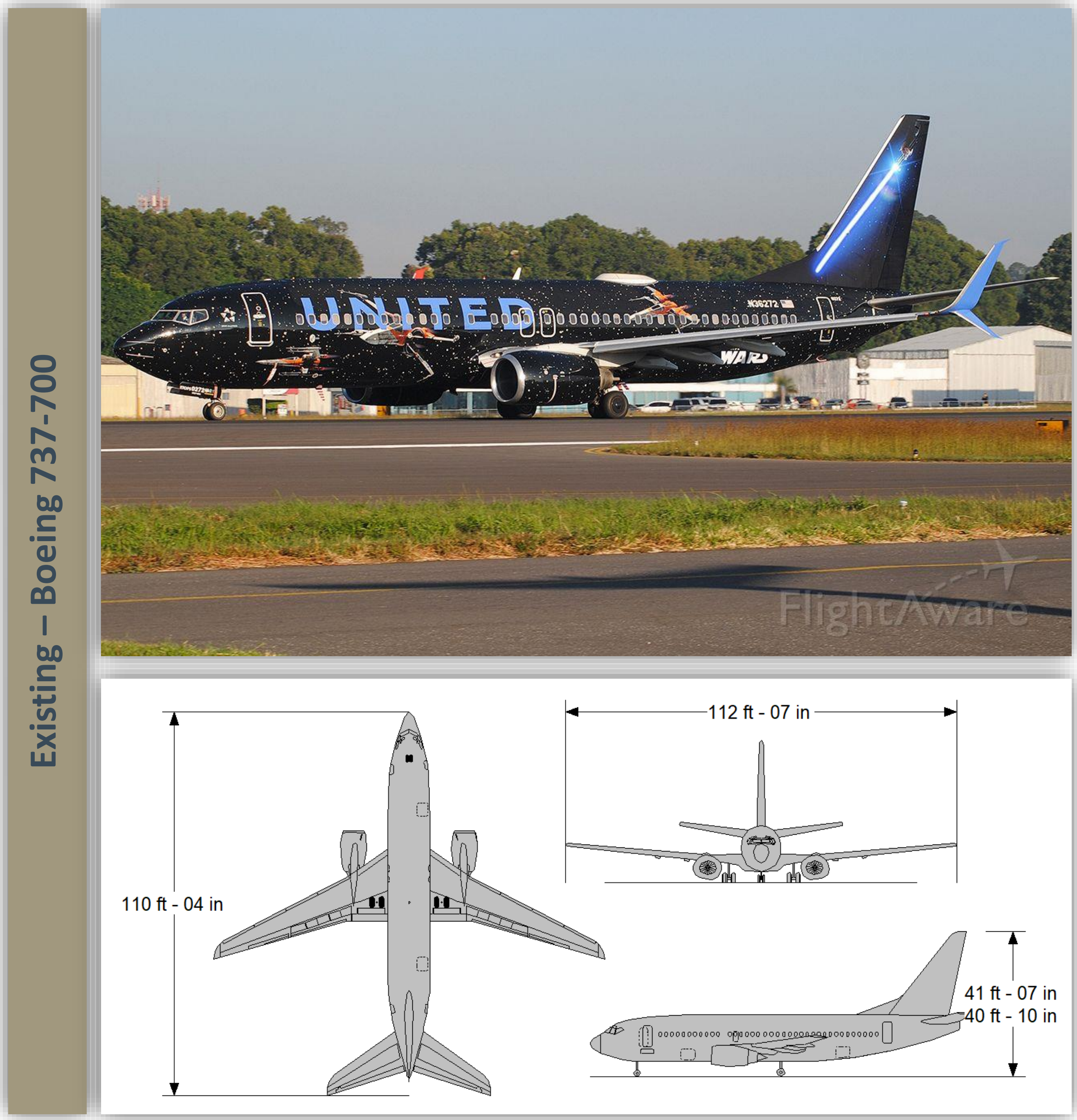
An initial step in identifying an airport's design requirements is the establishment of the Airport's existing and future Critical Aircraft. The critical aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. The FAA Defines Regular use in Advisory Circular (AC) 150/5000-17, Critical Aircraft and Regular Use Determination, as an aircraft type or of grouping with 500 annual operations.  An operation is considered to be a take-off or landing, with touch-and-go operations excluded from regular use calculations. An airports critical aircraft affects key aspects of design, such as the sizing of runways, taxiways/lanes, and the location of aircraft parking areas, hangar facilities, and protected airspace surfaces. Airport improvements are planned and developed per the established design criteria applicable to the critical aircraft.

Referenced in Chapter 3 of this report, the critical design aircraft has been established based on justification of substantial use and future use of LAL. **Table 5-1** depicts the existing and future selected critical aircraft for each runway at the Airport.

**Table 5-1 Critical Aircraft**

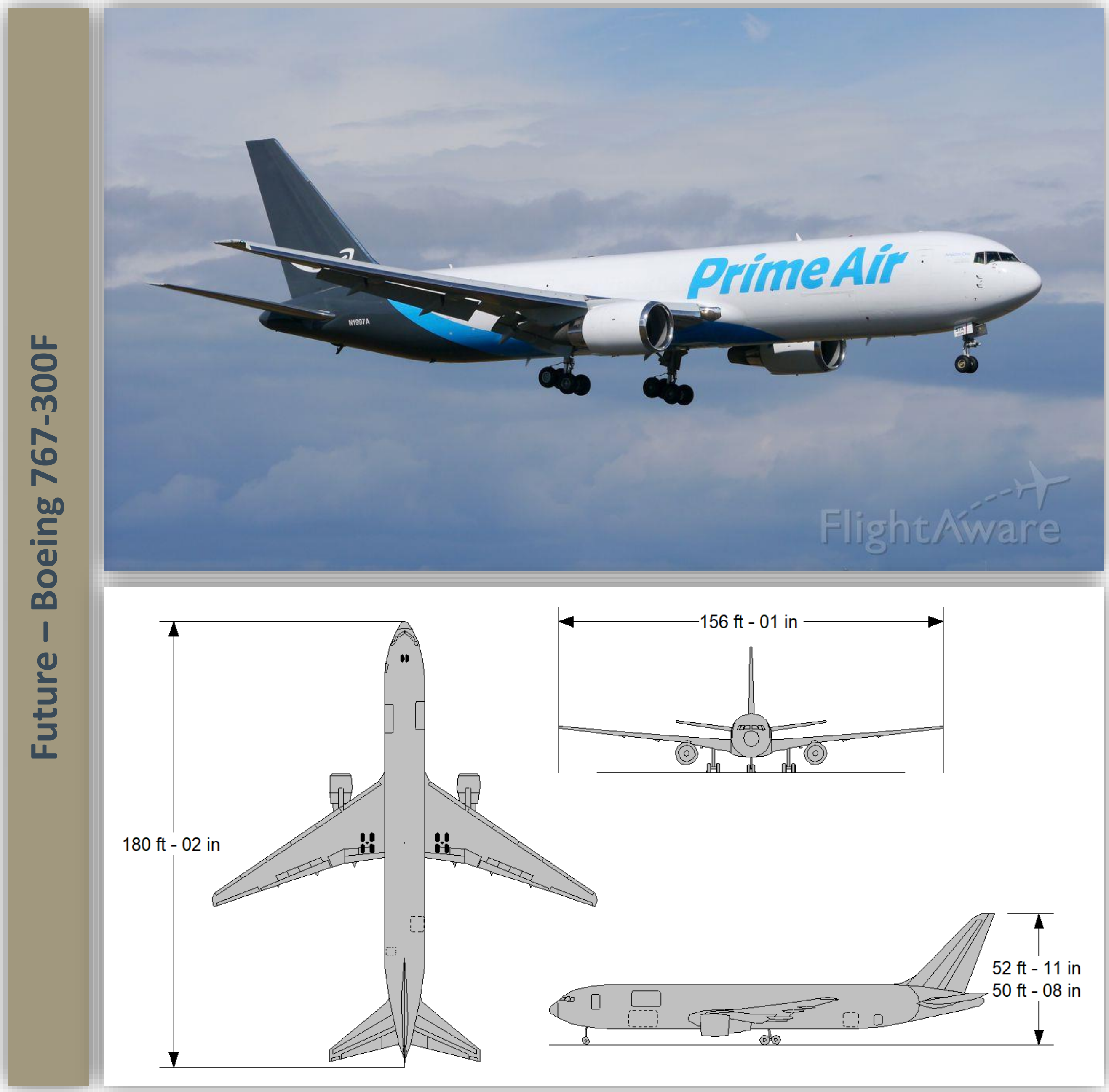
| Runway | Existing Critical Aircraft | Future Critical Aircraft |
|---|---|---|
| 09/27 | Boeing 737-700 | Boeing 767-300F |
| 05/23 | Boeing 737-700 | Boeing 737-700 |
| 08/26 | Cessna 172 | Cessna 172 |

**Figure 5-1 Existing Critical Aircraft – Boeing 737-700**




Source: Flightaware.com, 2020; Transoft Aircraft Data Viewer 3, 2020

Figure 5-2 Future Critical Aircraft – Boeing 767-300F




Source: Flightaware.com, 2020; Transoft Aircraft Data Viewer 3, 2020

### 5.2.2. Runway Design Code (RDC)

The Runway Design Code (RDC) signifies standards to which the 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 is the first portion of the RDC and relates to the aircraft approach speed, as depicted in **Table 5-2**. The ADG is the second component of the RDC and its represented by a Roman numerical as depicted in **Table 5-3**. The ADG relates to the aircraft wingspan or tail height of the critical aircraft. The final component of the RDC relates to the visibility minimums for the instrument approaches into each runway as depicted in **Table 5-4**. The runway design code (RDC) of each runway at LAL and its respective critical aircraft is depicted in **Table 5-5**.

**Table 5-2 Aircraft Approach Category**

| Aircraft Approach Category | 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 5-3 Airplane Design Group**

| Group # | Tail Height (ft [m]) | Wingspan (ft [m]) |
|---|---|---|
| **I** | < 20' (< 6 m) | < 49' (< 15 m) |
| **II** | 20' - < 30' (6 m - < 9 m) | 49' - < 79' (15 m - < 24 m) |
| **III** | 30' - < 45' (9 m - < 13.5 m) | 79' - < 118' (24 m - < 36 m) |
| **IV** | 45' - < 60' (13.5 m - < 18.5 m) | 118' - < 171' (36 m - < 52 m) |
| **V** | 60' - < 66' (18.5 m - < 20 m) | 171' - < 214' (52 m - < 65 m) |
| **VI** | 66' - < 80' (20 m - < 24.5 m) | 214' - < 262' (65 m - < 80 m) |

Source: *FAA AC 150/5300-13A*, Prepared by Atkins 2017

**Table 5-4 Visibility Minimums**

| RVR (ft.) | Flight Visibility Category (statute mile) |
|---|---|
| VIS | Visual Approach |
| 4000 | Lower than 1 mile but not lower than ¾ mile (APV ≥ 3/4 but < 1 mile) |
| 2400 | Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA) |
| 1600 | Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA) |
| 1200 | Lower than 1/4 mile (CAT-III PA) |

Source: *FAA AC 150/5300-13A*, Prepared by Atkins 2017

**Table 5-5 Critical Aircraft and Runway Design Code**

| Runway | Existing Critical Aircraft | Existing RDC | Future Critical Aircraft | Future RDC |
|---|---|---|---|---|
| **09/27** | Boeing 737-700 | C-III | Boeing 767-300F | C-IV |
| **05/23** | Boeing 737-700 | C-III | Boeing 737-700 | C-III |
| **08/26** | Cessna 172 | A-I | Cessna 172 | A-I |

### 5.2.3. Airport Reference Code (ARC)

Per FAA AC 150/5300-13A, the ARC is a system used to relate airport design criteria to the planner or designer and is based on an airport's highest RDC, minus the visibility component. Airport improvements can be planned and developed per the established ARC for an entire airport. The existing ARC for LAL is C-III. The future ARC for LAL is C-IV.

# 5.3. Airside Facility Requirements

FAA standards are utilized in this analysis for developing airport facilities capable of meeting both existing and forecasted levels of aviation activity. FAA AC 150/5300-13A, *Airport Design*, uses coding systems to relate airport design criteria to the established critical aircraft at the airport. These criteria will further dictate the future need for expanded airfield infrastructure and operational parameters to best plan and meet the forecasted future operations.

## 5.3.1. Runway Requirements

The following sections examine the runways' general characteristics with respect to conformance to FAA design and safety requirements.

### 5.3.1.1. Runway Width

Runway width standards are established in FAA AC 150/5300-13A and are based on RDC criteria. **Table 5-6** outlines the FAA runway width standards, and the existing runway facilities at LAL. Currently, Runways 09/27, 05/23, and 08/26 meet their existing respective FAA requirements.

**Table 5-6 Runway Width**

| Runway | ARC (Existing and Future) | FAA Requirement Width (Ft.) (Existing and Future) | Existing Width (Ft.) (Existing and Future) |
|---|---|---|---|
| 09/27 | C-III / C-IV | 150 | 150 |
| 05/23 | C-III | 150 | 150 |
| 08/26 | A-I | 60 | 60 |

Source: *FAA AC 150/5300-13A*, Prepared by Atkins 2018

### 5.3.1.2. Runway Length Analysis

In accordance with FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, an analysis was conducted to determine the runway length requirements for the existing and future critical aircraft operating at LAL. FAA AC 150/5325-4B uses a five-step procedure to determine recommended runway lengths for a selected list of critical design aircraft. The five steps are summarized below.

1. Identify the list of critical design airplanes that will make regular use of the proposed runway for an established planning period of at least five years. For federally funded projects, the definition of the term "*substantial use*" quantifies the term "*regular use*".
2. Identify the airplanes that will require the longest runway lengths at MTOW. This will be used to determine the method for establishing the recommended runway length. When the MTOW of the listed airplane is over 60,000 lbs., the recommended runway length is determined per individual airplane and their respective airplane planning manuals.
3. Use Table 1-1 in AC 150/5325-4B (**Table 5-7** in this document) and the airplanes identified in step #2 to determine the method that will be used for establishing the recommended runway length. MTOW is used because of the significant role played by airplane operating weights in determining runway lengths.
4. Select the recommended runway length from among the various runway lengths generated by step #3 per the process identified in chapters 2, 3, or 4 of the AC, as applicable.
5. Apply any necessary adjustment to the obtained runway length, when instructed by the applicable chapter of the AC, to the runway length generated by step #4 to obtain a final recommended runway length. Adjustments to the length may be necessary for runways with non-zero effective gradients, excessive temperatures, wind conditions, airport elevation, etc.

**Table 5-7 Airplane Weight Categorization for Runway Length Requirements**

<table>
<tr><th colspan="3">Airplane Weight Category<br>Maximum Certificated Takeoff Weight (MTOW)</th><th>Design Approach</th><th>Location of Design Guidelines</th></tr>
<tr><td rowspan="4">12,500 pounds (5,670 kg) or less</td><td colspan="2">Approach Speeds less than 30 knots</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 203</td></tr>
<tr><td colspan="2">Approach Speeds of at least 30 knots but less than 50 knots</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 204</td></tr>
<tr><td rowspan="2">Approach Speeds of 50 knots or more</td><td>With Less than 10 Passengers</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 205 Figure 2-1</td></tr>
<tr><td>With 10 or more passengers</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 205 Figure 2-2</td></tr>
<tr><td colspan="3">Over 12,500 pounds (5, 670 kg) but less than 60,000 pounds (27,200 kg)</td><td>Family grouping of large airplanes</td><td>Chapter 3; Figures 3-1 or 3-2 1 and Tables 3-1 or 3-2</td></tr>
<tr><td colspan="3">60,000 pounds (27,200 kg) or more or Regional Jets 2</td><td>Individual large airplane</td><td>Chapter 4; Airplane Manufacturer Websites (Appendix 1)</td></tr>
<tr><td colspan="5">Note 1: When the design airplane's APM show a longer runway length than what is shown in Figure 3-2, use the airplane manufacturer's APM. However, users of an APM are to adhere to the design guidelines found in Chapter 4.</td></tr>
<tr><td colspan="5">Note 2: All regional jets regardless of their MTOW are assigned to the 60,000 pounds (27,200 kg) or more weight category.</td></tr>
</table>

Source: FAA AC 150/5325-4B Runway Length Requirements for Airport Design

### 5.3.1.2.1. Runway Length: Takeoff Distance

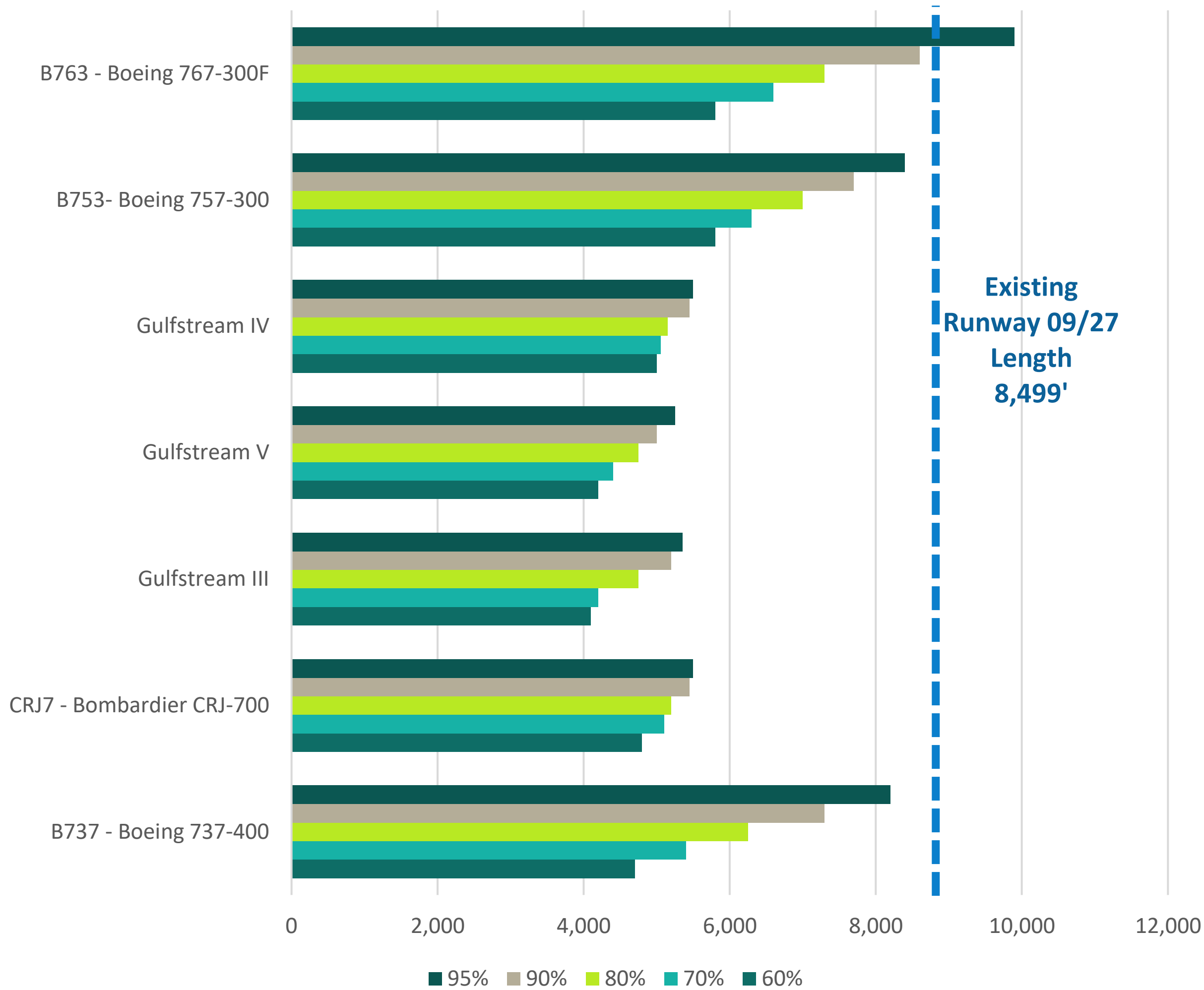
Runway length requirements are based on a variety of factors, the most notable of which is the takeoff distance of the critical aircraft operating on the runway. The departure requirements are often the most critical for measuring runway length required since departing aircraft have a full fuel load thus increasing the amount of runway required. Average high temperatures and the elevation of the runway are other factors that affect runway length requirements. The low elevation of LAL makes the elevation factor less important. Considering LAL's location in Florida, the region can reach higher temperatures during the summer months that will be taken into consideration during this analysis and will play a larger role. FAA AC 150/5325-4B, *Runway Length Requirements of Airport Design*, provides guidance that suggests recommending runway lengths based on a family grouping of aircraft. Due to the critical aircraft having a maximum takeoff weight (MTOW) of over 60,000 pounds, it is advised that the aircraft's airport planning manual (APM) is analyzed to determine the takeoff length needed, then resulting in the recommended runway length.

### 5.3.1.2.2. Takeoff Distance Requirements

In accordance with AC 150/5325-4B, the existing fleet mix was analyzed in detail to verify the type of runway length analysis required. Based on the forecast analysis that was completed for LAL, the critical aircraft and other additional aircraft that are to be considered for this analysis fall within the 60,000 pounds or more category for MTOW. Per AC 150/5325-4B, it is recommended that determining the runway length required of aircraft over 60,000 pounds in MTOW is to directly reference the specific manufacturer provided aircraft planning manual. These aircraft planning manuals provide information on a specific aircraft model such as performance, dimensions, weight, design standards, etc.

**Figure 5-3** depicts the results of an analysis of the critical fleet mix at various take-off load factors on a standard day (59°F) at LAL. In standard day temperatures the existing runway length of Runway 09/27 is insufficient to operate the B767-300F at useful load factors higher than 90 percent.

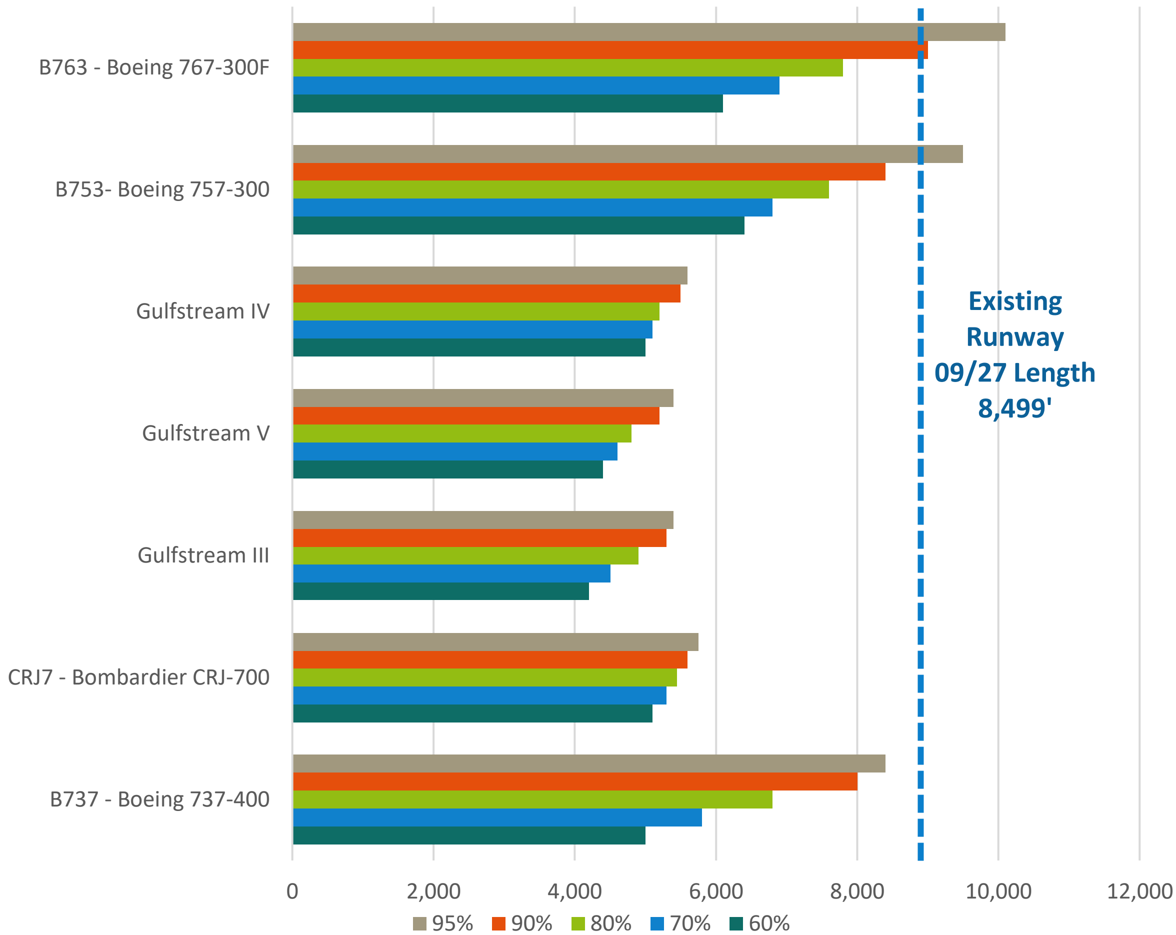
**Figure 5-3 Critical Fleet Mix - Standard Day 59° Take-Off Distances**




Source: TFMSC data January 2017-December 2017, Atkins Analysis 2018

The mean daily maximum temperature of the hottest month at LAL is 94.2°F. Lakeland maintains a warm tropical climate typically 9 months out of the year. These high temperatures reduce aircraft performance, causing an increase in aircraft take-off distance required. The runway length evaluation must also consider the average elevated temperatures present at LAL, with conditions as cool as standard day rarely occurring. **Figure 5-4** depicts the fleet mix performance at various useful loads at a temperature of 85°F. In this scenario the future aircraft, the Boeing 767-300F is unable to operate with 90 percent useful load at Lakeland on the existing runway length of 8,499'. Currently, the future critical aircraft is not expected to operate at 90 percent load factor and will operate at closer to 80 percent load factor. The cargo tenant operating the Boeing 767-300F will not reach a higher load factor due to the max operating volume of the aircraft being reached prior to the 80 percent load factor threshold. However, when the need arises where the future critical aircraft must operate at or above 90 percent load factor, the primary runway should be extended to a length of 10,000 feet to accommodate the operational environment.

**Figure 5-4 Critical Fleet Mix – Standard Day + 25° (85°) Take-Off Distances**




Source: TFMSC data January 2017-December 2017, Atkins Analysis 2018

## 5.3.2. Runway Protective Surfaces

Runway protective surfaces such as the Runway Safety Area, Runway Object Free Area, and Runway Protection Zone aim to protect aircraft, people, and property in the case of an aircraft deviating from its intended course while conducting conventional runway operations. The following sections outline the existing and future criteria for the runway protective surfaces at LAL. A detailed analysis of protective surfaces utilizing updated survey data is planned as part of the upcoming Alternatives Development Chapter.

### 5.3.2.1. Runway Safety Area

A Runway Safety Area (RSA) is a graded surface centered on a runway that is required to be free of all objects except for those that are 'fixed by function' such as runway lights and certain NAVAIDS. The purpose of the RSA is to protect aircraft in the event of an under-shoot, overrun, or aircraft runoff from a runway during landing or take-off operations. The area must be able to support emergency vehicle operations and maintenance vehicles and is required to be graded to slope away from the runway at 1.5 to 5.0 percent. The width and length of an RSA depend upon a runway's RDC and approach visibility minimums. Meeting RSA requirements is one of the FAA's highest priorities in maintaining safety at the nation's airports. **Table 5-8** lists the Airport's existing and future RSA requirements.

**Table 5-8 Runway Safety Area Dimensions**

| Runway | RDC (Existing / Future) | RSA Width (Ft.) (Existing / Future) | Length Beyond Runway End (Ft.) (Existing / Future) |
|---|---|---|---|
| 09/27 | C-III / C-IV | 500 | 1,000 |
| 05/23 | C-III | 500 | 1,000 |
| 08/26 | A-I | 120 | 240 |

Source: FAA 150/5300-13A, *Airport Design*, Atkins Analysis 2018

There are currently no impacts to the RSAs at the Airport. Future development at the Airport should ensure to not impact the RSAs to maintain the safe environment for operators.

#### 5.3.2.2. Runway Object Free Area

Like the RSA, the Runway Object Free Area (ROFA) must be free of objects except those required to support air navigation and ground maneuvering operations. The function of the ROFA, also centered on the runway, is to enhance the safety of aircraft operating on the runway. It is not permissible to park an airplane within the ROFA. The width and length of the ROFA depend upon an airport's specific RDC and approach visibility minima. The ROFA does not have specific slope requirements, but the terrain within the ROFA must be relatively smooth and graded to be at or below the edge of the RSA. The compliance of the ROFA with all relevant FAA standards is discussed in the Inventory chapter of this report. **Table 5-9** notes the ROFA dimensions for each runway at LAL.

**Table 5-9 Runway Object Free Area Dimensions**

| Runway | RDC (Existing / Future) | ROFA Width (Ft.) (Existing / Future) | Length Beyond Runway End (Ft.) (Existing / Future) |
|---|---|---|---|
| 09/27 | C-III / C-IV | 800 | 1,000 |
| 05/23 | C-III | 800 | 1,000 |
| 08/26 | A-I | 400 | 240 |

Source: FAA 150/5300-13A, *Airport Design*, Atkins Analysis 2018

Portions of the Runway 09/27 and Runway 05/23 ROFA are currently impacted. The ROFA on both ends of Runway 05/23 is currently impacted by airport-controlled perimeter roads which go through the protective surface. The ROFA on the Runway 27 end has vegetation, and an airport-controlled perimeter road. These impacts are inadvisable due to safety parameters of this area. It is recommended that these identified areas are mitigated to ensure the safety of operating aircraft.

#### 5.3.2.3. Runway Protection Zones

A Runway Protection Zone (RPZ) is an area centered symmetrically on an extended runway centerline. The RPZ has a trapezoidal shape and extends prior to each runway end. The RPZ is aimed at enhancing the safety of people and property on the ground by limiting and/or restricting the construction of certain structures within its bounds. This area should be free of land uses that create glare, smoke, or other hazards to air navigation. Additionally, the FAA requires that no vertical structures are constructed within the extents of the RPZ.

The dimensions of an RPZ depend on each runway's RDC. With no proposed reductions in instrument approach visibility minimums, the size and dimensions of the existing RPZs at LAL are not anticipated to change throughout the planning period. **Table 5-10** provides the RPZ dimensions for each runway at LAL.

**Table 5-10 Runway Protection Zone Dimensions**

| Approach RPZ | RDC (Existing / Future) | Length (Ft.) (Existing / Future) | Inner Width (Ft.) (Existing / Future) | Outer Width (Ft.) (Existing / Future) |
|---|---|---|---|---|
| 09 | C-III / C-IV | 2,500 | 1,000 | 1,750 |
| 27 | C-III / C-IV | 1,700 | 1,000 | 1,510 |
| 05/23 | C-III | 1,700 | 1,000 / 500 | 1,510 / 1,010 |
| 08/26 | A-I | 1,000 | 500 | 700 |
| **Departure RPZ** | | | | |
| 09/27 | C-III / C-IV | 1,700 | 500 | 1,010 |
| 05/23 | C-III | 1,700 | 500 | 1,010 |
| 08/26 | A-I | 1,000 | 500 | 700 |

Source: FAA 150/5300-13A, *Airport Design*, Atkins Analysis 2018

Portions of the Runway 23 RPZ are impacted by varying objects and features. Such impacts include Drane Field Road, and multiple buildings along Airport Perimeter Road E and Drane Field Road. The approach RPZ on Runway 5 is currently impacted by a facility constructed in 2016, located south of Doolittle Road and Doolittle Road itself. The Runway 9 RPZ is impacted by Kelvin Howard Road. These are examples of non-compliant conditions within the RPZ surface, as it is recommended that activities within the protective surface must be directly controlled by the airport. While these areas are inadvisable in nature, they are an existing condition per FAA interim guidance. It is recommended that these identified areas are mitigated to ensure the safety of operating aircraft.

## 5.3.3. Runway Designations

A runway designation is identified by the whole number nearest to the magnetic azimuth of the runway when oriented along the runway centerline as if on approach to that runway end. This number is then rounded off to the nearest unit of ten. Magnetic azimuth is determined by adjusting the geodetic azimuth associated with a runway to compensate for magnetic declination. Magnetic declination is defined as the difference between true north and magnetic north. The value of magnetic declination varies over time and global location. Magnetic declination is a natural process and periodically requires the re-designation of runways. **Table 5-11** shows the runway's true and magnetic bearing, along with the current magnetic declination.

**Table 5-11 Runway Magnetic Bearing**

| Runway | True Bearing | Magnetic Declination | Magnetic Bearing | Future Runway Designations |
|---|---|---|---|---|
| **9** | 89° 52' 19'' | 5° 58' W | 95° 50' 19'' | 10 |
| **27** | 269° 52' 19'' | 5° 58' W | 275° 50' 19'' | 28 |
| **5** | 44° 51' 41'' | 5° 58' W | 50° 49' 41'' | 5 |
| **23** | 224° 51' 41'' | 5° 58' W | 230° 49' 41'' | 23 |

Source: NOAA National Center for Environmental Information, Atkins Analysis 2018

The current rate of change is 0° 6' West per year according to the National Oceanic and Atmospheric Administration (NOAA) National Center for Environmental Information. However, the timing of the runway re-designations are standardized by the FAA to ensure a comprehensive and logical procedure for adjusting not only the runway designation but the approach procedures to the specific runways.

## 5.3.4. Runway Strength

The gross weight bearing capacity for Runway 09/27 is published in the FAA Airport 5010 as Single Wheel (S) 50,000 pounds. Dual Wheel (D) 250,000 pounds, Dual Tandem (DT) 550,000 pounds, and Two Dual Wheels in Double Tandem (2D/2D2) 1,120,000. Runway 05/23 is published as Single Wheel (S) 94,000 pounds and Dual Wheel (D) 150,000 pounds. Runway 08/26 is not posted due to the turf surface composition of the runway. Runway 09/27 pavement has been strengthened to accommodate the Boeing 767-300F's maximum takeoff weight (MTOW) of DT 370,800 pounds.

### 5.3.5. Taxiway Requirements

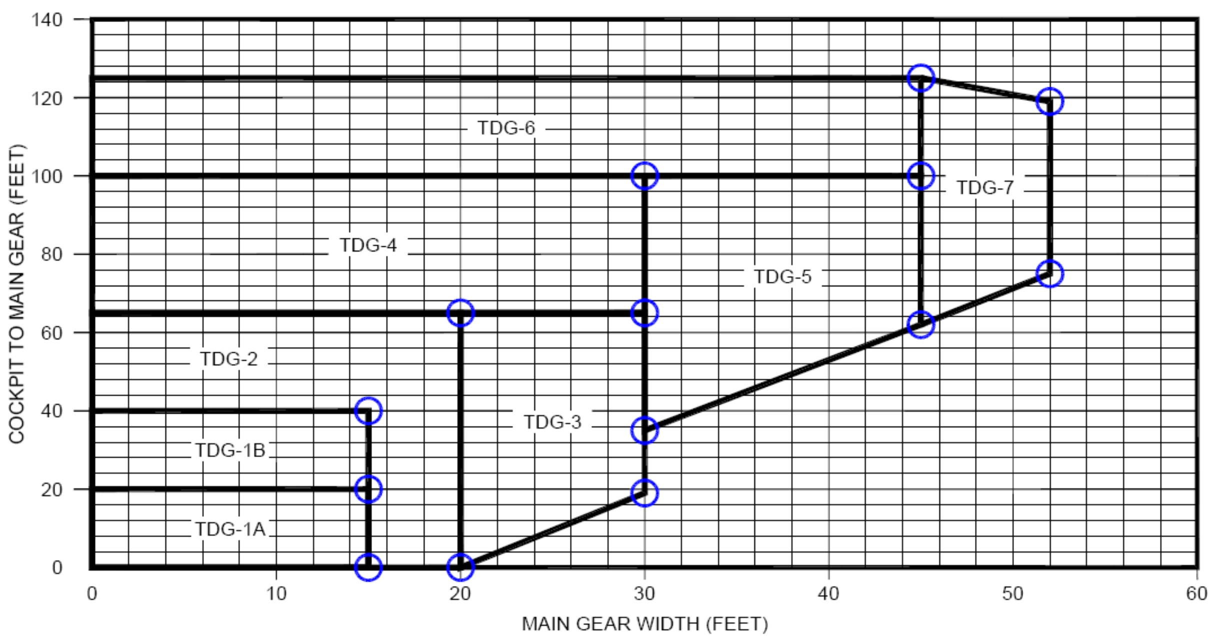
Taxiway Design Group (TDG) was introduced by the FAA with their release of AC 150/5300-13A in 2014. As depicted in **Figure 5-5**, there are eight TDGs which are determined by aircraft undercarriage (gear) dimensions such as main gear width and the distance between the cockpit and main gear. **Table 5-12** presents the Airport's anticipated critical aircraft during the planning period, along with the associated TDG dimensions.

**Table 5-12 Critical Aircraft & Respective TDG**

| Airplane Design Group | | | |
|---|---|---|---|
| **Aircraft Manufacture/Model** | **Main Gear Width (ft.)** | **Cockpit to Main Gear (ft.)** | **TDG** |
| Boeing 737-700 (Existing) | 22' 10'' | 46' 6'' | 3 |
| Boeing 767-300F (Future) | 35' 9'' | 74' 8'' | 5 |
| Cessna 172 | 7' 8'' | 4' 8'' | 1A |

Source: Atkins Analysis, 2018

**Figure 5-5 FAA AC 150/5300-13A – Taxiway Design Groups (TDGs)**




Source: FAA AC 150/5300-13A Change 1, Airport Design

Taxiway systems should provide safe and efficient routes for aircraft ground movement to and from an airports runways and apron areas. The type and location of taxiways in relation to a runway system have a significant impact on airfield capacity. As traffic increases, the taxiway system can limit an airport's overall capacity, especially if the configuration results in frequent runway crossings by taxiing aircraft or does not provide sufficient access to airport facilities.

FAA guidance found in FAA AC 150/5300-13A, recommends that a taxiway system should:

- Provide each runway with a full-length parallel taxiway
- Have as many bypasses, multiple accesses, or connector taxiways as possible to each runway end

- Provide taxiway run-up / holding bay areas for each runway end
- Have the most direct routes possible
- Have adequate curve and fillet radii
- Avoid areas where ground congestion may occur

Taxiway systems which are designed for TDG 3 aircraft have a required pavement width of 50', where TDG 5 has a required pavement width of 75'. The existing taxiway system at LAL can accommodate the larger taxiway design group category on specific taxiways. These taxiways include Taxiway A, B (north of runway 09/27 only), C, J, and K. It is recommended that major taxiway routes should be enhanced to accommodate the critical aircraft's taxiway design group when taxiway rehabilitation occurs. TDG 5 design standards are currently justified for all Taxiways north of Runway 09/27 with the 767-300F as the taxiway critical aircraft for these areas. TDG 5 design standards are currently justified for all taxiways south of Runway 09/27 with the P3-Orion as the taxiway critical aircraft for these areas. The existing and future taxiway safety surfaces are described in the following sections. Some taxiway fillets at taxiway/runway and taxiway/taxiway intersections do not meet the FAA design standards. Historically, the FAA permitted a few methodologies for designing and constructing taxiway fillets. However, with the most recent release of FAA 150/5300-13A Change 1, the options have been reduced to a single standard that ensures all wheels of an aircraft tracking on the taxiway centerline will maintain sufficient clearance from the taxiway edge.

#### 5.3.5.1. Taxiway Safety Area

Like the RSA for the runway pavement, the Taxiway Safety Area (TSA) is centered on the taxiway centerline and provides a protective area around the taxiway pavement. This is to primarily provide ample room for emergency vehicle accessibility, and to minimize the severity of an aircraft run-off. The TSA is cleared and graded, and free of all objects that are not fixed by function. The width of the TSA depends on the critical aircraft's respective ADG. **Table 5-13** depicts the TSA width in respect to the critical aircraft.

**Table 5-13 Taxiway Safety Area Requirements**

| Critical Aircraft (ADG) | TSA Width (ft.) |
|---|---|
| Existing – Boeing 737-700 (III) | 118 |
| Future - Boeing 767-300F (IV) | 171 |

Source: FAA AC 150/5300-13A Change 1, Airport Design. Atkins Analysis 2018

#### 5.3.5.2. Taxiway Object Free Area

Similar to the ROFA for the runway pavement, the Taxiway Object Free Area (TOFA) is centered on the taxiway centerline and provides an additional protected area beyond the TSA. The TOFA prohibits service vehicle roads, parked aircraft, and other objects that are not necessary for aircraft ground navigation. Vehicles can only operate in the TOFA if the vehicle operator gives the right of way to the oncoming aircraft. **Table 5-14** depicts the TOFA width in respect to the critical aircraft.

**Table 5-14 Taxiway Object Free Area Requirements**

| Critical Aircraft (ADG) | TOFA Width (ft.) |
|---|---|
| Existing – Boeing 737-700 (III) | 186 |
| Future - Boeing 767-300F (IV) | 259 |

Source: FAA AC 150/5300-13A Change 1, Airport Design. Atkins Analysis 2018

### 5.3.6. Inadvisable Airfield Geometry

Inadvisable airfield geometry includes but is not limited to pavement which is non-compliant with updated airfield standards, and pavement geometry prone to high-activity with multiple intersecting centerlines. Hotspots are identified when there is an increased risk of airfield incursions or there has historically been many incursions in a specific area.

Runway 27 end taxiway connector, Taxiway C, is considered as a bypass taxiway entering the runway. Bypass taxiways are crucial at busy airports as it provides ATC the flexibility to maneuver aircraft around other aircraft that are not yet ready for departure, ensuring a steady stream of departing aircraft. Bottlenecks result when a preceding aircraft is not ready for takeoff and blocks the access taxiway to the runway. Currently, the Taxiway C bypass is non-compliant, as the area between the bypass taxiways is currently paved. FAA AC 150/5300-13A requires that the area between the bypass taxiways contain either a painted island with appropriate marking or is not paved. It is recommended that the bypass taxiway deficiency is mitigated to ensure compliance with FAA airfield standards and improve situational awareness for pilots operating at the airport.

### 5.3.7. Aircraft Run Up Areas

Aircraft run up areas are crucial for efficient flow on airfields. These are used by pilots to preform pre-takeoff procedures including instrument and engine performance checks as well as to hold while waiting for clearance from ATC. They should be designed to provide a clearly marked area for pilots to park that will keep their aircraft clear of the active taxiway.

Run up areas are typically located at the runway ends directly off the taxiway and clear of any protected runway or taxiway surfaces. General design of holding bays include assured wingtip clearance of established critical aircraft and proper markings to guide pilots safely. Markings should be labeled to have a specified area where aircraft can turn within the holding bays to allow for free movement in and out of the run-up area without having to wait for preceding aircraft to move. This will allow for aircraft to easily enter and exit the run-up area without interfering with other aircraft in the same run up area. Currently, there are no designated aircraft run up areas at LAL. It is recommended that future aircraft run up areas are planned to ensure the efficient aircraft flow on the Airfield.

Run-up areas proposed in Chapter 5, *Alternatives*, will aim to meet the following criteria:

- Markings should be placed to direct aircraft to turn perpendicular or angled to the taxiway, which will create independent standing areas, so aircraft can enter and exit at ease and avoid prop wash during run up and ensure proper wingtip clearance.
- Pavement area should be increased to address capacity issues and ensure proper hold bay depth for the established critical aircraft.
- Identify additional locations to maximize run up area availability for each runway end.
- Ensure value engineering measures are put in place to reduce amount of pavement necessary.

### 5.3.8. Airfield Lighting

Chapter 2- *Inventory* describes the existing condition of airfield lighting equipment at LAL. Currently, each paved runway has lighting such as Runway Edge Lighting and Runway Threshold Lighting. Each runway at the Airport lacks Runway End Identification Lighting (REIL), which is required for precision approach runways. Due to this, it is recommended the runways are enhanced with this lighting system in the future. However, lighting will be analyzed in the upcoming alternatives analysis when making any proposed improvements to instrument approach minima. Finally, future improvements to or implementation of lighting equipment should feature light-emitting diode (LED) technologies where able and when practical.

### 5.3.9. Signage

Chapter 2- *Inventory*, describes existing conditions of airfield signage at LAL. While no specific recommendations for signage improvement are identified, airfield signage should be expanded and updated as necessary in conjunction with any airfield improvement projects.

### 5.3.10. Airfield Marking

Chapter 2- *Inventory,* describes the existing conditions of airfield markings at LAL. While no specific recommendations for marking improvements are identified, airfield markings should be expanded and updated as necessary in conjunction with any airfield improvement projects.

## 5.4. Demand and Capacity

### 5.4.1. Airspace Capacity

Airspace is defined as the navigable space that is used by pilots to navigate from one airport to another. Airspace capacity can become constrained when flight paths of air traffic at nearby airports, or local navigational aids (NAVAIDs), interact to add operations to the airspace that surrounds an individual airport. This creates the possibility of congestion within LAL's airspace. The need to alter flight paths of arriving and departing aircraft to avoid obstructions is also a concern.

The LAL airfield is enclosed in the Mode-C veil of Tampa International. This requires operators to have a Mode-C identifier onboard the aircraft for Class B procedures. The Class B airspace directly to the west of LAL can cause possible air navigation delays during high traffic volume at TPA. This, coupled with the several airports surrounding LAL, can cause delay in air navigation. In addition, the alert areas to the southwest of LAL can cause further delay with operators staying outside of the alert area boundaries.

### 5.4.2. Airside Capacity

Airside Capacity calculations represent the capacity of the airside infrastructure such as runways, taxiways, and Instrument Approach Procedures (IAPs). These values are compared to existing and future demand to determine the need for future capacity enhancing infrastructure such as additional runways or taxiway exits.

Airside capacity is a measure of the number of aircraft that can operate at an airport in a given timeframe. Capacity is most often expressed in hourly or annual measures. Hourly capacities are calculated for visual flight rules (VFR) and instrument flight rules (IFR) to identify any peak-period issues. Hourly airport capacity calculations included in the following sections do not include variables attributed to air traffic control (ATC) procedures such as procedural spacing. The differentiation between VFR and IFR hourly capacities derived from the heightened minimums required for IFR operations. While under IFR conditions, some aircraft are limited in their ability to handle said conditions and will ultimately reduce the hourly capacity. Annual Service Volume (ASV) is calculated to measure an airport's ability to meet existing and future demand levels.

The major components to be considered when determining an airport's capacity include runway orientation and configuration, runway length, and runway exit locations. Additionally, the capacity of any given airfield system is affected by operational characteristics such as fleet mix, climatology, and IAP's. Each of these components has been examined as part of the airside capacity analysis.

The FAA defines total airport capacity as a reasonable estimate of an airport's annual capacity, which accounts for the differences in runway use, aircraft mix, weather conditions, etc., which would be encountered over a year's time. The parameters, assumptions, and calculations required for this analysis are included in the following sections.

#### 5.4.2.1. Airfield Capacity Parameters and Assumptions

The generally accepted methodology for calculating airfield capacity is found in FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*. The calculations are based on the runway utilizations that produce the highest sustainable capacity consistent with existing air traffic rules, practices, and guidelines. The criteria and values used in the AC are typical of U.S. airports with similar runway configurations and are designed to enable calculation of airport capacity as accurately as possible. The parameters and assumptions identified in this section were used to calculate the Airport's airfield capacity.

#### 5.4.2.2. Runway Orientation, Utilization, and Wind Coverage

The Airport has three bi-directional runways, Runway 09/27 and Runway 08/26 with an east-west alignment, and Runway 05/23 with a northeast-southwest alignment. The utilization rates and orientation of these runways were evaluated to determine the Airport's annual capacity, which is the sum of capacities determined for each runway. It is important to note that an operation is defined as either a takeoff or landing. The direction of each operation is highly influenced by wind, available instrument approaches, noise abatement procedures, airspace restrictions, and/or other operating parameters. The runway use configuration for the Airport's capacity calculations considered runway orientations for Runway 09/27, 05/23, and 08/26 in various combinations.

Providing adequate wind coverage is an important factor in enhancing an airports capacity. Runways should be constructed to maximize the opportunity for aircraft to take-off and land heading into the wind. The FAA recommends that each airport's primary runway have 95 percent or greater wind coverage in all-weather conditions. According to FAA AC-150/5300-13A, *Airport Design*, the 95 percent wind coverage is met for a B-II runway when the crosswind component does not exceed 13 knots. Furthermore, the wind analysis revealed that each of the three bi-directional runways exceed the 95 percent wind coverage independently for the classes of aircraft most regularly accommodated.

### 5.4.2.3. Aircraft Mix Index

The FAA has developed a classification system for grouping aircraft based on size, weight, and performance. **Table 5-15** describes the classification categories as they are presented in FAA AC 150/5060-5, *Airport Capacity and Delay*.

**Table 5-15 FAA Aircraft Certifications**

| Aircraft Class | Max. Cert. Takeoff Weight (lb) | Number of Engines | Wake Turbulence Classification |
|---|---|---|---|
| A | 12,500 or less | Single | Small (S) |
| B | | Multi | Small (S) |
| C | 12,500 – 300,000 | Multi | Large (L) |
| D | Over 300,000 | Multi | Heavy (H) |

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

This classification system is used to develop an aircraft mix which is the relative percentage of operations conducted by each of the four classes of aircraft (A, B, C, and D). The aircraft mix is used to calculate a mix index which is then used for airfield capacity studies. The FAA defines the mix index as a mathematical expression, representing the percent of Class C aircraft, plus three times the percent of Class D aircraft (C+3D). The FAA has established mix index ranges for use in capacity calculations as listed below:

- 0 to 20
- 21 to 50
- 51 to 80
- 51 to 120
- 121 to 180

A review of the calendar year 2017 Traffic Flow Management System Counts (TFMSC), compiled by the FAA, indicates the airport experiences most of its traffic from aircraft falling into either A or B weight classifications outlined above. Being the FAA establishes mix index ranges for airport capacity calculations it is not necessary to compute the actual mix index value. For the purposes of this analysis it is assumed that the mix index range for LAL will be between zero and twenty throughout the planning period. This assumes that the aircraft having maximum certified takeoff weighting over 41,000 lbs. will not make up more than 30 percent of the Airport total annual operations.

### 5.4.2.4. Arrivals Percentage

The percent of arrivals is the ratio of arrivals to total operations. It is typically safe to assume that the total annual arrivals will equal total departures, and that average daily arrivals will equal average daily departures. Therefore, a factor of 50 percent arrivals will be used in the capacity calculations for the Airport. This percentage is based on operational understandings.

### 5.4.2.5. Touch-and-Go Percentage

The touch and go percentage is the ratio of landings with an immediate takeoff to total operations. This type of operation is typically associated with flight training. The number of touch and go operations normally decreases as jet operations increase, the demand for service and number of total operations approach runway approach capacity, and/or weather conditions deteriorate. It is assumed that there are no touch and go operations conducted during IFR conditions. Typically, touch-and-go operations are assumed to be between zero and 40 percent of all operations at the Airport.

Due to the number of flights schools located at the airport, and the location of the airport relative to the major metropolitan areas of Orlando and Tampa, flight training operations at LAL can be assumed to be higher than average. As discussed in section 3.6 of the forecast of aviation activity, touch-and-go operations are anticipated to be approximately 50 percent of total operations.

### 5.4.2.6. Taxiway Access Factors

Taxiway entrance and exit locations are an important factor in determining the capacity of an airport's runway system. Runway capacities are highest when there are full-length parallel taxiways, ample runway entrance and exit taxiways, and no active runway crossings available. FAA AC 150/5060-5, *Airport Capacity and Delay,* identifies the criteria for determining taxiway exit factors at an airport. The criteria for exit factors are generally based on the mix index and the distance the taxiway exits are from the runway threshold and other taxiway connections. Taxiway exits were evaluated for operations in both directions on all three runways. **Table 5-16** provides the findings of the taxiway exit evaluation. All runways have accessible taxiway exits between 2,000 feet and 4,000 feet of the landing threshold. For the taxiway exits to count towards the capacity at the airfield, the exits need to be separated by at least 750 feet in addition to being in a range from 2,000 feet to 4,000 feet from the landing thresholds.

Runway 09/27 has a full-length parallel taxiway with multiple runway/taxiway connectors. This will decrease runway occupancy times for aircraft arriving on the primary runway due to the multiple options for exit at the respective aircraft's need. The availability of multiple taxiway exits will increase the overall utilization of the runway within any given time.

**Table 5-16 LAL Taxiway Exit Ranges**

| Runway | Number of Exits within Optimal Range (2,000 ft. to 4,000 ft.) |
|---|---|
| 9 | 3 |
| 27 | 2 |
| 5 | 2 |
| 23 | 1 |
| 8 | N/A |
| 26 | N/A |

Source: Atkins Analysis 2018

### 5.4.2.7. Instrument Approach Capabilities

Instrument approach capability is qualified based upon the ability of an airport to safely accommodate aircraft operations during periods of inclement weather. Weather, in this regard, is characterized by two measures: local visibility in statute miles and the height of a substantial cloud ceiling above airport elevation. These two measurements are termed "approach minima". **Table 5-17** details the existing approach visibility minimums for each runway.

**Table 5-17 Instrument Approach Minimums**

| Runway | Approach Minimums | Ceiling Height Minimums |
|---|---|---|
| 9 | 1/2 < Mile Visibility | 200’ |
| 27 | 3/4 < Mile Visibility | 200’ |
| 5 | 3/4 < Mile Visibility | 200’ |
| 23 | 1 < Mile Visibility | 300’ |
| 8 | N/A | N/A |
| 26 | N/A | N/A |

Source: FAA LAL Instrument Approach Charts

#### 5.4.2.8. Weather Influences

Operational limitations during such times of inclement weather were accounted for in airport capacity computations. Weather data obtained from the National Climatic Data Center (NCDC) is broken up into VFR and IFR observations. The data identified that IFR conditions (ceilings greater than 200 feet or less than 1,000 feet above ground level [AGL] and/or visibility greater than ½ mile but less than three miles) occur approximately 6.28 percent of the time at the Airport.

Wind data was obtained and analyzed to accurately depict the most appropriate operational traffic flow during various wind conditions. This wind data was utilized to understand runway utilization scenarios and to better understand the most favorable operational scenarios. **Table 5-18** provides the airfield operating condition assumptions based on the NCDC weather VFR data. **Table 5-19** provides the airfield operating condition assumptions based on the NCDC weather IFR data.

**Table 5-18 VFR Airfield Operating Configurations**

| | 0° - 90° Wind | 91° - 180° Wind | 181° - 270° Wind | 271° - 360° Wind |
|---|---|---|---|---|
| **Arrivals** | Runways 9, 5, 8 | Runways 9, 23, 8 | Runways 27, 23, 26 | Runways 27, 23, 26 |
| **Occurrence %** | 41.46% | 13.31% | 8.96% | 10.86% |

Source: NCDC Wind & Weather Observations, 2017, & Atkins Analysis 2018

**Table 5-19 IFR Airfield Operating Configurations**

| | 0° - 90° Wind | 91° - 180° Wind | 181° - 270° Wind | 271° - 360° Wind |
|---|---|---|---|---|
| **Arrivals** | Runways 9, 5 | Runways 9, 23 | Runways 27, 23 | Runways 27, 23 |
| **Occurrence %** | 3.47% | 1.55% | 1.66% | 1.74% |

Source: NCDC Wind & Weather Observations, 2017, & Atkins Analysis 2018

The wind ranges were calculated based on the most effective basis to compare the collected NCDC data to the existing airfield layout.

### 5.4.3. Airfield Capacity Calculations

The airfield capacity calculations in this section were performed using the parameters and assumptions discussed in the previous sections. These calculations also utilize data from the aviation demand forecast, as presented within Chapter 3, for portions of the capacity calculations. The following sections outline the hourly capacities in VFR and IFR conditions, as well as the Airport’s calculated ASV.

#### 5.4.3.1. Hourly Capacity Calculations

The hourly capacity of the runway facilities is determined by analyzing the appropriate VFR and IFR figures in AC 150/5060, *Airport Capacity and Delay*. The equation used to obtain the hourly capacity was taken from the FAA AC 150/5060-5 and is presented below.

***Hourly Capacity = (C*) x (T) x (E)***

**Hourly Capacity Base (C*)**

Hourly Capacity Base (C*) is calculated for both VFR conditions and IFR conditions utilizing FAA provided diagrams provided in AC 150/5060. By first computing a combination of mix index, and arrivals percentage, the hourly capacity is determined. At LAL the following hourly capacity bases were utilized:

- VFR – Operating Runway 9, 5, & 8, (C*) = 75
- IFR – Operating Runway 9, & 5, (C*) = 54
- VFR – Operating Runway 27, 23, & 26, (C*) = 75
- IFR – Operating Runway 27, & 23 (C*) = 54

**Touch & Go Factor (T)**

The Touch and Go Factor (T) is an expression of touch and go activity and its effect on capacity. The value is derived using tables within AC 150/5060. Due to the weather constraints under IFR conditions, the factor for (T) is constant during said conditions. This is primarily due to the training aspect of touch and go operations. The factors in calculating (T) include the percent of operations which are touch and go, and the mix index.

- In VFR scenarios operating Runway 9, 5, & 8 at LAL, (T) = 1.34
- In VFR scenarios operating Runway 27, 23, & 26, at LAL, (T) = 1.34
- For IFR scenarios (T) is always assumed to be **1.00**

**Exit Factor (E)**

Exit Factor (E) is an expression of the availability of taxiway exits within an appropriate range for the mix of aircraft operating at the airport, derived by selecting the appropriate tables provided within AC 150/5060. The primary factors in calculating (E) are the mix index, the number of exits which are within appropriate exit range for arriving aircraft, and the percent arrivals (50%). The appropriate exit range for arriving aircraft, based on the calculated mix index, is within 2,000' to 4,000' from the arriving runway threshold as identified in **Table 5-16**. For the exit to count, there must be a minimum separation of 750' between runway exits. To calculate capacity at LAL for various scenarios the following exit factors (E) were utilized:

- Operating Runway 9, & 5 (E) = .94
- Operating Runway 27, & 23 (E) = .92

**Hourly VFR Capacity**

Hourly VFR capacities at LAL were calculated to be 99.

**Hourly IFR Capacity**

Hourly IFR capacities used similar assumptions to those used in the VFR hourly capacity calculations. However, maintaining greater separation between aircraft is generally required during IFR operations, which results in the hourly capacity base variable of the equation to be lower. In addition, certifications and authorizations are needed to operate in IFR conditions which reduces the overall hourly capacity further. These adjustments taken into consideration, the overall hourly capacity during IFR operations is 54.

### Annual Service Volume

An airport's ASV is the maximum number of annual operations that can occur at the airport before an assumed maximum operational delay value is encountered. ASV is calculated based on the existing runway configuration, aircraft mix, and the parameters and assumptions identified herein, and incorporates the hourly VFR and IFR capacities calculated previously. Utilizing this information and the guidance provided in FAA AC 150/5060-5, *Airport Capacity and Delay,* the Airport's existing ASV conditions were calculated using the following equation:

- Weighted Hourly Capacity (Cw) x Annual/Daily Demand (H) = **ASV**

The weighted hourly capacity (Cw) is an expression of hourly capacity which takes into account the percentage of time each runway use configuration is used for both VFR and IFR conditions.

- Cw x D x H = ASV → **222,437**

Additionally, according to the FAA, the following guidelines should be used to determine necessary steps as demand reaches designated levels.

- **60 percent of ASV –** The threshold at which planning for capacity improvements should begin.
- **80 percent of ASV** – The threshold at which planning for improvements should be complete and construction should begin.
- **100 percent of ASV** – The airport has reached the total number of annual operations it can accommodate, and capacity-enhancing improvements should be made to avoid extensive delays.

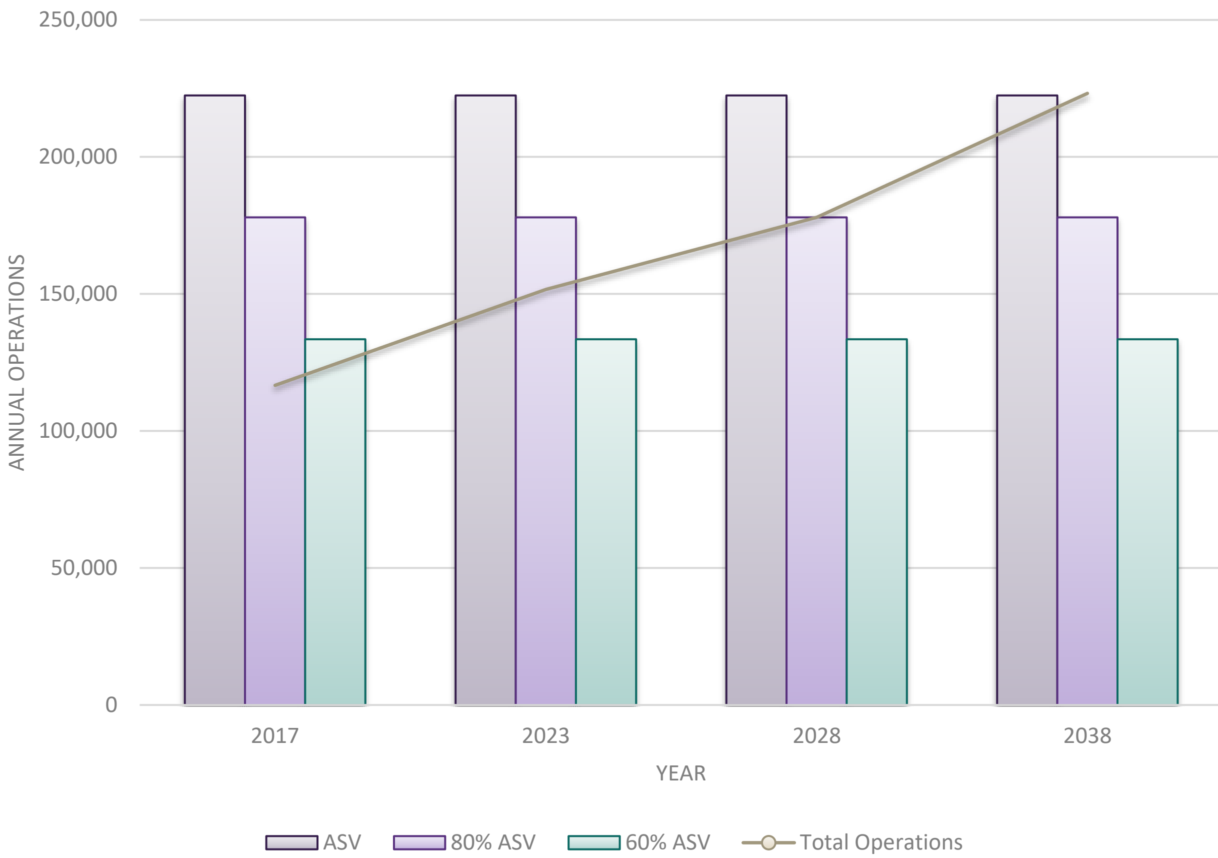
The current aviation demand in number of aircraft operations for the base year 2017 at LAL, as presented in Chapter 4, Aviation Activity Forecasts, is 116,653. **Table 5-20** compares the preferred aviation demand forecast for LAL to the current ASV, **Figure 5-6** illustrates this relationship.

**Table 5-20 Annual Service Volume vs. Annual Demand**

| Year | Annual Operations | Annual Service Volume | Percent of Annual Service Volume |
|---|---|---|---|
| **2017** | 116,653 | 222,437 | 54.44% |
| **2023** | 151,700 | 222,437 | 68.20% |
| **2028** | 177,900 | 222,437 | 79.98% |
| **2038** | 223,200 | 222,437 | 100.34% |

Source: FAA AC 150/5060-5, Airport Capacity and Delay, ESA analysis 2018, and Atkins analysis, 2018

**Figure 5-6 Annual Service Volume vs. Annual Demand**




Based on the calculated relationship between the Airport's existing ASV and forecast of aviation demand, the Airport will surpass the 60 percent ASV threshold before 2023, the 80 percent ASV threshold before 2028, and closely approaching the 100 percent ASV post 2038. As described above, the planning for capacity enhancing projects should commence when the 60 percent ASV threshold is surpassed. To ensure this can be accomplished, capacity enhancing development will be identified in subsequent chapters of this report.

## 5.5. Landside Facility Requirements

The planning of landside facilities is based on both airside and landside capacity. The requirements for terminal and support area facilities has been determined for the 20-year planning period. The principal operating elements covered under these analyses for general aviation requirements include:

- Aircraft Hangars
- Aircraft Parking Apron
- Fueling Facilities
- Terminal/Airport Administration Building
- Support Facilities
- Perimeter/Security Fencing and Access Gates
- Utilities
- Vehicle Access and Parking
- Land Use

### 5.5.1. Aircraft Storage Hangars

Hangar requirements for a GA facility are a function of the number of based aircraft, the type of aircraft to be accommodated, owner preferences, and area climate. Furthermore, it is common when calculating the hangar size needs of a facility to use an average size requirement for the various types of aircraft; meaning that each type of aircraft will require a different amount of space (usually measured in square-feet) within a specific type of storage facility, e.g. T-hangar, single-aircraft box hangar, or large multi-aircraft conventional hangar. **Table 5-21** provides the current aircraft storage assumptions at LAL.

**Table 5-21 Aircraft Storage Assumptions**

| Aircraft Storage Type | % of Based Aircraft Fleet Using Storage |
|---|---|
| **SE Piston** | |
| T-Hangar | 45% |
| Parking Apron | 45% |
| Conventional/Box Hangar | 10% |
| **ME Piston** | |
| Conventional/Box Hangar | 70% |
| T-Hangar | 0% |
| Parking Apron | 30% |
| **Jet** | |
| Conventional Hangar (Large) | 100% |
| **Rotorcraft** | |
| Conventional/Box Hangar | 80% |
| Apron | 20% |

Acronyms: Square Feet (Sq. Ft.), Single-Engine (SE), Multi-Engine (ME)

Source: Atkins Analysis 2018

#### 5.5.1.1. T-Hangars

Future t-hangar requirements will be representative of the type and sophistication of future based aircraft and the preferences of aircraft owners. Existing t-hangar facilities at LAL cater specifically to small single-engine aircraft. Currently 95 single-engine aircraft are stored in the t-hangar facilities. It is reasonable to anticipate that the t-hangar storage requirement will increase compared to the existing utilization rate, as there is currently a limited amount of t-hangar capacity at the Airport. T-Hangars provide an efficient method for aircraft storage and should be capitalized to provide additional airport revenue. These assumptions were selected after review of the Airport Cooperative Research Program (ACRP) Report 113, *Guidebook on General Aviation Facility Planning*. This guidebook has provided researched and effective guidance to help the creation of flexible and cost-effective general aviation plans. A 20 percent planning buffer was applied to the T-Hangar calculations to account for possible fluctuations in future operations. It will be assumed that in the future, 45 percent of single-engine based aircraft will be stored in t-hangars. Utilizing that assumption, and comparing it to the aviation demand forecast, **Table 5-22** provides a summary of the surplus and deficiency of t-hangar units over the planning period.

**Table 5-22 T-Hangar Requirements**

| | Base Year | Forecast | | |
|---|---|---|---|---|
| | 2017 | 2023 | 2028 | 2038 |
| Single-Engine Aircraft Requiring T-Hangar/T-Shed Storage | 88 | 97 | 104 | 120 |
| Current Capacity | 95 | 95 | 95 | 95 |
| **Surplus/Deficiency (Hangars)** | **7** | **2** | **9** | **25** |

Includes 20% planning buffer

Source: Atkins Analysis 2018

There is currently a deficiency at the Airport, due to the limited number of t-hangars available and the t-hangar wait list that currently exists. The wait list has approximately 6 committed operators. These results will be further analyzed during the alternatives section of this report.

### 5.5.1.2. Conventional Hangars

Those single engine aircraft not forecasted to be based on the apron or in a t-hangar unit are assumed to be based in a conventional hangar. For planning purposes, the spatial requirements for each aircraft type is provided in **Table 5-23**. Based on a comparison of the forecast conventional storage need by aircraft type against the spatial requirements, the storage assumptions for multi-engine, Jet, and Rotor aircraft were calculated and are provided in **Table 5-24.**

**Table 5-23 Average Aircraft Space Requirements (Conventional/Box Hangars)**

| Aircraft Storage Type | Space Required (Sq. Ft.) |
|---|---|
| **Conventional/Box Hangar** | |
| SE Piston | 1,800 |
| ME Piston | 3,200 |
| Jet | 5,200 |
| Rotorcraft | 3,200 |

Includes 20% planning buffer

Acronyms: Square Feet (Sq. Ft.), Single-Engine (SE), Multi-Engine (ME)

Source: Atkins Analysis 2018

The average space requirements for the various aircraft in the Airport's based aircraft fleet mix was applied to the based aircraft forecasts to estimate hangar area requirements for each hangar type. **Table 5-23** provides the assumptions used regarding the space requirements needed for each type of based aircraft at the Airport. The existing based aircraft data provided by airport management, along with the current aircraft storage conditions, combined with the forecasted fleet mix, **Table 5-24** provides the calculated demand requirements for hangar space throughout the planning periods. A 20 percent planning buffer was applied to the conventional hangar calculations to account for possible fluctuations in future operations.

**Table 5-24 Conventional Hangar Requirements**

| | Base Year | Forecast | | |
|---|---|---|---|---|
| | 2017 | 2023 | 2028 | 2038 |
| Based Single-Engine Aircraft Requiring Hangar Space | 19 | 21 | 23 | 27 |
| Based Multi-Engine Requiring Hangar Space | 18 | 21 | 24 | 32 |
| Based Jet Requiring Hangar Space | 16 | 21 | 26 | 41 |
| Based Helicopter Requiring Hangar Space | 10 | 13 | 16 | 23 |
| **Total Aircraft Hangar Space Required (sq. ft.)** | **208,680** | **256,513** | **305,453** | **436,128** |
| Total Existing Hangar Space (sq. ft.) | 125,821 | 125,821 | 125,821 | 125,821 |
| **Surplus / Deficiency (sq. ft.)** | **82,859** | **130,692** | **179,632** | **310,307** |

Includes 20% planning buffer

Acronyms: Square Feet (Sq. Ft.)

Source: Atkins Analysis 2018

## 5.5.2. General Aviation Aprons

General aviation aprons are areas that provide for the tie-down and storage of aircraft, as well as provide access to airside facilities and fuel facilities. FAA AC 150/5300-13A, *Airport Design*, provides guidelines for sizing aircraft aprons based on the number of aircraft anticipated to be utilizing the airport on a busy day. Operations can be classified in two categories: local and itinerant. Apron spaces at LAL was analyzed across each category of operations in accordance with FAA guidance, and the results are presented in the following sections.

### 5.5.2.1. Aircraft Parking Apron

The Airport is comprised of multiple aircraft parking areas. To identify the required parking needed for based aircraft not stored in a hangar, as well as transient aircraft requiring temporary parking, a demand analysis for the parking will be conducted. Transient aircraft are those that are visiting the airport on a temporary basis and do not remain for an extended period. Areas designated for the parking of transient (visiting) aircraft are usually identified as “itinerant aprons”. There are currently multiple apron areas for based aircraft. The layout of said aprons are arranged to be accessible to the conventional hangars at LAL and are typically located directly in front of said hangars.

Due to the Airport’s flight training operations, it has been assumed that a total of 45 percent of the based single-engine aircraft, 30 percent of multi-engine aircraft, and 20 percent of rotorcraft will be stored on apron pavements. Most of the single-engine and multi-engine aircraft being stored on aprons are owned and operated by the flight schools. Itinerant apron space is intended for relatively short-term parking periods, usually less than 24 hours. For this study, it is assumed the average itinerant aircraft occupies the apron for five hours. Utilizing the peaking characteristics established in the *Forecast* chapter of this report, recognizing that itinerant operations represented 50 percent of total airport operations, applying the FAA’s recommendation of 360 square yards per itinerant aircraft, **Table 5-25** identifies the Airport’s combined apron requirements over the planning period. A 20 percent planning buffer was applied to the apron calculations to account for possible fluctuations in future operations.

**Table 5-25 Apron Requirements**

| | Forecast | | | |
|---|---|---|---|---|
| | **2017** | **2023** | **2028** | **2038** |
| **Based Aircraft Apron Requirements** | | | | |
| Single Engine Aircraft Requiring Apron Parking | 84 | 93 | 102 | 122 |
| Multi Engine Aircraft Requiring Apron Parking | 8 | 9 | 10 | 14 |
| Rotorcraft Requiring Apron Parking | 3 | 3 | 4 | 6 |
| Total Based Aircraft Apron Required (sq. yards)[1] | 35,155 | 39,525 | 43,608 | 53,188 |
| **Itinerant Aircraft Apron Requirements** | | | | |
| Average Day Peak Hour Operations | 48 | 72 | 85 | 106 |
| Average Day Peak Hour Itinerant Operations | 24 | 36 | 43 | 53 |
| Transient Aircraft Positions Required (5-hour avg. stay) | 120 | 180 | 213 | 265 |
| Total Transient Apron Required (sq. yards)[1] | 51,840 | 77,760 | 91,800 | 114,480 |
| **Total Apron Requirements** | | | | |
| Total Apron Required (sq. yards)[1] | 86,995 | 117,285 | 135,408 | 167,668 |
| Existing Aircraft Apron (sq. yards) | 70,028 | 70,028 | 70,028 | 70,028 |
| **Surplus/Deficiency (sq. yards)** | **16,967** | **47,257** | **65,380** | **97,640** |

Includes 20% planning buffer

Source: Atkins Analysis 2018

## 5.5.3. Security and Perimeter Fencing

The primary function of airport fencing is to restrict the inadvertent entry to the airport by unauthorized individuals or wildlife. Most GA airports at a minimum possess some type of perimeter fencing around the airfield. LAL currently has fencing and access control measures in place that provides a layer of security and safety for its users and tenants. Overall, the eight-foot high fencing is in good condition. However, portions of the fencing on the east side of airport property have deteriorated. It is critical that deficient fencing is rehabilitated immediately due to safety concerns and the requirements of the airports Part 139 certificate. As new development at the airport occurs, security and perimeter fencing will need to be expanded and or modified proportionally to maintain a secure perimeter.

## 5.5.4. GA Terminal

The existing GA terminal is described in Chapter 2, *Inventory*. Chapter 5 of ACRP Report 113, *Guidebook on General Aviation Facility Planning*, provides general guidance as to the sizing of GA terminals. The primary consideration is that the facility can support the number of pilots, passengers, and visitors which could reasonably be expected during peak hour operations. GA facility sizing can range from 100 to 150 square feet per person. For planning purposes, the ACRP suggests using a factor of 2.5 people per-peak hour operation (pilots and passengers). Additionally, combining the square-footage of the terminal building and the FBO facility produced total "terminal" space available at the Airport today. The logic being that the majority of GA itinerant users are likely to use the FBOs rather than the Terminal; thus, the FBO shared public space in fact adds to the overall "terminal" space at the Airport, even though the space is located in physically different locations. The requirements for the GA building space are presented in **Table 5-26**.

**Table 5-26 GA Building Requirements**

| | Base Year | Forecast | | |
|---|---|---|---|---|
| | **2017** | **2023** | **2028** | **2038** |
| Peak Hour Operations | 48 | 72 | 85 | 106 |
| Required General Terminal Building Space (sq ft.) | 12,000 | 18,000 | 21,250 | 26,500 |
| Current Capacity Fixed Based Operator (sq ft.) | 4265 | 4265 | 4265 | 4265 |
| **Surplus/Deficiency (sq ft.)** | **7,735** | **13,735** | **16,985** | **22,235** |

Source: Atkins Analysis 2018

The terminal facilities currently have a deficiency in square footage based on the determined peak hour operations. This is due to the terminal building being designed and constructed for commercial service operations, and as such does not accommodate GA operations. It is recommended that the general aviation terminals are expanded to mitigate this current deficiency and to effectively accommodate the projected growth of operations.

## 5.5.5. Automobile Parking and Access

Clearly defined parking areas near an airport's terminal building and other landside facilities are essential elements for GA airports. LAL has numerous vehicle parking areas available, both to the public and for its based aircraft users and tenants. Public parking areas have a current surplus in the amount of spaces available. The number of automobile parking spaces required is generally calculated as a function of peak hour users as well as tenant and employee demand. Parking requirements are shown in **Table 5-27**.

**Table 5-27 Automobile Parking Requirements**

| | Forecast | | | |
|---|---|---|---|---|
| | **2017** | **2023** | **2028** | **2038** |
| GA Peak Hour Airport Users | 48 | 72 | 85 | 106 |
| Employees | 20 | 20 | 20 | 20 |
| Simultaneous Parking Area Users | 68 | 92 | 105 | 126 |
| **Parking Area Required (sq. yards)** | **2,380** | **3,220** | **3,675** | **4,410** |
| Existing (sq. yards) | 14,945 | 14,945 | 14,945 | 14,945 |
| **Surplus / Deficiency (sq. yards)** | **12,565** | **11,725** | **11,270** | **10,535** |

Source: Atkins Analysis 2018

Based on the existing public parking spaces currently available at LAL, there is no current need for additional marked automobile parking areas. This is due to the terminal parking area having capacity for scheduled commercial service and is built out for this primary reason. However, if specific tenants experience fluctuations of traffic, it is recommended that the tenant in question evaluates parking needs as they arise.

## 5.5.6. Fuel Storage

Fuel flowage is measured in U.S. gallons and is divided into two categories; Jet A for jet aircraft and 100LL (Avgas) for non-jet aircraft. Fuel flowage data has been provided depicting gallons sold month by month from 1993 to 2017. The fuel flowage demand was determined by segregating airport operations into jet and non-jet operations and applying trend in gallons of flowage per operation. The peak month forecast was taken into consideration to best plan for most demanding operation periods.

Based on existing capacity and based on the fuel demand analysis, it is seen that future additions to fuel storage at LAL is needed to supply the growing operational levels. Growth in air cargo operations at LAL including widebody cargo aircraft will drive an exponential demand increase for Jet A storage and availability. Additionally, to be operationally efficient, it is recommended that fuel storage facilities are near major airside and landside development. This will reduce the number of runway crossings needed and overall capacity will increase.

The existing fuel storage capacity has been analyzed in contrast to the projected growth of air cargo operations, and overall airport operations. It is recommended that total fuel storage capacity is increased incrementally throughout the planning period to a total storage capacity of 824,000 gallons. This will include tanks for self-serving, fuel truck replenishing, and general auxiliary fuel storage. Both Jet A and 100LL fuel types will be stored and considered during this fuel farm expansion. Locations for additional fuel storage units will be analyzed in the alternatives section of this report.

### 5.5.7. Airport Equipment Storage Building

The existing airport equipment storage building is currently outdated and at capacity. An additional storage building is needed to safely protect equipment when not in use and to allow for increased storage space. A well-built operations storage building is needed to ensure the longevity and safety of airport equipment. Locations for a new airport equipment storage building will be analyzed in the alternatives section of this report.

This Page Intentionally Left Blank

# Airport Development Plan

FlyLakeland
Lakeland Linder International Airport

# 6. Airport Development Plan

The primary objective of this chapter is to outline a logical development plan for Lakeland Linder International Airport, which meets the aviation needs over the planning period as well as satisfies the ultimate development goals of the Airport. The identification of alternatives was completed based on the information presented in the previous chapters of this AMP in conjunction with reasonable foresight into industry trends and associated facilities.

The alternatives were evaluated, and the result is a selected development plan. The alternatives and selected development plan are based on the general criteria outlined in **Table 6-1**.

**Table 6-1 Evaluation Criteria for Selected Development Plan**

| Criteria | Description |
|---|---|
| Operational | Any selected development plan should be capable of meeting the Airport's facility needs as they have been identified for the planning period. Further, preferred plans must resolve any existing or future deficiencies as they relate to FAA design and safety criteria. |
| Environmental | Airport growth and expansion has the potential to impact the Airport's environs. The selected development plan should seek to minimize environmental impacts in the areas outside the Airport's boundaries. The selected development plan should also recognize sensitive environmental features that may be impacted by the development plan. |
| Feasibility | The selected development plan should be feasible and justifiable. Development should not exceed the identified demand, however, areas in which development above and beyond the demand can be feasibly accommodated without interfering with existing and future development may be identified. Development plans must meet the needs of the Airport and local government while meeting all FAA design standards and the vision of the local community. The selected development plan should proceed along a path that supports the area's long-term economic development and diversification objectives. |
| Cost | Identification of cost efficient and effective development is paramount during the planning process. Cost should be considered during the alternatives analysis process to meet the identified demand in a reasonable and responsible manner. The selected development plan must meet the needs of the Airport and community while minimizing excessive and unreasonable costs. |
| Sustainability | The four categories of sustainability should be referenced throughout all planning processes to ensure future airport development is completed in a method that promotes economic viability, operational efficiency, natural resource conservation, and social responsibility. |

## 6.1. Development Plans

As a preliminary guideline for the creation of airport development alternatives and plans, a conceptual on-airport vacant-land map is presented in **Figure 6-1** highlighting the areas that are suitable for development throughout the planning period. Vacant land can best be defined as an area on which no significant improvements have been constructed or is currently not used for any purpose. The identification of vacant land is crucial at the beginning of the alternatives process to understand current developable land assets. The concept was created to protect approach/departure paths, safety areas, and Part 77 surfaces to ensure the continued safe operation of aircraft.

## 6.2. Airport Development Alternatives and Concepts

The airport development plan outlines the necessary development and facility requirements to meet the forecast demand, ensure competitiveness, financial viability, and to provide the Airport and surrounding community with the greatest overall benefit.

Alternatives have been developed independently for the airside and landside. Airside alternatives include development affecting runways, taxiways, and navigational aids. Landside alternatives include development such as general aviation aprons and hangars, terminal apron and terminal building, MRO and Cargo, and access roads.

The following sections provide details on the various airside and landside development alternatives.

### 6.2.1. Airside Alternatives

Airfield facilities are, by their nature, the focal point of an airport complex. Because of their role, and the fact that they physically dominate a great deal of the airport's property, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. The runway system requires the greatest commitment of land area and is often the greatest influence on the identification and development of other airport facilities.

The potential for physical expansion of an airport to accommodate airfield development is the primary factor that determines the airport's future capabilities. The runway and taxiway system directly affect the efficiency of aircraft movements both on the ground and in the surrounding terminal and regional airspace. It also dictates the types of aircraft that can be accommodated, which can directly affect the types of air service the airport can handle. In addition, the efficiency of aircraft movements is also affected by local approach and departure procedures, which can be influenced by local restrictions due to noise, airspace congestion, or other considerations

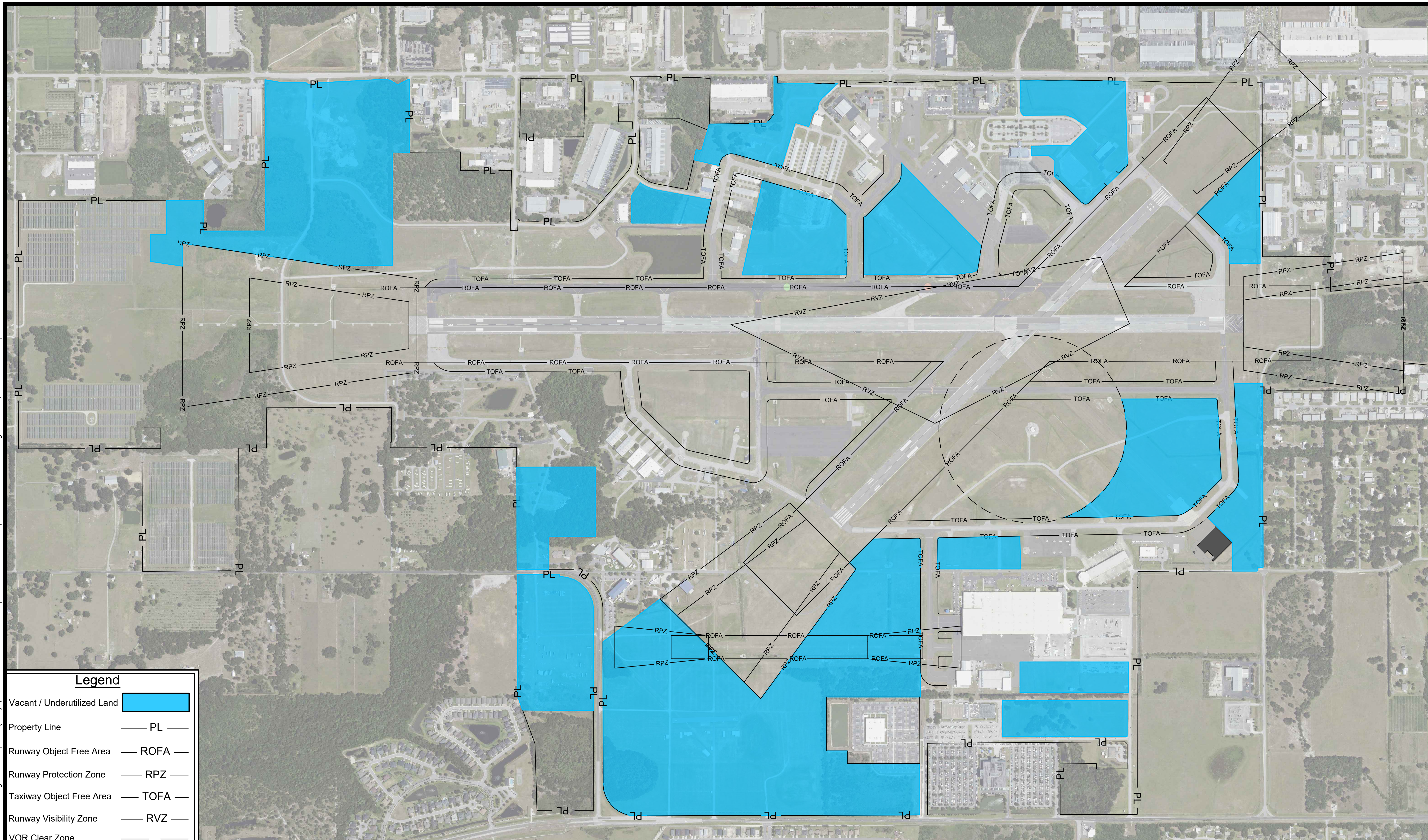
The previous airport master planning effort included airfield, airside, and landside developments necessary to meet the intended vision. These developments were re-assessed based on the current needs, design criteria, and vision for the future. Market conditions and specific needs continually evolve, requiring periodic updates to the development plan to best meet those needs.

#### 6.2.1.1. Required and Recommended Airfield Improvements

The airfield's current configuration accommodates the existing aircraft fleet mix and traffic levels with use of two bi-directional runways, Runway 09/27 and Runway 05/23. The supporting taxiway and taxilane infrastructure play a large role in providing a safe and efficient environment for ground navigation. However, the airfield's fleet mix is estimated to change during the forecast period as outlined in the forecast of aviation activity. The previous chapters identified areas for improvement on the airfield to mitigate capacity issues while encouraging growth and promoting safety. These elements are discussed in detail in the following sections.

##### 6.2.1.1.1. Runways

The existing Runway 09/27 is the Airport's primary runway and is 8,499 feet long by 150 feet wide. It is anticipated that this runway will continue to serve as the Airport's primary runway and accommodate most




ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Vacant Land Map

Figure 6-1

Plotted By: HASK8597 Jan23,2020 – 3:24pm
M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\4.1.4 Alternatives\LAL Vacant Land.dwg

corporate, commercial, and cargo aircraft. The runway length of 8,499 feet meets the existing demand. Based on the forecast of aviation demand, operations by large jet aircraft are anticipated to increase causing continued growth in the critical aircraft and a need for increased runway length. It has been specified that the anticipated aircraft utilizing the Airport will be larger compared to the existing critical aircraft. A future 1,501-foot extension to Runway 09/27 will likely be warranted within the planning period, as the Boeing 767-300 Freighter series aircraft (and similarly sized aircraft) are expected to frequent the Airport in greater numbers. This has been considered for the alternatives analysis and airfield infrastructure needed to accommodate it.

While a runway extension is not currently required to accommodate the existing and forecast airport users based on their specific operational parameters, a future runway extension may become necessary. To accommodate the future runway length requirements, the development alternatives evaluated an easterly extension, westerly extension, and split east/west extension. In each alternative, an ultimate runway length of 10,000-feet was achieved, with exception of a westerly extension option each other extension alternative presented significant development hurdles and issues.

Based on a comparison of the forecast of aviation activity to the ASV calculated in Chapter 4, an increase in the airport's capacity will be required during the planning period to accommodate the rising operations. Within the short-term (0-5 years), the airport will surpass the threshold determined by the FAA when planning should begin for capacity improvements. By the end of the mid-term planning period (6-10 years), the airport's operations will arrive at the threshold at which time construction for capacity improvements should begin. To accommodate the future capacity constraints, development alternatives included considerations of two variations of parallel runways to the existing Runway 09/27.

Based on a reevaluation of the runway identification compared to changes to the magnetic declination, it has been determined that the primary runway, Runway 09/27, will need to be re-designated to Runway 10/28 within the planning period.

#### 6.2.1.1.2. Taxiways

At present, required modifications to the taxiway infrastructure is to mitigate against high-risk and non-standard taxiway geometry. Primary modifications will mitigate wide expanses of taxiway pavement, improper runway entrances, and inadvisable runway crossings. Taxiway infrastructure is also proposed to support aeronautical development, and future runway infrastructure. This includes the cohesive infrastructure support in the expected operational areas of the critical aircraft. Enhancements to taxiway pavement such as width, strength, and geometry will be considered to meet the critical aircraft standards.

The following are recommended taxiway modifications:

- Taxiway C: At the Runway 27 end is considered to be non-standard airfield geometry due to a taxiway-runway interface that is wide expanse, or larger than standard, pavement. It is proposed that this taxiway entrance will be reduced to the standard taxiway width and geometry.
- Taxiway E: To open large portions of the airport property for aeronautical development, it is proposed to remove Taxiway E from the proposed Taxiway P extension down approximately 400 feet prior to the Taxiway E3 connector. This will allow for a large portion of the property to be accessible for future aeronautical development.

### 6.2.1.2. Other Airfield Improvements

Additional airfield improvements that have been identified by the Airport, airport operational staff, tenants, or the technical advisory committee have been identified below. The airfield improvements that have been identified here were evaluated in the various alternatives.

- Relocation of the VOR to the southern portion of airport property;
- Runway 9 upgrade to Cat III approach;
- Construction of a parallel runway to increase the annual service volume (ASV) and meet the future demand outlined in the approved forecast or extension of Runway 05/23;
- Decommissioning of the crosswind runway;

- Realign perimeter road outside of RPZ where possible;
- Relocation of on-airport buildings to improve airfield efficiency and safety of operations;
- Shifting of Taxiway D to be in line with Taxiway P and provide a standard full-length parallel taxiway on the south side of Runway 09/27;
- Relocation of the airport maintenance building to the west of Taxilane H;
- Construction of ground run-up enclosure (GRE) facilities at various key locations to allow for aircraft maintenance testing; and,
- Construction of run-up aprons at various key locations to allow for aircraft to bypass other aircraft that are performing run-up operations or awaiting air traffic clearance. These run-up aprons will be proposed with interior islands between each bypass lane to provide enhanced visual cues for operators.

### 6.2.2. Alternative 1

Airfield Alterative 1 is depicted in **Figure 6-2**. Components of this alternative were proposed in the previous master plan and there was interest expressed in re-evaluating this alternative within this AMP effort. Specifically, the Runway 09/27 extension and the Runway 05/23 extension. Based on the new forecast, a reduction in the overall runway extension was warranted and the runway extensions identified in this alternative are less when compared to the previous AMP effort. This alternative proposes a 1,501-foot westward extension of Runway 09/27, resulting in a future 10,000-foot by 150-foot-wide runway. This would allow the proposed future critical aircraft to operate at the Airport in hot and rainy conditions at 90 percent or above load factor. In conjunction with the runway extension, an Approach Lighting System (ALS) with Sequenced Flashers (ASLF) is proposed for future Cat III approach. For proper runway protective surface compliance, a tree clearing plan must be executed for all existing trees impacting the proposed protective surfaces. In addition, this alternative proposes a 1,995-foot southwestward extension of Runway 05/23, which would result in a future 7,000-foot by 150-foot-wide runway. The extension of the crosswind runway will allow for a larger fleet mix to operate at the airport on days where conditions warrant use of the crosswind runway, as well as providing critical infrastructure needed to meet the existing and future demand.

To accommodate both runway extensions and ensure enough supporting infrastructure is in place, it is proposed to extend the existing parallel taxiways to the future runway ends. Specifically, Taxiways A and P will be extended westward to the proposed Runway 09 end, while Taxiway B is proposed to be extended southwest to the proposed Runway 5 end. To enhance the operational efficiency of the airfield, it is proposed that Taxiway D be shifted to the north to be in line with Taxiway P, resulting in a standard full-length parallel taxiway for Runway 09/27. A partial-parallel taxiway for Runway 05/23 is proposed on the east side of the runway from the proposed Runway 5 end to intersect with the realigned Taxiway P. This will allow for improved access to the southeast section of the airport and reduce runway crossings by departing and arriving aircraft based in this sector of the airport. To accommodate the high number of aircraft based in the southeast sector of the airport and provide for additional future aeronautical development area, it is proposed to shift Taxiway E, between the future Taxiway P intersection and the intersection of Taxiway E3, to the west. In addition, this taxiway will support any aviation development constructed in the newly available land to the east. Taxiways will either be designed to TDG 5 or TDG 3 design standards depending on the existing or future critical aircraft anticipated in that area. Taxiway shoulders will be constructed on Taxiway A due to the anticipation of larger aircraft operating on this taxiway. Soils directly adjacent to taxiway pavement are susceptible to erosion. If aircraft engines overhang the existing taxiway pavement, opportunities for engine ingestion increase. Paved taxiway shoulders will mitigate this operational hazard to maintain a safe operating environment.

The ROFA impact on the Runway 27 end, which was identified in the Design Criteria and Facility Requirements chapter of this report, will be mitigated through the relocation of the airport perimeter road. The old perimeter road sections will be removed to ensure ROFA compliance. Run-up pads have been proposed around the airfield. Run-up pads provide a standing space for aircraft to perform engine run-up operations and for those awaiting air traffic clearance. The run-up pad permits aircraft that do not need to perform engine run-ups and those already cleared to move to their respective runway to bypass other aircraft. Run-up pads are most advantageous when located near runway ends. Three run-up pads have been proposed and each is designed to accommodate a Lockheed WP-3 Orion with the ability for traffic as large as ADG C-IV to bypass aircraft utilizing the run-up area. The proposed locations are on the east partial-parallel to Runway 05/23 near the Runway 5 end, south of the existing Runway 27 end, and south of the proposed Runway 9 end.

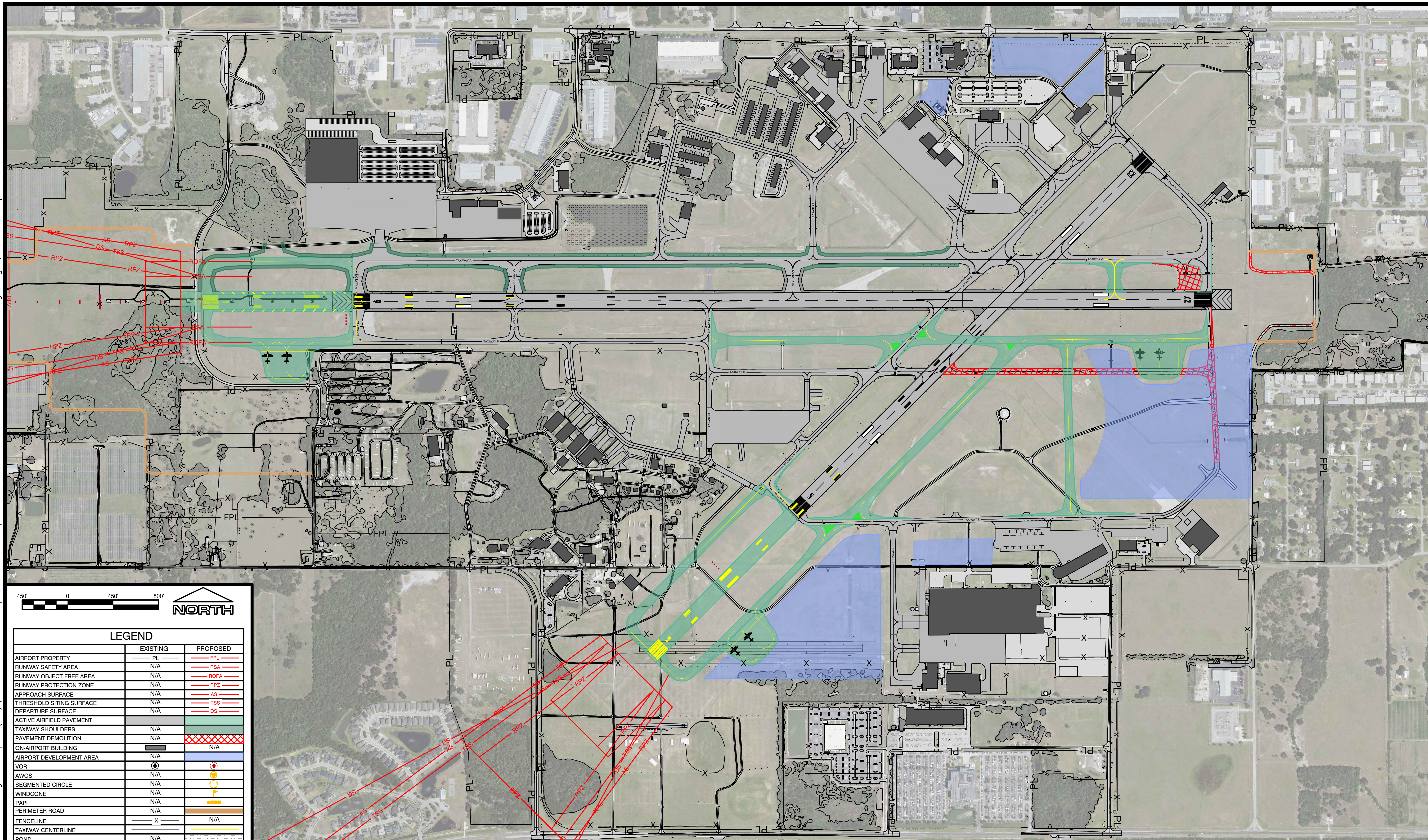
Key benefits of Alternative 1 include:

- Total Runway 09/27 length of 10,000 feet, which would accommodate the proposed future critical aircraft at max takeoff weight during all temperature conditions;
- Total Runway 05/23 length of 7,000 feet, which would increase usability by the existing and future fleet mix and increase the airports ASV;
- Dual parallel taxiways for Runway 09/27; and,
- Increased future aeronautical development areas.

Disadvantages of Alternative 1 include:

- Runway 5 extension results in decommissioning of turf runway;
- Runway 5 extension requires land acquisition and clearing within the bounds of the new RPZ;
- Runway 9 extension requires relocation of the existing airport perimeter road;
- Runway 9 extension results in impacts to wetlands west of the runway and minor impacts to the 100-year floodplain; and,
- Development has the potential to impact listed species habitat.

Plotted By: HASK8597
M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\4.1.4 Alternatives\LAL Draft Airside Alternatives - Preferred Master.dwg Aug10,2020 - 5:51pm




| LEGEND | | |
|---|---|---|
| | EXISTING | PROPOSED |
| AIRPORT PROPERTY | PL | FPL |
| RUNWAY SAFETY AREA | N/A | RSA |
| RUNWAY OBJECT FREE AREA | N/A | ROFA |
| RUNWAY PROTECTION ZONE | N/A | RPZ |
| APPROACH SURFACE | N/A | AS |
| THRESHOLD SITING SURFACE | N/A | TSS |
| DEPARTURE SURFACE | N/A | DS |
| ACTIVE AIRFIELD PAVEMENT | | |
| TAXIWAY SHOULDERS | N/A | |
| PAVEMENT DEMOLITION | N/A | |
| ON-AIRPORT BUILDING | | N/A |
| AIRPORT DEVELOPMENT AREA | N/A | |
| VOR | | |
| AWOS | N/A | |
| SEGMENTED CIRCLE | N/A | |
| WINDCONE | N/A | |
| PAPI | N/A | |
| PERIMETER ROAD | N/A | |
| FENCELINE | X | N/A |
| TAXIWAY CENTERLINE | | |
| POND | N/A | |

ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Airside Alternative 1

Figure 6-2

### 6.2.3. Alternative 2

Alternative 2 is depicted in **Figure 6-3**. Alternative 2 proposes an extension of Runway 09/27 for a new total length of 10,000-feet. The extension would be split between each end of the runway, with a westward extension of 750.5-feet and an eastward extension of 750.5-feet, for a total extension of 1,501-feet. To enhance capacity and eliminate an existing high-activity runway intersection, it is proposed to decommission Runway 05/23 and construct a new runway parallel to Runway 09/27. The newly constructed runway will be designed to ADG C-III standards with a total length of 7,400-feet by 150-feet wide. The runway is proposed to have a non-precision approach on both ends with no lower than 3/4 statue mile visibility. Supplemental wind-cones will be placed in appropriate spots on the airfield to support operations on both runways.

To enhance the operational efficiency of the airfield, it is proposed that Taxiway D be shifted to the north to be in line with Taxiway P, resulting in a standard parallel taxiway separation for the full-length of the runway. Taxiways A and P, the parallel taxiways to Runway 09/27, would subsequently be extended on each end of the runway to match the proposed extension. Realignment of Taxiway D and the extension of Taxiway P will also provide a mid-field parallel taxiway that serves both the existing Runway 09/27 and the new parallel runway. A full-length parallel taxiway to the new parallel runway is proposed on the south side of the runway. To support the south parallel runway, and open area for future aeronautical development, it is proposed to shift a portion of Taxiway E from the intersection of the proposed south parallel taxiway of the south parallel runway to the intersection of Taxiway E2 to the west to align with the end of the proposed south parallel runway. The existing Taxiway D pavement will be removed. Approximately 873 feet of Taxiway E will be removed, starting from the proposed Runway 09/27 south parallel taxiway then running south. The remaining Taxiway E pavement will be preserved to accommodate existing aeronautical development in the area. Taxiway B will be fully removed from the intersection of Taxiway A south.

To accommodate the new south parallel runway, the VOR facility would need to be relocated. It is recommended that the VOR facility be relocated on the airfield to a location where it has proper clearance from all runways and taxiways, while enabling the greatest area possible for future airport development. The proposed site is located on the southern portion of the property, to the south of the existing turf runway.

The AWOS equipment will need to be relocated due to the location of the proposed south parallel runway. Per FAA order 6560.20C, *Siting Criteria for Automated Weather Observation Systems*, position of the AWOS equipment is necessary to be kept relatively close to the primary runway. This will allow for the accurate weather measurement at the runway. Due to this, the equipment is anticipated to be positioned south of the proposed south parallel taxiway and east of the Taxiway E1 extension.

A ground run-up enclosure (GRE) facility is proposed to be constructed off of the proposed north-south taxiway, running from the existing Taxiway E up to the proposed south parallel runway's south parallel taxiway. The GRE facility will allow tenants to perform long duration run-up testing during aircraft maintenance.

One area has been identified for future aeronautical development. One of the development areas is located where the existing Runway 23 end is located. With the realignment of Runway 23, approximately 60 acres of land would become available in the northeast corner of the airport. This area would be considered prime terminal area development as it has access to the existing terminal and terminal apron, airfield access via Taxiway B and A, as well as land side access via Drane Field Road.

Key benefits of Alternative 2 include:

- Total Runway 09/27 length of 10,000 feet, which would accommodate the proposed future critical aircraft at max takeoff weight during all temperature conditions;
- New parallel runway will improve the airports ASV by removing the intersecting runways; and,
- Relocation of the VOR and decommissioning of Runway 05/23 opens over 60 acres of developable airport owned property.

Disadvantages of Alternative 2 include:

- Easterly portion of the extension of Runway 09/27 requires acquisition of property in the proposed RPZ;

- Newly constructed south parallel runway requires acquisition of property on the west side of the runway in the proposed RPZ;
- Existing tenant leaseholds will be impacted, and relocation will be required;
- Relocation of the VOR will be required prior to construction of the new parallel runway;
- Relocation of the AWOS equipment will be required prior to construction of the new parallel runway;
- Extension of Runway 09/27 to the west and east impacts wetlands to the south and east of the runway;
- Relocation of the VOR impacts a known wetland
- Minor impacts to the 100-yr floodplain west and south of Runway 9; and,
- Development has the potential to impact listed species habitat.

### 6.2.4. Alternative 3

Alternative 3 is depicted in **Figure 6-4**. This alternative is similar to Alternative 1 in regard to the increase of total Runway 09/27 length up to 10,000-feet. However, in this alternative, it is proposed that the full 1,501-foot extension is completed to the east. To enhance capacity and draw smaller aircraft operations from the primary runway, it is proposed to develop a parallel runway to the primary. The parallel runway will be designed to ADG B-II standards with a total length of 3,900-feet and width of 75-feet. The Taxiway D pavement, to the greatest extent possible, will be converted and used for the construction of the parallel runway. Any remaining existing Taxiway D pavement will be removed. The proposed Runway 10R/28L should be capable of accommodating non-precision approaches with not lower than 1 statute mile visibility. This proposed runway can be upgraded to a C-III runway in the future by shifting the centerline south approximately 221-feet to ensure a 400-foot separation from the future parallel Taxiway P. The proposed full-length parallel taxiway to the south of the proposed parallel runway is located approximately 488-feet from the proposed Runway 10R/28L to ensure future growth to a future C-III is possible and minimum design standards can be attained without relocation. Existing Taxiway E pavement is proposed to be removed from the realigned Taxiway D down to the recently built hangar on Taxiway E just east of Taxiway E3. This will allow for approximately 38 acres of developable property to be made available.

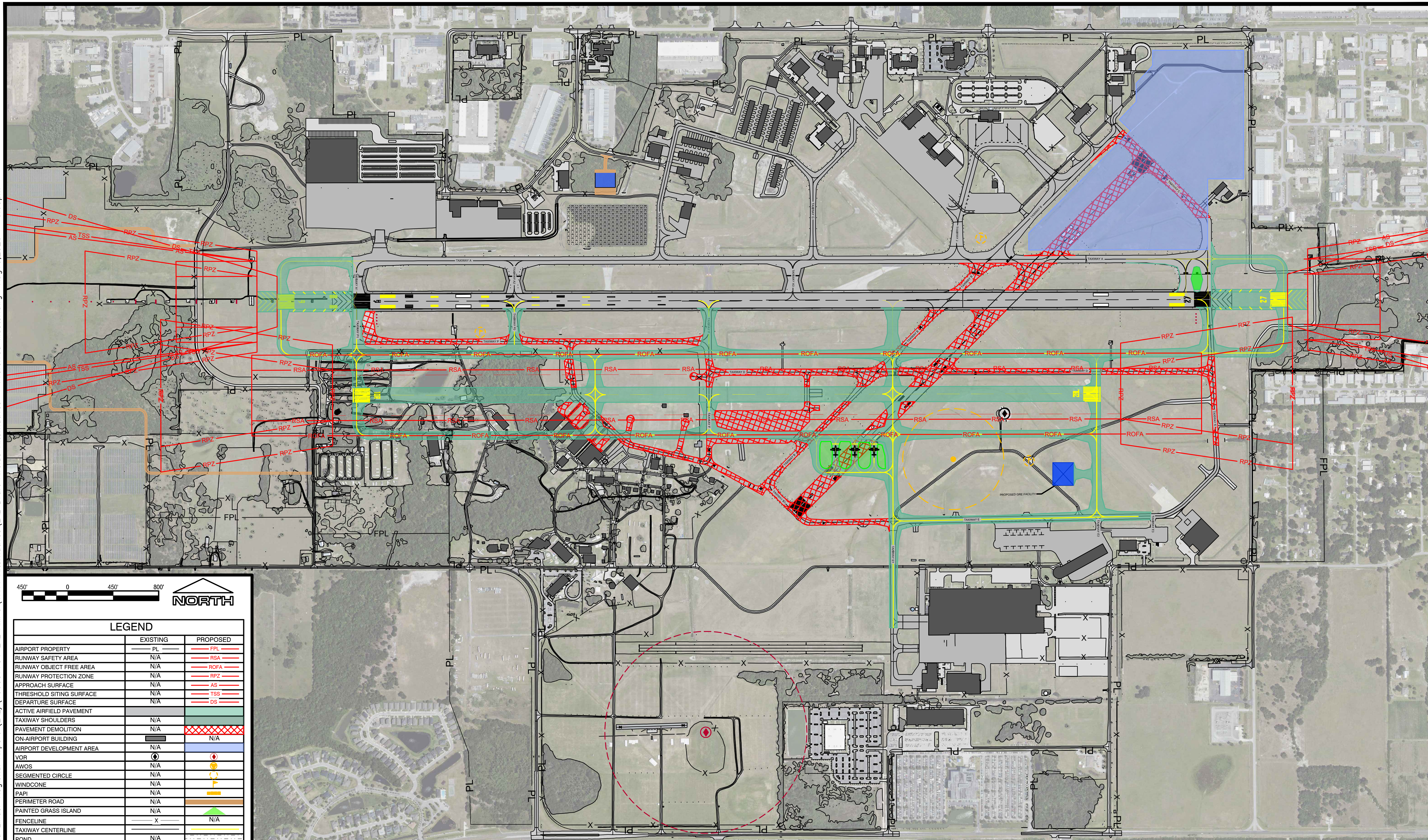
To accommodate the proposed south parallel runway and taxiway complex, the VOR facility would need to be relocated. It is recommended that the VOR facility be relocated on the airfield to a location where it has proper clearance from all runways and taxiways, while enabling the greatest area possible for future airport development.

Key benefits of Alternative 3 include:

- Total Runway 09/27 length of 10,000 feet, which would accommodate the proposed future critical aircraft at max takeoff weight during all temperature conditions; and,
- Proposed parallel runway will improve the airports ASV by shifting smaller aircraft from the airport's primary runways..

Disadvantages of Alternative 3 include:

- Easterly extension of Runway 09/27 requires acquisition of property in the proposed RPZ; and,
- Relocation of the VOR will be required prior to construction of the parallel runway.
- Extension of Runway 27 to the east impact's wetlands, requires acquisition of right-of-way's, and has the potential for noise impacts east of the runway; and,
- Development has the potential to impact listed species habitat.




| LEGEND | | |
|---|---|---|
| | EXISTING | PROPOSED |
| AIRPORT PROPERTY | PL | FPL |
| RUNWAY SAFETY AREA | N/A | RSA |
| RUNWAY OBJECT FREE AREA | N/A | ROFA |
| RUNWAY PROTECTION ZONE | N/A | RPZ |
| APPROACH SURFACE | N/A | AS |
| THRESHOLD SITING SURFACE | N/A | TSS |
| DEPARTURE SURFACE | N/A | DS |
| ACTIVE AIRFIELD PAVEMENT | | |
| TAXIWAY SHOULDERS | N/A | |
| PAVEMENT DEMOLITION | N/A | |
| ON-AIRPORT BUILDING | | N/A |
| AIRPORT DEVELOPMENT AREA | N/A | |
| VOR | | |
| AWOS | N/A | |
| SEGMENTED CIRCLE | N/A | |
| WINDCONE | N/A | |
| PAPI | N/A | |
| PERIMETER ROAD | N/A | |
| PAINTED GRASS ISLAND | N/A | |
| FENCELINE | X | N/A |
| TAXIWAY CENTERLINE | | |
| POND | N/A | |

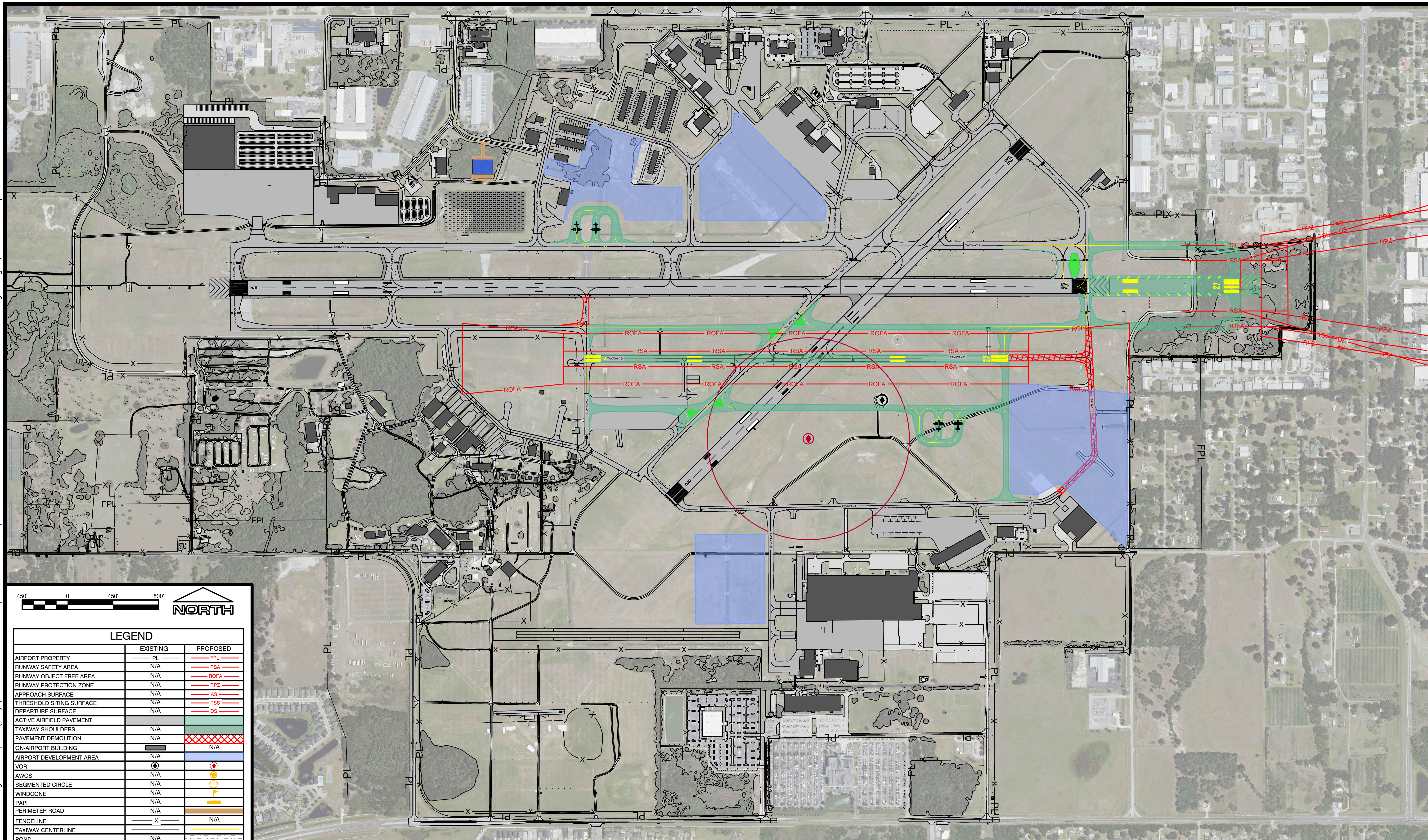
ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Airside Alternative 2

Figure 6-3




## LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY | PL | FPL |
| RUNWAY SAFETY AREA | N/A | RSA |
| RUNWAY OBJECT FREE AREA | N/A | ROFA |
| RUNWAY PROTECTION ZONE | N/A | RPZ |
| APPROACH SURFACE | N/A | AS |
| THRESHOLD SITING SURFACE | N/A | TSS |
| DEPARTURE SURFACE | N/A | DS |
| ACTIVE AIRFIELD PAVEMENT | | |
| TAXIWAY SHOULDERS | N/A | |
| PAVEMENT DEMOLITION | N/A | |
| ON-AIRPORT BUILDING | | N/A |
| AIRPORT DEVELOPMENT AREA | N/A | |
| VOR | | |
| AWOS | N/A | |
| SEGMENTED CIRCLE | N/A | |
| WINDCONE | N/A | |
| PAPI | N/A | |
| PERIMETER ROAD | N/A | |
| FENCELINE | X | N/A |
| TAXIWAY CENTERLINE | | |
| POND | N/A | |

ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Airside Alternative 3

Figure 6-4

Plotted By: HASK8597 M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\4.1.4 Alternatives\LAL Draft Airside Alternatives – Preferred Master.dwg Aug10,2020 – 6:04pm

## 6.3. Landside Alternatives

Landside facilities form a critical backbone to the airport's efficient and effective operations. While airside facilities will usually drive the location and availability of developable land, landside facilities form the crucial interface between the airport and the surrounding community it serves. Ensuring that landside development compliments airside facilities without interfering with planned future airside development is paramount, as it has the potential to limit the opportunities for an airport's future expansion should it be necessary.

### 6.3.1. Required and Recommended Landside Improvements

The airport's existing development is decentralized and either located on the north or south sides of the runway complex. The predominant portion of the business aviation and general aviation facilities for itinerant and based aircraft are located on the north side of the airport and west of the existing terminal building. Aeronautical businesses and flight schools are located on the south side of the airport to the east of Runway 05/23.

Airport tenants play a key role in an airport's vitality and its ability to be as self-sufficient as possible. Ensuring that future development is done in a compatible manner with airside facilities is paramount in ensuring the safety and efficiency of operations at the airport. The previous chapters identified areas for improvement that will be necessary to handle the forecast capacity while encouraging growth and promoting safety. These elements are discussed in detail in the following sections.

The existing terminal/administrative building can handle up to two commuter size commercial service aircraft at any given time. Access roads and parking are available to the north of the terminal/administrative building. A rental car facility is located directly east of the terminal apron.

Identification of an area for future expansion of the terminal building, apron, and associated taxiway system, to accommodate commercial service and charter/air taxi service is necessary to ensure that the space is reserved and available.

#### 6.3.1.1. Business Aviation Area

The existing business aviation area is located to the southwest of the existing terminal building and terminal apron. The Fixed Base Operator (FBO) is located on this apron, along with multiple hangars which are either managed by the FBO or for private use. A large apron space is available to the south of the FBO and hangars which serves itinerant traffic as well as those aircraft based at the airport that do not currently lease hangar space.

The potential for expansion of the FBO and itinerant apron is constrained by the terminal apron to the northeast and existing hangar buildings to the northwest. Existing and future demand outlined in the approved forecast indicates a need for increased itinerant apron space, as well as increased demand for large aircraft storage hangars. Relocation of the FBO buildings, and consolidation of the business aviation facilities, will ensure that adequate separation of activity types is achieved, and maximum efficiency of operations is realized.

#### 6.3.1.2. General Aviation Facilities

The existing hangar capacity does not meet the existing demand. As outlined in the Demand Capacity Chapter, future aircraft storage needs exceed the available t-hangar and conventional hangar space that is available. An additional 74 t-hangar units and 310,307 square feet of conventional hangar space will be required within the planning period. One t-hangar was recently constructed to accommodate the existing demand; however, future growth will necessitate continued expansion of the general aviation facilities.

Aircraft parking aprons for both based aircraft and itinerant aircraft, are not sufficient to meet the existing or future demand. Additional aircraft parking apron will be required to accommodate the demand. Approximately 97,000 square yards of aircraft parking apron will be required to meet the demand within the planning period.

### 6.3.1.3. MRO/Cargo and Other Commercial Development Area

Identification of future MRO/Cargo and other commercial development areas is critical in ensuring the airport continues to be as self-sufficient as possible and provides an environment for growth opportunities. Lakeland Linder International Airport is centrally located to serve the commercial needs of both the Orlando and Tampa metropolitan areas, and as such, has seen tremendous growth and demand over the past decade.

To align future MRO/cargo and commercial development areas with the future airfield development, proper planning and identification of areas which will not impact the airside facilities and safety areas is critical.

## 6.3.2. Alternative A

Terminal Alternative A is depicted in **Figure 6-5**. This alternative proposes relocation of the existing FBO building and FBO storage hangars located directly southwest of the terminal and terminal apron to the southwest between the itinerant apron. This undeveloped area is well suited for consolidation of the business aviation facilities as it is located directly east of the existing general aviation hangars and provides ancillary services to the general aviation t-hangar tenants. Development in this area is restricted by the temporary ROFA on Taxiway A, where Taxiway A is utilized as a small aircraft runway during the Sun ‘n Fun Aerospace Expo. Additionally, this area provides ample space for development and expansion of conventional storage hangars to meet the anticipated future demand. Additional t-hangar development has been identified on the west side of Taxilane G, south of the existing t-hangars. Improvements to the airport access roads will provide duel access points to Drane Field Road and separation of commercial users and general aviation users. Relocation of the FBO and FBO hangars allows for the future expansion of the terminal building and terminal apron to the west, reducing impacts to other facilities located between the terminal and Taxiway B.

Land has been identified within the terminal access road loop, providing prime future commercial development area with access by terminal users as well as hotel guests and visitors. Additionally, areas for future terminal parking and a consolidated rental car facility has been identified between Drane Field Road and the terminal access road loop. A secondary access point for general aviation users has been identified from the air traffic control tower access road, crossing Taxilane H, and looping south of the proposed t-hangars.

Fuel farm expansion is proposed off Taxilane H and Aero Pl., which will include ten tanks totaling 824,000 gallons of added fuel storage. The area will be landside accessible via Aero Pl. and can accommodate a 16-wheeler fuel truck. Two 250,000-gallon fuel silos will be placed in the middle of the fuel farm access road, which will supply the six 50,000-gallon tanks and two 12,000-gallon tanks located towards Taxilane H. The self-serve 12,000-gallon tanks will be accessible via Taxilane H and the proposed apron area for safe refueling. The 50,000-gallon tanks will be accessible for on-airport fuel trucks.

Previously planned development located to the north of the existing FBO has been included within the alternatives analysis to ensure appropriate land allocation. This development includes two conventional hangars with associated office space and automobile parking.

Key benefits of Alternative A include:

- Consolidated business aviation center and separation of aviation activities;
- Secondary landside access point for general aviation tenants;
- Future commercial development area; and,
- Substantial increase in fuel storage infrastructure.

Disadvantages of Alternative A include:

- High initial investment required for relocation of FBO and FBO hangars;
- Relocation and/or renegotiation of leaseholds may be required; and,
- Development has the potential to impact listed species habitat.

### 6.3.3. Alternative B

Terminal Alternative B is depicted in **Figure 6-6**. This alternative proposes expansion of the terminal building to the east, with additional terminal apron east and south of the existing apron. The existing FBO and FBO hangar would remain on the transient aircraft parking apron, with expansion of conventional hangars in the open field located south of the transient aircraft parking apron, north of Taxiway A, and east of Taxilane G. Additional conventional hangar expansion would be located off Taxilane H. These conventional hangars will have apron frontage and allocated automobile parking. The existing t-hangars will be expanded to add four additional units to their structures.

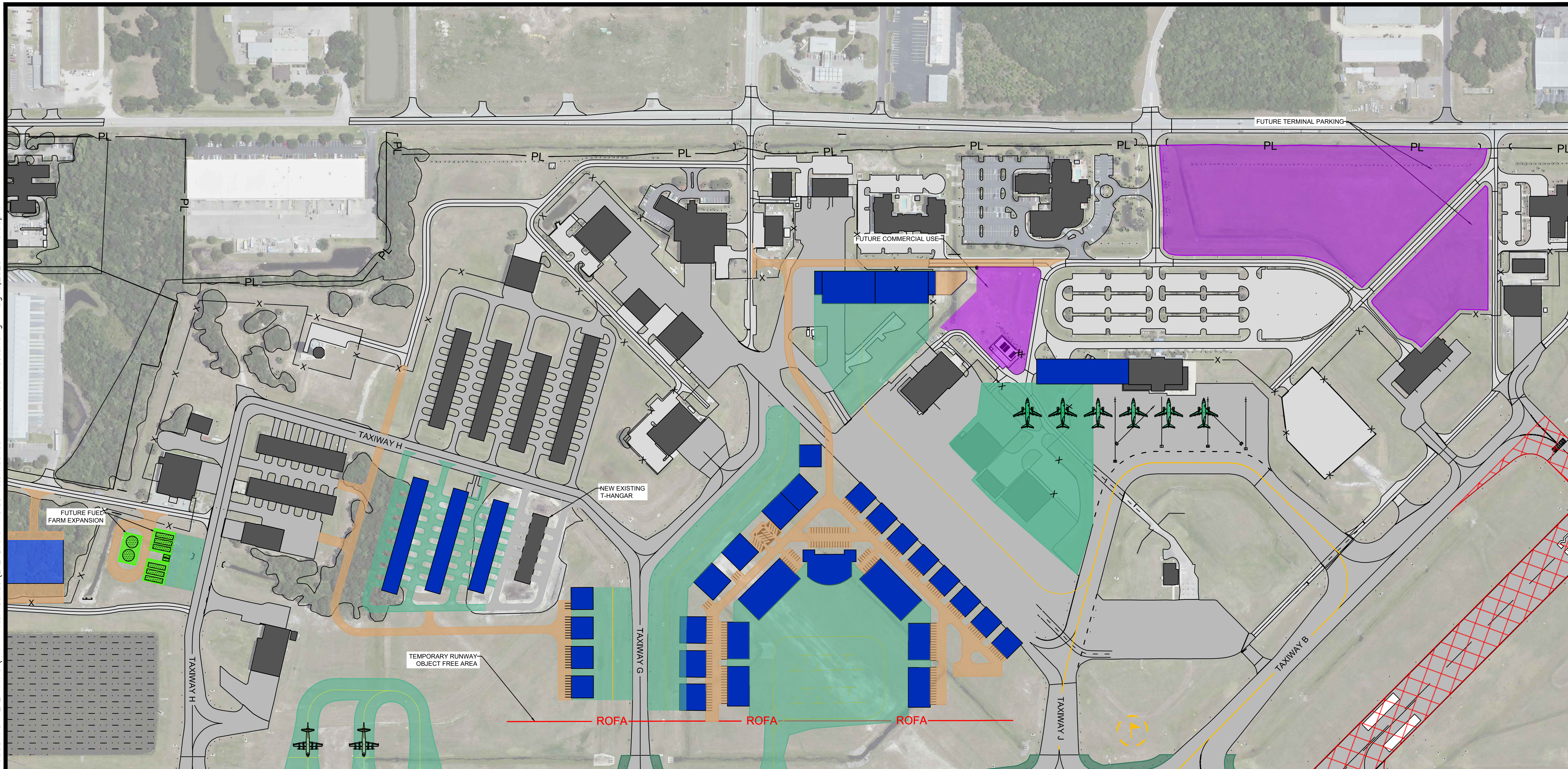
Access would be provided from the terminal access road loop to the expanded conventional hangar area. Expansion of the terminal access road loop would include designation of a commercial development area, as well as designating an area for future terminal parking and a consolidated rental car facility to the northeast of the terminal.

Key benefits of Alternative B include:

- Limited relocation of existing airport facilities;
- Landside access to hangar facilities, limiting vehicular traffic from taxiway and apron surfaces; and,
- Future commercial development area.

Disadvantages of Alternative B include:

- Limited future expansion opportunities if required for the terminal building and apron.




LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| PROPOSED AIRFIELD PAVEMENT | N/A | |
| PROPOSED LANDSIDE ACCESS | N/A | |
| PROPOSED PAVEMENT DEMOLITION | N/A | |
| PROPOSED BUILDINGS | N/A | N/A |
| FUTURE DEVELOPMENT AREAS | N/A | |
| FENCE | —— X —— | N/A |
| PROPERTY LINE | —— PL —— | N/A |
| TAXIWAY CENTERLINES | ———— | ———— |
| AIRCRAFT FOR DISPLAY | N/A | ✈ |

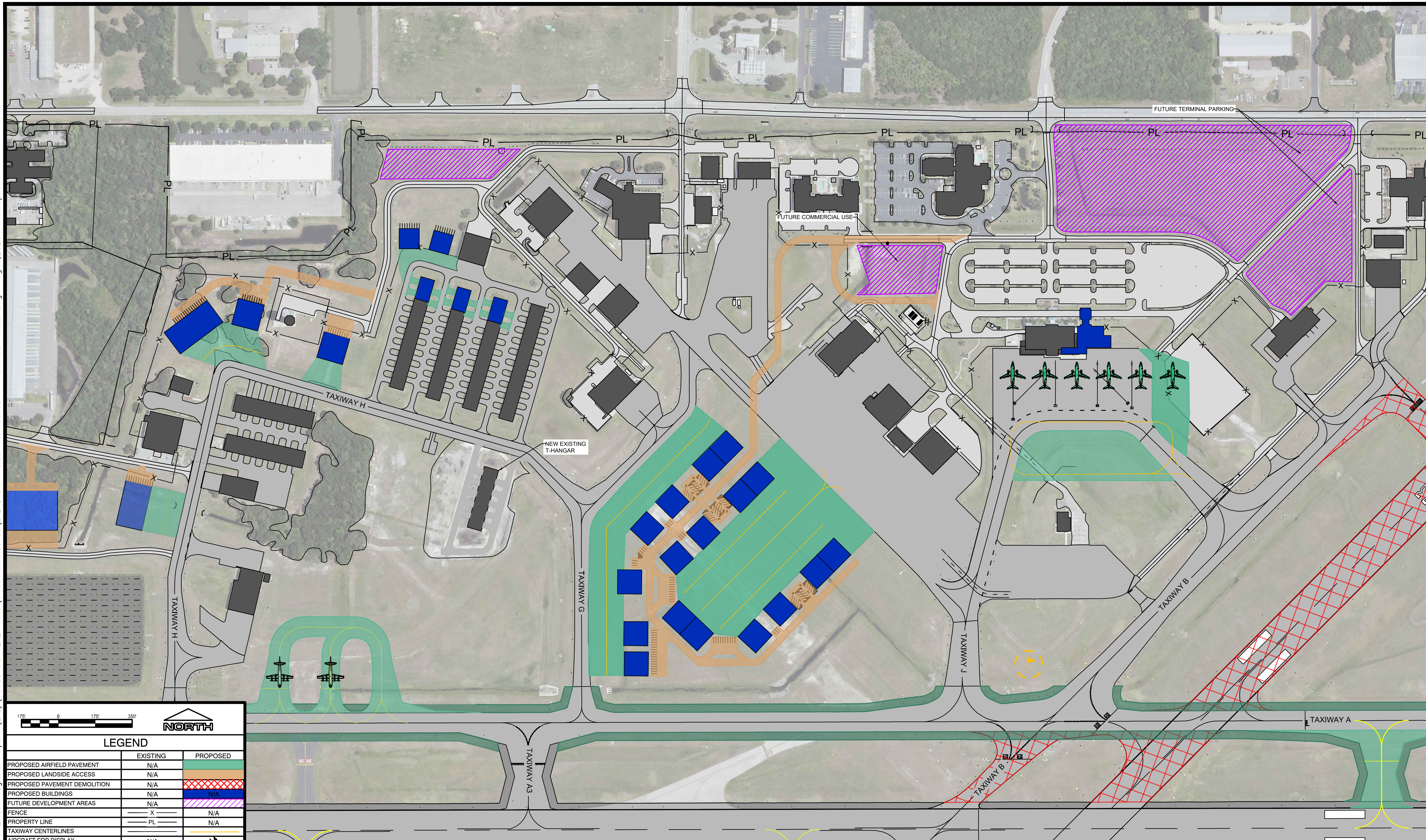
ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Terminal Development Alternative - A

Figure 6-5




ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Terminal Development Alternative - B

Figure 6-6

Plotted By: HASK8597
M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\4.1.4 Alternatives\LAL Draft Airside Alternatives - Preferred Master.dwg Aug10,2020 - 6:06pm

## 6.4. Alternatives Evaluation Criteria

The evaluation of the alternatives followed the criteria as found in FAA's AC 150/5070-6B, *Airport Master Plans* and included the following:

- Financial Feasibility
- Operational Performance
- Environmental Implications
- Best Planning Tenets

### 6.4.1. Financial Feasibility

This analysis considers the impacts of an alternative in relation to the Airport's economic viability as well as that of the surrounding community. Furthermore, the analysis provides consideration of the estimated development costs associated with the various alternatives, along with prospective funding sources. The following were assessed as a part of this analysis:

- **Development costs** – Includes anticipated costs of development and potential alternative funding sources. Alternative funding sources include those other than the City or the FAA, such as private business owners and/or developers.
- **Job creation** – The potential of each alternative to create employment and other economic development benefits for the Airport and immediate surrounding area.
- **Financial sustainability** – Anticipated opportunities for revenue generation through increased activity, new businesses, etc. to increase the Airport's ability to become more financially self-sufficient.

### 6.4.2. Operational Performance

An airport's ability to function as a system can be evaluated based on several factors:

- **Capacity** – The ability to accommodate future demand as determined in the facility requirements.
- **Capability** – The ability to meet airport design standards and ensure a safe operating environment.
- **Operational efficiency** – How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc. This also considers the coexistence of existing and future users.

### 6.4.3. Environmental Implications

As discussed in the Environmental Overview Chapter, there are several environmental resources that may be impacted to some degree resulting from airport development. To review the NEPA environmental categories associated with the Airport in detail, please refer to Chapter 3, Environmental Overview. The following are the Airport's identified environmental criteria:

- Air Quality
- Biological Resources (Including Fish, Wildlife, and Plants)
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Land Use
- Noise and Noise-Compatible Land Use
- Climate
- Department of Transportation Act
- Historical, Architectural, Archaeological, and Cultural Resources

- Visual Effects (Including Light Emissions)
- Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

### 6.4.4. Sustainability

The FAA is committed to making airports environmentally responsible with initiatives that affect facility operations, the aviation industry, and customers. Airports commonly follow the approach to sustainability codified by Airports Council International-North America, known as EONS, which take into account four key considerations when sustainability programs are designed and implemented:

- **E**conomic Viability
- **O**perational Efficiency
- **N**atural Resource Conservation
- **S**ocial Responsibility

Furthermore, the Florida Department of Transportation Aviation and Spaceports Office developed the Airport Sustainability Guidebook to lead sustainability at Florida airports. At its core, the guidebook provides a basic structure for developing, implementing, and monitoring sustainability initiatives at airports.

### 6.4.5. Noise and Compatible Land Use

In order to assess the potential change in noise exposure that would result from the projected aircraft activity levels and the proposed airport improvements, noise contours were developed using the FAA's Aviation Environmental Design Tool (AEDT) for the three planning horizons of 2023, 2028, and 2038.

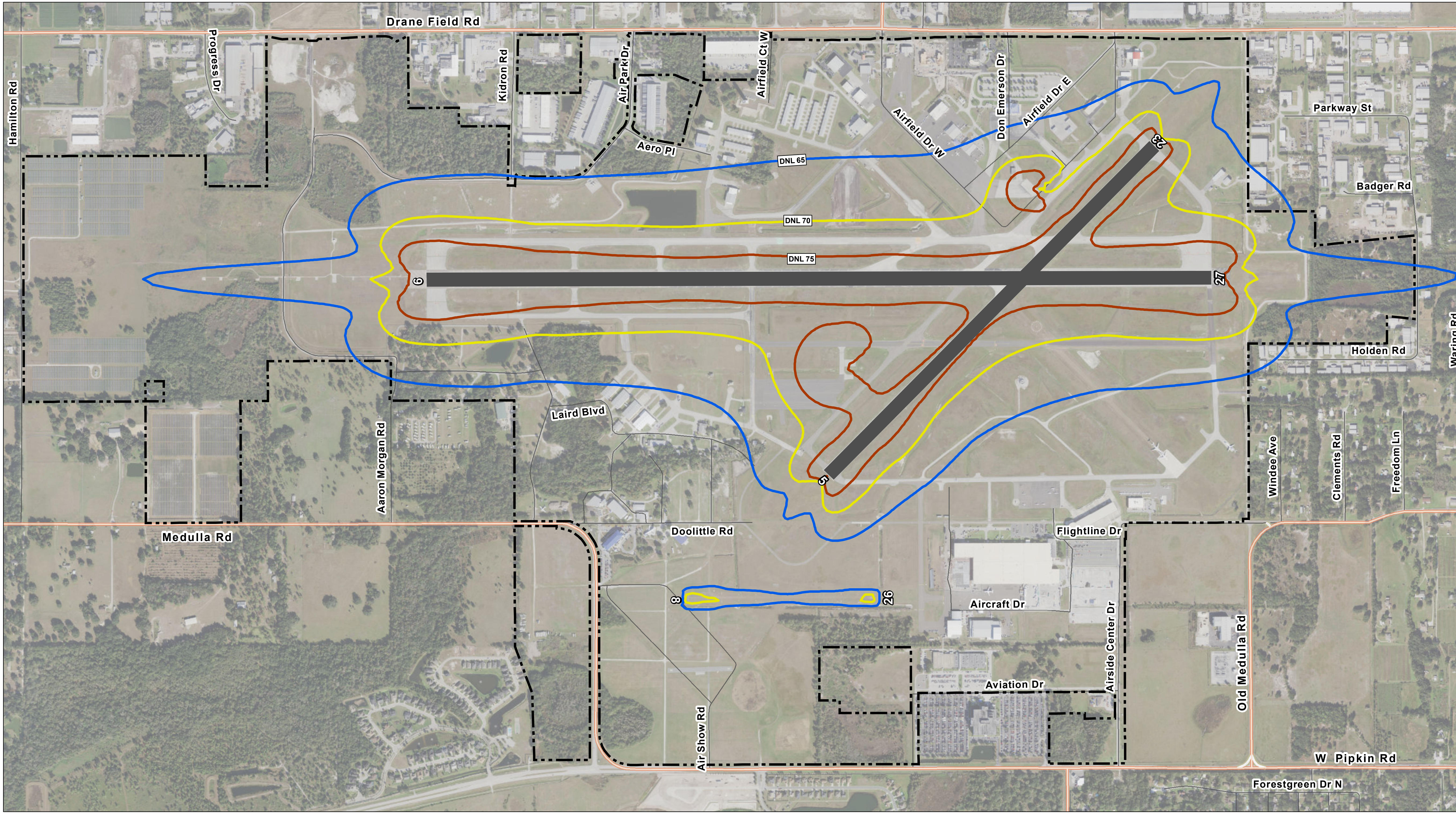
Forecast year 2023 **Figure 6-7** shows that DNL 70 and 75 contours remain entirely within the airport property. Similar to the 2018 base year, the DNL 65 contour extends off-airport into compatible commercial and light industrial areas to the east.

As shown on **Figure 6-8**, it is expected that by 2028, a 1,501-foot extension of Runway 9-27 to the west will be operational. The 2028 noise model reflects a corresponding shift of the noise contours to the west. The DNL 65 is projected to extend to the west across Hamilton Road into a residential parcel just off-airport property while the DNL 70 and 75 contours will remain on-airport property. The area of commercial and light industrial uses within the DNL 65 are slightly larger than those expected in 2018 and 2023.

The deactivation of Runway 5-23 and construction of parallel Runway 10R-28L are reflected in the noise contours shown on **Figure 6-9**. The contours on Runway 09/27 show similar, but slightly smaller extension of the noise contours beyond airport property. The 65 DNL contour also goes off property to the west and encompasses a portion of a residential property just off Windee Avenue. To the south of the future approach end of Runway 10R, the DNL 65, 70, and 75 contours extend across the property line to the immediate south and encompass a portion of the Sun N' Fun campgrounds.

In all future cases, it is anticipated that noise contours resulting from operations on the turf Runway 8-26 will be contained within airport property.

The future contours presented are based on the proposed improvements to the existing airfield and the forecasted aviation activity levels. Each of the proposed runway improvements will be subject to the federal environmental review process, which will likely include a more focused noise impact analysis specific to each project.




FlyLakeland
Lakeland Linder International Airport

0 450 900 1,800 Feet

LAL Property Line

**2023 DNL Contours**

- 65 dB
- 70 dB
- 75 dB

SOURCE: AEDT 2d; ESA, 2019. NOTE: DNL = Day-Night Equivalent Sound Level.

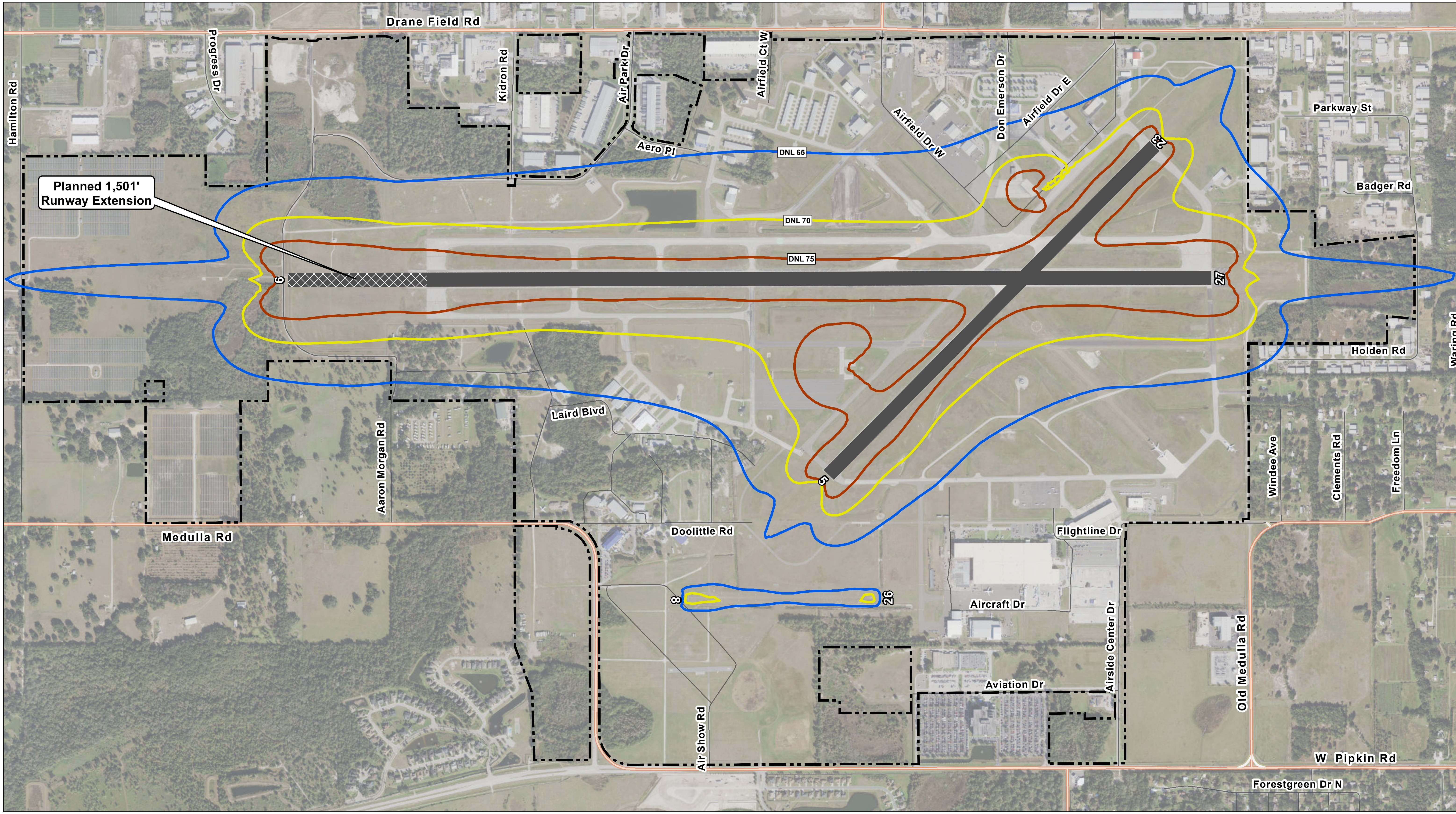
Lakeland Linder International Airport

**Figure 6-7**

**2023 Future DNL Contours**

N W E S

ESA




FlyLakeland Lakeland Linder International Airport

0 450 900 1,800 Feet

LAL Property Line
Planned Runway Extension

**2028 DNL Contours**
- 65 dB
- 70 dB
- 75 dB

SOURCE: AEDT 2d; ESA, 2019. NOTE: DNL = Day-Night Equivalent Sound Level.

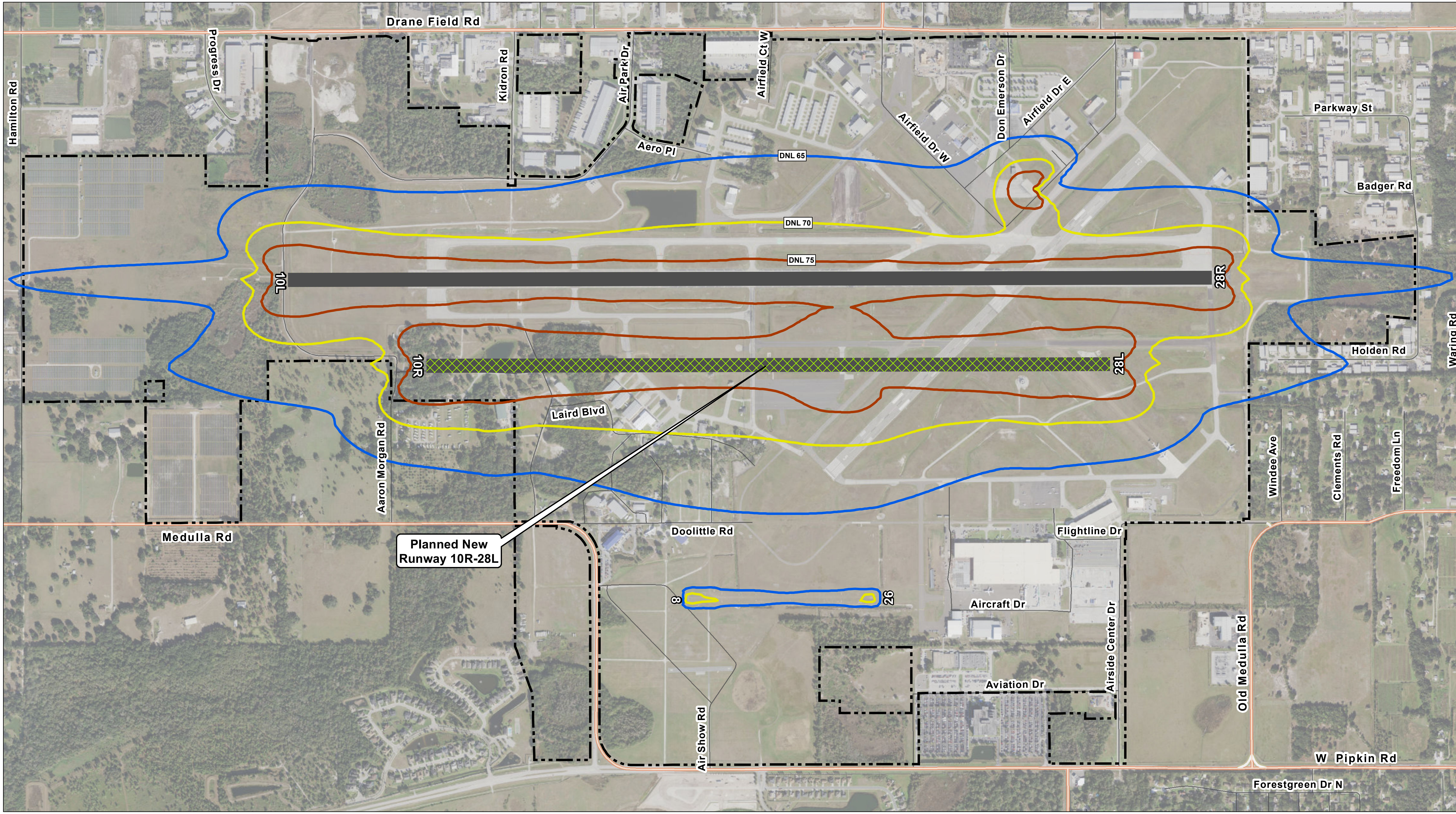
Lakeland Linder International Airport

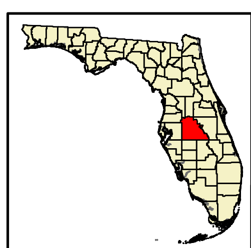
**Figure 6-8**

**2028 Future DNL Contours**

N W E S

ESA



Fly Lakeland
Lakeland Linder International Airport

0 450 900 1,800 Feet

LAL Property Line

Planned New Runway 10R-28L

**2038 DNL Contours**

65 dB

70 dB

75 dB

SOURCE: AEDT 2d; ESA, 2019. NOTE: DNL = Day-Night Equivalent Sound Level.

Lakeland Linder International Airport

**Figure 6-9**

**2038 Future DNL Contours**

N W E S

ESA

### 6.4.6. Best Planning Practices

Several best planning tenets were selected to determine the most responsible and implementable alternative within this AMP. These include:

- Flexibility to accommodate unforeseen change (e.g., increases or decreases in activity levels, changes to fleet mix, new users, etc.).
- Technically feasible (e.g., considers site constraints and other limitations).
- Conforms to the City's goals.

## 6.5. Preferred Development Alternatives

The following section presents the preferred development alternatives based on the evaluation of the alternatives presented in this chapter.

### 6.5.1. Preferred Airfield Development Alternative

**Figure 6-10** depicts the preferred airfield development alternative. The selected airfield development alternative is a combination of components of the development alternatives identified earlier in this chapter. Elements of each of the alternatives were combined to form the selected development alternative, which best meets the requirements outlined in the forecast of aviation activity as well as the facility requirements.

The selected development alternative incorporates the westerly extension of Runway 09/27. Prior to the extension of the runway, an ALSF is proposed to enable the airport to attain Cat III approach minimums required by existing and future users. The ALSF will be relocated as part of the runway extension.

In addition, construction of a new 7,400-foot by 150-foot wide parallel runway to Runway 09/27, with an ARC C-III, will provide for adequate separation of the varied fleet mix currently and forecasted to operate at the airport. Based on the approved forecast, the existing runway system will surpass 60 percent of the annual service volume (ASV) within five years. Prior to the end of the 20-year planning period, the ASV will approach 100 percent. Based on the current FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, and Draft FAA Order 5090.5, *Formulation of the NPIAS and ACIP,* planning and design of the new parallel runway should begin within five years, with construction being complete within 10 years.

The existing Runway 05/23 will be removed due to the construction of the proposed south parallel runway. This will open approximately 60 acres of developable airport property north of Taxiway A and east of existing Taxiway B (future Taxiway K). In addition, the removal of the runway crossings will increase capacity and limit the number of runway crossings while operating at LAL. Existing Taxiway B will be removed from the intersection of Taxiway A south to the fullest extent, due to new parallel taxiway infrastructure being proposed for the existing Runway 09/27 (future 10L/28R) and the proposed south parallel runway.

To alleviate existing complex taxiway geometry, improvements will be made to the existing Taxiway C (future Taxiway A8) intersection with Runway 27 (future Runway 28R). Supporting taxiway infrastructure is necessary to ensure the safety and efficiency of operations in and around the airport. Existing parallel Taxiway P (future Taxiway B) will be extended from the intersection of existing Taxiway F to existing Taxiway E, to create a full-length parallel taxiway to Runway 09/27 on the south side of the runway. In addition, existing Taxiway P (future Taxiway B) will be shifted to the south approximately 130'. This shift will accommodate the upgraded glide slope equipment clearance standards. The upgraded glideslope equipment will be installed between Runway 09/27 and existing Taxiway P. A new parallel taxiway will be constructed on the south side of the new parallel runway. Existing Taxiway E (future Taxiway D) will be removed between the new southern parallel taxiway and existing Taxiway E3 to allow for future aeronautical development in the southeast corner of the airport. Taxiway shoulders will be constructed on existing Taxiway A due to the anticipation of aircraft operating with an ADG IV designation.

The impact to the ROFA on the Runway 27 end will be mitigated through the relocation of the existing airport perimeter road to run outside the protective surface boundary. The remnants of the old perimeter road will be removed. The ROFA impact on the Runway 5/23 end will be mitigated through a requested ROFA Modification of Standards (MOS), which will serve until the crosswind runway is ultimately decommissioned.

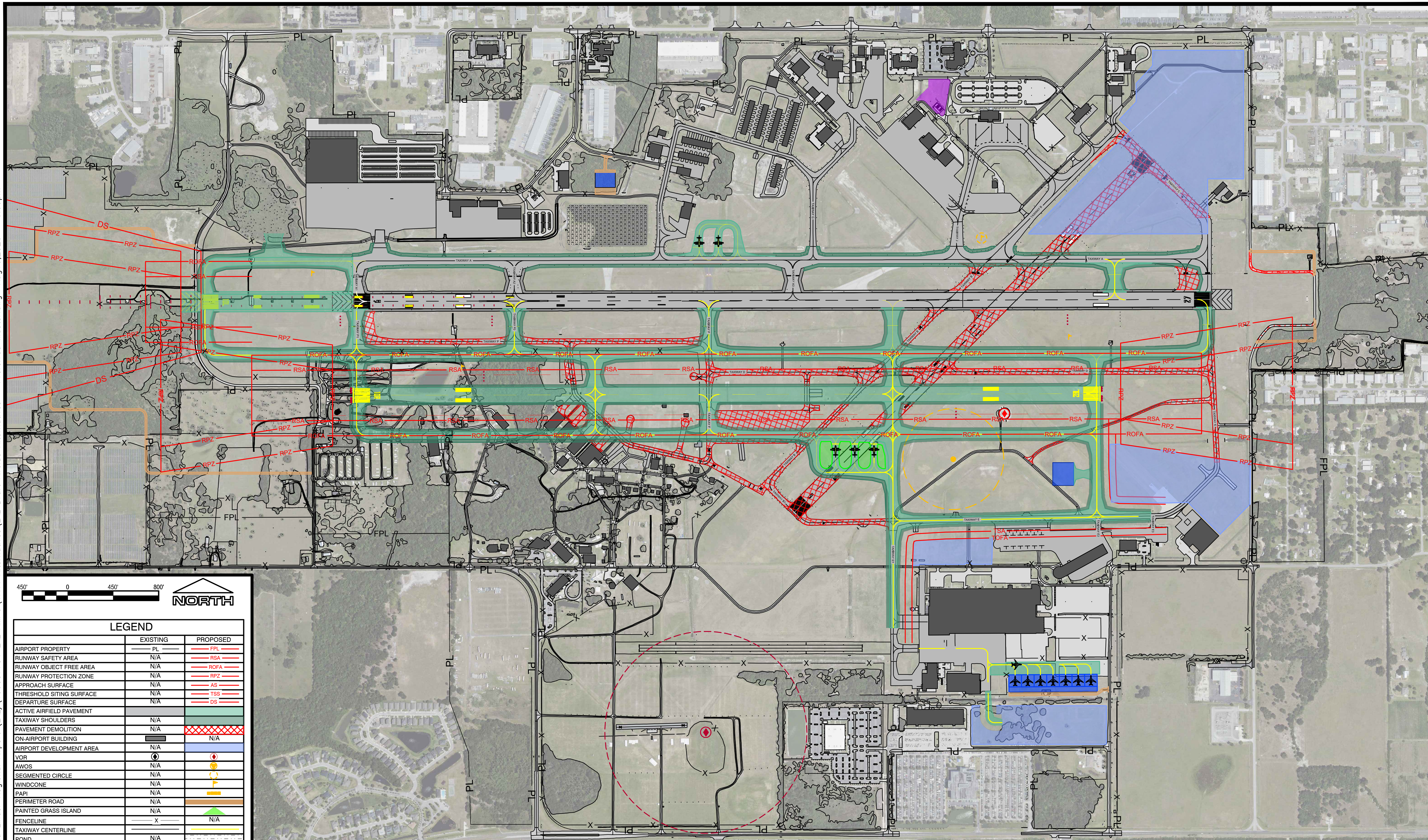
The VOR will be relocated to the southwest to meet the minimum separation requirements to the new parallel runway and southern parallel taxiway.

This alternative provides the capability to ensure the airport is as self-sustaining as possible, meets the needs of the current and future users, and continues to provide a significant economic impact to the local community and the overall region.

### 6.5.2. Preferred Terminal Development Alternative

**Figure 6-11** depicts the preferred terminal development alternative. Similar to the selected airside development alternative, the selected terminal development alternative integrated the most preferred development from each of the alternatives. The selected terminal development alternative includes relocation of the business aviation facilities to a centralized business aviation sector by relocating the FBO and FBO hangars nearby the terminal apron to the southwest. Additional hangar facilities are identified central to the relocated FBO facilities and apron. Additionally, an access road network is included, providing a dedicated access road for general aviation hangar facilities, removing the need for vehicular traffic on the aprons and taxiways. Relocation of the business aviation facilities allows for reservation of land for future expansion of the terminal building and terminal apron to the west and east of the existing terminal. The substantial increase of fuel storage proposed off existing Taxilane H (future Taxilane E) and Aero Pl., will accommodate the exponential increase in operations.

Land for future terminal support facilities such as terminal parking, rental car facilities, and commercial development is identified to the northeast and northwest of the terminal. These facilities will enhance the efficiency of the terminal area, while improving the safety of operations by separating the commercial, business, and general aviation users. Capacity constraints which currently exist due to the proximity of the various user groups will be alleviated through the planned future development layout of the north terminal area.




| LEGEND | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY | PL | FPL |
| RUNWAY SAFETY AREA | N/A | RSA |
| RUNWAY OBJECT FREE AREA | N/A | ROFA |
| RUNWAY PROTECTION ZONE | N/A | RPZ |
| APPROACH SURFACE | N/A | AS |
| THRESHOLD SITING SURFACE | N/A | TSS |
| DEPARTURE SURFACE | N/A | DS |
| ACTIVE AIRFIELD PAVEMENT | | |
| TAXIWAY SHOULDERS | N/A | |
| PAVEMENT DEMOLITION | N/A | |
| ON-AIRPORT BUILDING | | N/A |
| AIRPORT DEVELOPMENT AREA | N/A | |
| VOR | | |
| AWOS | N/A | |
| SEGMENTED CIRCLE | N/A | |
| WINDCONE | N/A | |
| PAPI | N/A | |
| PERIMETER ROAD | N/A | |
| PAINTED GRASS ISLAND | N/A | |
| FENCELINE | X | N/A |
| TAXIWAY CENTERLINE | | |
| POND | N/A | |

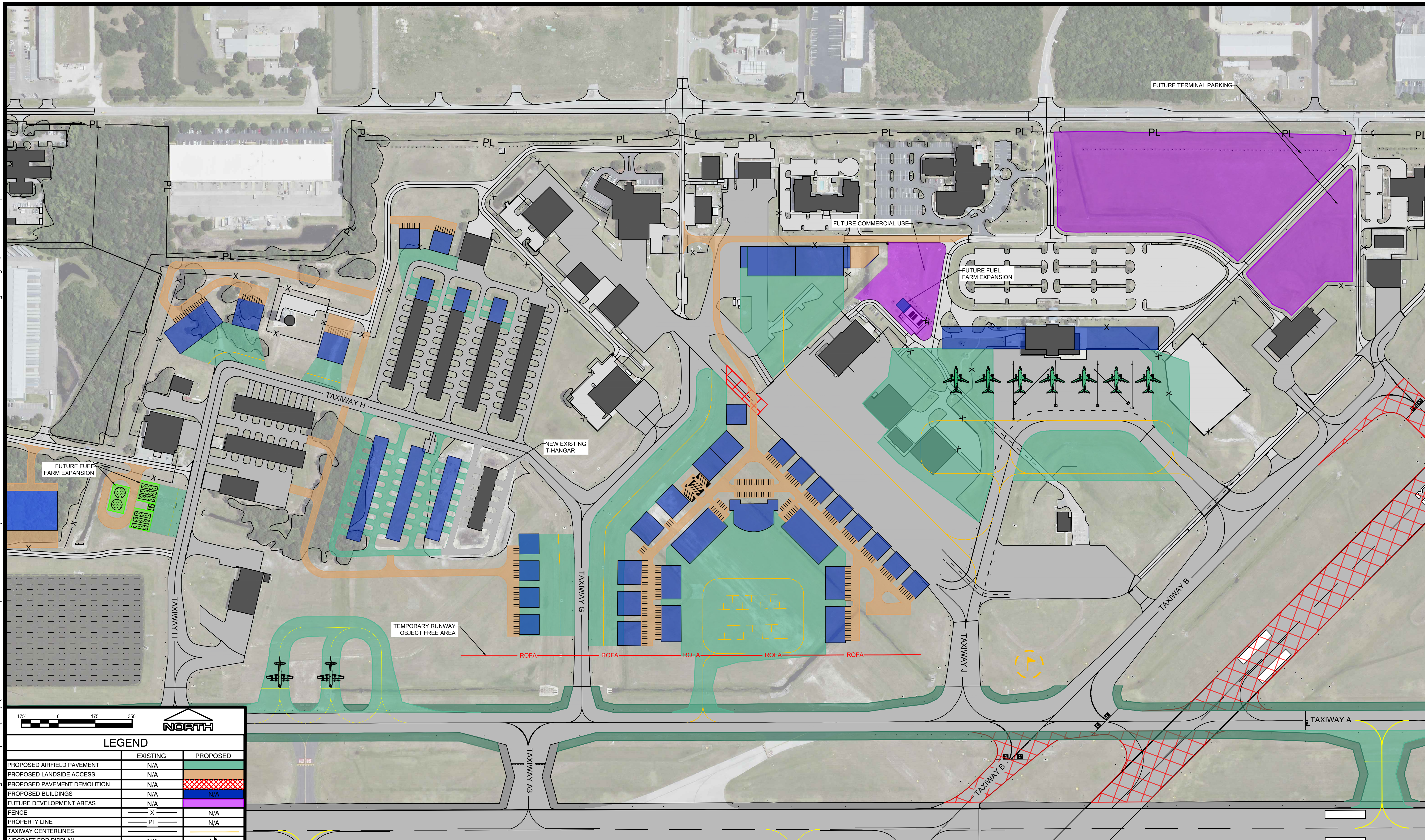
ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Airside Alternative Preferred Alternative

Figure 6-10




ATKINS
Member of the SNC-Lavalin Group

FlyLakeland
Lakeland Linder International Airport

Lakeland Linder International Airport
Airport Master Plan Update

Preferred Terminal Development Alternative

Figure 6-11

## 6.6. Alternatives Evaluation Summary

The evaluation criteria described above were applied to each airside and terminal alternative based on the initial input from the Airport staff. Based on the overall assessment, each criterium was assigned a rating for comparison. The rating system is based on the Consumer Reports method.

All alternatives were evaluated independently due to their variations. As a result of the evaluation summaries, depicted in **Figure 6-12**, Airfield Alternative 1 scored the highest, followed by Airfield Alternative 2, while Airfield Alternative 3 scored the lowest. Terminal alternatives were evaluated based on similar criteria and are depicted in **Figure 6-13**. Terminal Alternative A scored the highest, but only by one point over terminal Alternative B. A no-change alternative was also evaluated as a baseline, incorporating ongoing projects at the airport with a no-change scenario for the future terminal area development. The no-change alternative scored the lowest. As a result of the evaluation summary, and discussions with the airport and technical advisory committee, the selected terminal alternative incorporates various design elements from both terminal Alternatives A and B.

**Figure 6-12 Airfield Alternatives Evaluation Matrix**

## Alternatives Evaluation Criteria

### Lakeland Linder International Airport

| ● = 1 ◐ = 0 ○ = -1 | Pref. Alt | Alt. 1 | Alt. 2 | Alt. 3 |
|---|---|---|---|---|
| **Financial Feasibility** | | | | |
| Development Costs | ◐ | ◐ | ○ | ○ |
| Job Creation | ◐ | ◐ | ◐ | ◐ |
| Financial Sustainability | ● | ● | ● | ● |
| **Operational Performance** | | | | |
| Capacity | ● | ● | ● | ◐ |
| Capability | ● | ● | ● | ◐ |
| Operational Efficiency | ● | ● | ● | ● |
| **Environmental** | | | | |
| Air Quality | ◐ | ◐ | ◐ | ◐ |
| Biological Resources | ○ | ○ | ○ | ○ |
| HazMat/Waste | ◐ | ◐ | ◐ | ◐ |
| Land Use | ◐ | ◐ | ○ | ○ |
| Noise | ◐ | ◐ | ◐ | ○ |
| Climate | ◐ | ◐ | ◐ | ◐ |
| DOT Section 4(f) | ○ | ○ | ○ | ◐ |
| NHPA Section 106 | ◐ | ◐ | ◐ | ◐ |
| Visual/Lighting Effects | ◐ | ◐ | ◐ | ◐ |
| Water Resources | ○ | ○ | ○ | ○ |
| **Best Planning Practices** | | | | |
| Flexibility | ● | ● | ● | ● |
| Technically Feasible | ● | ● | ● | ◐ |
| Conforms to City's Goals | ● | ● | ● | ◐ |
| **Sustainability Goals** | | | | |
| Overall Support of Sustainability | ● | ● | ◐ | ◐ |
| **Evaluation** | | | | |
| Score | 5 | 5 | 2 | -2 |
| **Summary** | | | | |
| Ranking | --- | 1 | 2 | 3 |

**Key**

| | |
|---|---|
| ● = 1 | This symbol represents a positive impact, an improvement or benefit, a lower anticipated cost, a higher level of flexibility, or a lower impact to the environment. |
| ◐ = 0 | This symbol represents maintaining a similar level or benefit, an average cost, an average level of flexibility, or average potential environmental impact. |
| ○ = -1 | This symbol represents an improvement that is not anticipated to meet the need, a higher cost, limited flexibility, and higher than normal environmental impacts. |

**Figure 6-13 Terminal Alternatives Evaluation Matrix**

## Alternatives Evaluation Criteria

Lakeland Linder International Airport

| ● = 1 ◑ = 0 ○ = -1 | Pref. Alt | Alt. A | Alt. B | No Change |
|---|---|---|---|---|
| **Financial Feasibility** | | | | |
| Development Costs | ○ | ○ | ◑ | ● |
| Job Creation | ● | ● | ◑ | ○ |
| Financial Sustainability | ● | ● | ● | ◑ |
| **Operational Performance** | | | | |
| Capacity | ● | ● | ● | ○ |
| Capability | ● | ● | ● | ◑ |
| Operational Efficiency | ● | ◑ | ● | ◑ |
| **Environmental** | | | | |
| Air Quality | ◑ | ◑ | ◑ | ◑ |
| Biological Resources | ○ | ○ | ○ | ○ |
| HazMat/Waste | ◑ | ◑ | ◑ | ◑ |
| Land Use | ◑ | ◑ | ◑ | ◑ |
| Noise | ◑ | ◑ | ◑ | ◑ |
| Climate | ◑ | ◑ | ◑ | ◑ |
| DOT Section 4(f) | ◑ | ◑ | ◑ | ◑ |
| NHPA Section 106 | ◑ | ◑ | ◑ | ◑ |
| Visual/Lighting Effects | ◑ | ◑ | ◑ | ◑ |
| Water Resources | ◑ | ◑ | ◑ | ◑ |
| **Best Planning Practices** | | | | |
| Flexibility | ● | ● | ◑ | ○ |
| Technically Feasible | ● | ● | ● | ◑ |
| Conforms to City's Goals | ● | ● | ◑ | ○ |
| **Sustainability Goals** | | | | |
| Overall Support of Sustainability | ◑ | ◑ | ◑ | ◑ |
| **Evaluation** | | | | |
| Score | 6 | 5 | 4 | -4 |
| **Summary** | | | | |
| Ranking | --- | 1 | 2 | 3 |

**Key**

| | |
|---|---|
| ● = 1 | This symbol represents a positive impact, an improvement or benefit, a lower anticipated cost, a higher level of flexibility, or a lower impact to the environment. |
| ◑ = 0 | This symbol represents maintaining a similar level or benefit, an average cost, an average level of flexibility, or average potential environmental impact. |
| ○ = -1 | This symbol represents an improvement that is not anticipated to meet the need, a higher cost, limited flexibility, and higher than normal environmental impacts. |

This Page Intentionally Left Blank

# Airport Layout Plan

Lakeland Linder International Airport

# 7. Airport Layout Plan

## 7.1. Introduction

The Airport Layout Plan (ALP) is a set of drawings that provides a graphical representation of the 20-year development plan that is discussed in this master plan. Each airports ALP can differ depending on the complexity of the airport and any special focus areas. The ALP provides a blueprint for future airport development and should be used in conjunction with this master plan in order to gain a full understanding of the purpose and need for all development that has been identified.

The ALP is a requirement of 49 U.S.C. § 47107(a)(16). All development at the airport must follow the approved ALP to ensure safety, utility, and efficiency of the airport. The FAA requires that the ALP be kept up-to-date to ensure compliance with this law.

The following sheets are included in the ALP set. All sheets presented in this chapter have been reduced to 11 inches by 17 inches and may not be to scale.

- Cover Sheet
- Existing Conditions
- Airport Layout Plan
- Airport Data Sheet
- Terminal Layout Plan (2)
- Inner Approach Plan & Profile (7)
- Airport Airspace Surfaces (3)
- Departure Surface Drawing (4)
- Airport Land Use Plan
- Exhibit ‘A’ – Airport Property Inventory Map (2)

## 7.2. Cover Sheet

The cover sheet is a required sheet and provides all baseline information regarding the ALP set that is contained therein. The cover sheet includes the official airport name, airport owner, associated city and state, the party responsible for preparation of the ALP set, an index of drawings, and graphical representation of the airport’s regional location.

**Figure 7-1** presents the ALP Cover Sheet.

## 7.3. Existing Condition

The existing conditions drawing presents the airport as of today. The drawing includes all areas of the airport and displays all existing infrastructure, including but not limited to runways, taxiways, aprons, buildings, on-airport roadways, air traffic control tower, etc. All infrastructure is labeled and identified further on the corresponding airport data sheet. Additionally, all imaginary surfaces, including but not limited to the Runway Safety Area, Runway Object Free Area, Runway Protection Zone, Precision Approach Path Indicator Obstruction Clearance Surface, Approach and Departure Surfaces, Taxiway Safety Area, and Taxiway Object Free Area.

**Figure 7-2** presents the Existing Conditions Sheet.

## 7.4. Airport Layout Plan

The Airport Layout Plan (ALP) drawing presents the planned airport development over the following 20-year period. The drawing includes all elements of the existing conditions drawing but adds all future development and associated imaginary surfaces and labels. The ALP drawing is required by law to be kept up-to-date. Following all development on airport property, the ALP should be reviewed and, if necessary, updated, to reflect the recent change.

**Figure 7-3** presents the Airport Layout Plan drawing.

## 7.5. Airport Data Sheet

The airport data sheet provides all key data related to the overall airport location, runways, taxiways, imaginary surfaces, navigational aids, lighting, declared distances, wind coverage data, and any modifications to airport design standards, if applicable. All tables included on the airport data sheet present the existing and future data.

Wind data analyzed for this master plan was compiled from the National Oceanic and Atmospheric Administration (NOAA) Integrated Surface Database for a 10-year period from 2010 to 2019.

**Figure 7-4** presents the Airport Data Sheet.

## 7.6. Terminal Layout Plan

The Terminal Layout Plan provides greater detail of the airport's various terminal areas. As the terminal areas at the airport are divided on the north and south sides of the runways, two (2) terminal layout plans were necessary to show the extents of both terminal areas. Additional detail such as apron dimensions, annotations, and offsets between various design elements are presented within the terminal layout plans.

**Figure 7-5** and **Figure 7-6** present the Terminal Layout Plans.

## 7.7. Inner Approach Plan & Profile

The inner approach plan and profile drawings present critical natural and man-made features along the extended runway centerlines. The plan and profile drawings include the inner portion of the approach, up until the approach surface reaches at least 100-feet above threshold elevation. The sheets assist in identification and mitigation of any potential obstructions that may impact the safe and efficient operation of aircraft. All objects identified on the inner approach plan and profile are included on the associated obstruction tables which include further details and are located on the corresponding sheet, and/or a supplemental data sheet. The elevation of the extended runway centerline and the critical ground profile are displayed, along with a representative icon for all traverse ways, vegetation, poles, towers, etc. Adjustments were made to identify the potential maximum elevation of an object on each traverse way.

All data presented in these sheets was obtained by survey in September 2018.

**Figure 7-7**, **Figure 7-8**, **Figure 7-9**, **Figure 7-10**, **Figure 7-11**, **Figure 7-12**, and **Figure 7-13** present the Inner Approach Plan and Profile drawings for all existing and future runway ends.

## 7.8. Airport Airspace Surfaces

The Airport Airspace Surfaces sheets depict the critical natural and man-made features surrounding the airport, outside of the inner approach. The sheets depict imaginary surfaces presented in Title 14 CFR Part 77, *Safe, Efficient Use, and Preservation of Navigable Airspace*, in relation to the runway ends and airport elevation. Objects that may impact the safe and efficient operation of aircraft are identified, and further details are provided in obstruction data tables included on the corresponding sheet, and/or a supplemental data sheet. The airspace surfaces include the primary, approach, transitional, horizontal, and conical surfaces based on the most demanding category and type of existing, or planned, approach.

**Figure 7-14, Figure 7-15**, and **Figure 7-16** present the Airport Airspace Surface drawings.

## 7.9. Departure Surface Drawing Sheets

The Departure Surface Drawings depict the critical natural and man-made features located within the departure for each existing and planned runway end. All obstructions are further identified on data tables included on the corresponding sheet, and/or a supplemental data sheet. Similar to the inner approach and airport airspace surface sheets, identification of objects within the departure surface assist with mitigation of potential obstructions that may impact the safe and efficient operation of aircraft. The elevation of the extended runway centerline and the critical ground profile are displayed, along with a representative icon for all traverse ways, vegetation, poles, towers, etc. Adjustments were made to identify the potential maximum elevation of an object on each traverse way.

**Figure 7-17**, **Figure 7-18**, **Figure 7-19**, and **Figure 7-20** present the departure surface drawings.

## 7.10. Airport Land Use Plan

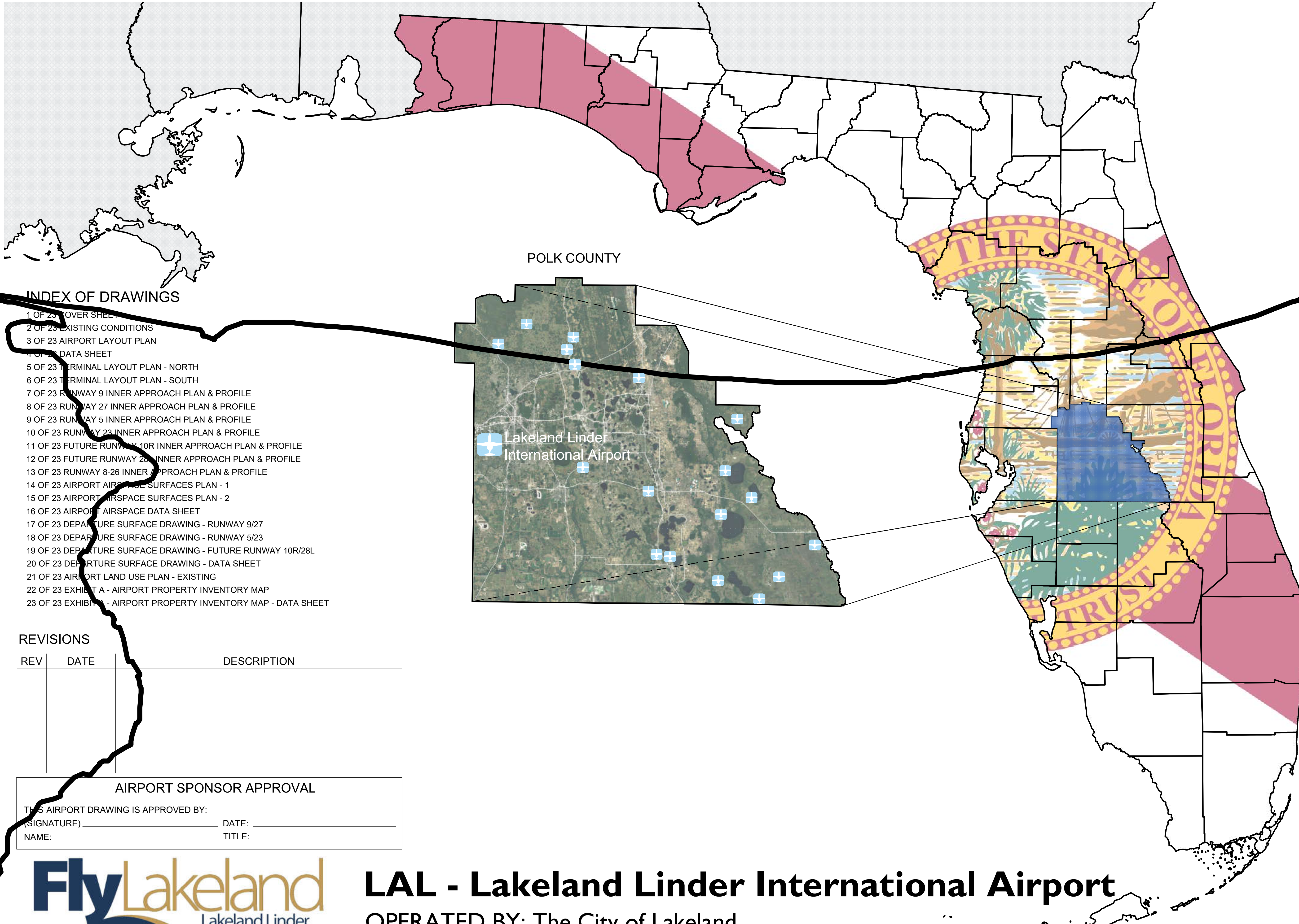
The Airport Land Use Plan presents the on- and off-airport land uses surrounding the airport. Off-airport land uses were obtained from the City of Lakeland and Polk County. The land use map provides the airport, City, and County government an aid in future municipal planning efforts and zoning. Airports are encouraged to work with the neighboring City and County governments to ensure compatible land uses, especially in areas adjacent to or in the immediate vicinity of the airport to activities compatible with normal airport operations.

**Figure 7-21** presents the Airport Land Use Map.

## 7.11. Exhibit ‘A’ – Airport Property Inventory Map

The Exhibit ‘A’ Airport Property Inventory Map provides an inventory of all parcels that make up the dedicated airport property. The Exhibit ‘A’ documents how and when each parcel was acquired, the funding source used to acquire the property, or if the property was conveyed to the airport as Federal Surplus land or Government Property. The Exhibit ‘A’ also identifies any future land needed for airport development or for protection of the runway approaches. In addition to all parcels currently owned by the airport, the Exhibit ‘A’ must document all former parcels owned by the airport and when they were released/sold.

**Figure 7-22** and **Figure 7-23** present the Exhibit ‘A’ Airport Property Inventory Map and associated data sheet.




## INDEX OF DRAWINGS



## REVISIONS

| REV | DATE | DESCRIPTION |
|---|---|---|

### AIRPORT SPONSOR APPROVAL

THIS AIRPORT DRAWING IS APPROVED BY: ______________________

(SIGNATURE) ______________________ DATE: ______________________

NAME: ______________________ TITLE: ______________________

FlyLakeland Lakeland Linder International Airport

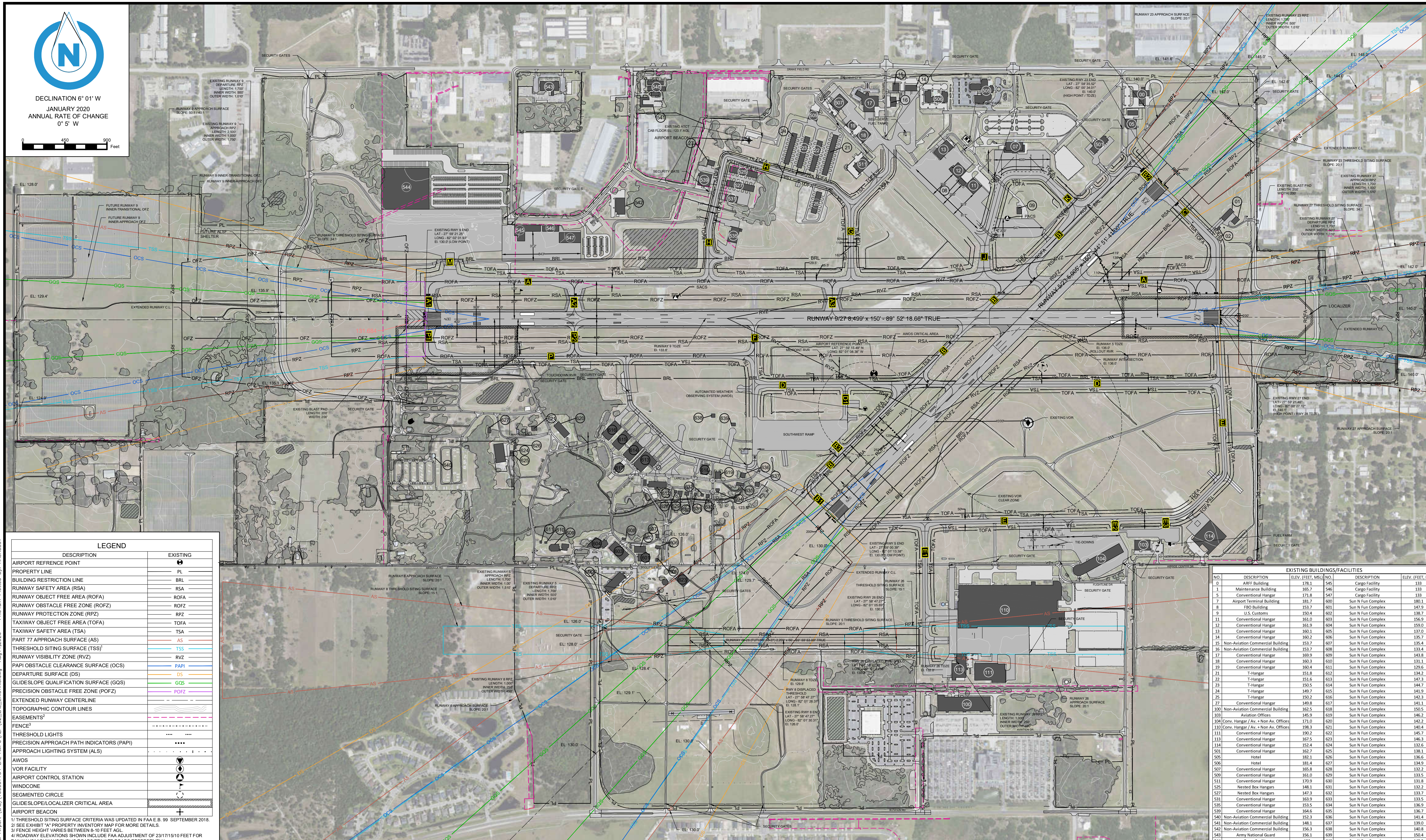
# LAL - Lakeland Linder International Airport

OPERATED BY: The City of Lakeland

# AIRPORT LAYOUT PLAN

AUGUST 2020

PREPARED BY
ATKINS
4030 West Boy Scout Blvd Suite 700 Tampa, Florida 33607
Tel: (321) 775-6231
www.atkinsglobal.com/northamerica




## LEGEND

| DESCRIPTION | EXISTING |
|---|---|
| AIRPORT REFRENCE POINT | |
| PROPERTY LINE | PL |
| BUILDING RESTRICTION LINE | BRL |
| RUNWAY SAFETY AREA (RSA) | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA |
| RUNWAY OBSTACLE FREE ZONE (ROFZ) | ROFZ |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ |
| TAXIWAY OBJECT FREE AREA (TOFA) | TOFA |
| TAXIWAY SAFETY AREA (TSA) | TSA |
| PART 77 APPROACH SURFACE (AS) | AS |
| THRESHOLD SITING SURFACE (TSS)[1] | TSS |
| RUNWAY VISIBILITY ZONE (RVZ) | RVZ |
| PAPI OBSTACLE CLEARANCE SURFACE (OCS) | PAPI |
| DEPARTURE SURFACE (DS) | DS |
| GLIDESLOPE QUALIFICATION SURFACE (GQS) | GQS |
| PRECISION OBSTACLE FREE ZONE (POFZ) | POFZ |
| EXTENDED RUNWAY CENTERLINE | |
| TOPOGRAPHIC CONTOUR LINES | |
| EASEMENTS[2] | |
| FENCE[3] | |
| THRESHOLD LIGHTS | |
| PRECISION APPROACH PATH INDICATORS (PAPI) | |
| APPROACH LIGHTING SYSTEM (ALS) | |
| AWOS | |
| VOR FACILITY | |
| AIRPORT CONTROL STATION | |
| WINDCONE | |
| SEGMENTED CIRCLE | |
| GLIDESLOPE/LOCALIZER CRITICAL AREA | |
| AIRPORT BEACON | |

1/ THRESHOLD SITING SURFACE CRITERIA WAS UPDATED IN FAA E.B. 99 SEPTEMBER 2018.
2/ SEE EXHIBIT "A" PROPERTY INVENTORY MAP FOR MORE DETAILS.
3/ FENCE HEIGHT VARIES BETWEEN 8-10 FEET AGL.
4/ ROADWAY ELEVATIONS SHOWN INCLUDE FAA ADJUSTMENT OF 23/17/15/10 FEET FOR RAILWAYS/HIGHWAYS/PUBLIC ROADS/PRIVATE ROADS RESPECTIVELY

## EXISTING BUILDINGS/FACILITIES

| NO. | DESCRIPTION | ELEV. (FEET, MSL) | NO. | DESCRIPTION | ELEV. (FEET, MSL) |
|---|---|---|---|---|---|
| 0 | ARFF Building | 178.1 | 545 | Cargo Facility | 133 |
| 1 | Maintenance Building | 165.7 | 546 | Cargo Facility | 133 |
| 5 | Conventional Hangar | 171.8 | 547 | Cargo Facility | 133 |
| 7 | Airport Terminal Building | 181.7 | 600 | Sun N Fun Complex | 180.1 |
| 8 | FBO Building | 153.7 | 601 | Sun N Fun Complex | 147.9 |
| 9 | U.S. Customs | 150.4 | 602 | Sun N Fun Complex | 138.7 |
| 11 | Conventional Hangar | 161.0 | 603 | Sun N Fun Complex | 156.9 |
| 12 | Conventional Hangar | 161.9 | 604 | Sun N Fun Complex | 159.0 |
| 13 | Conventional Hangar | 160.1 | 605 | Sun N Fun Complex | 137.0 |
| 14 | Conventional Hangar | 160.2 | 606 | Sun N Fun Complex | 135.7 |
| 15 | Non-Aviation Commercial Building | 153.7 | 607 | Sun N Fun Complex | 135.4 |
| 16 | Non-Aviation Commercial Building | 153.7 | 608 | Sun N Fun Complex | 133.4 |
| 17 | Conventional Hangar | 169.9 | 609 | Sun N Fun Complex | 143.8 |
| 18 | Conventional Hangar | 160.3 | 610 | Sun N Fun Complex | 131.1 |
| 19 | Conventional Hangar | 160.4 | 611 | Sun N Fun Complex | 129.6 |
| 21 | T-Hangar | 151.8 | 612 | Sun N Fun Complex | 134.2 |
| 22 | T-Hangar | 151.6 | 613 | Sun N Fun Complex | 147.3 |
| 23 | T-Hangar | 150.5 | 614 | Sun N Fun Complex | 144.7 |
| 24 | T-Hangar | 149.7 | 615 | Sun N Fun Complex | 141.9 |
| 25 | T-Hangar | 150.2 | 616 | Sun N Fun Complex | 142.3 |
| 27 | Conventional Hangar | 149.8 | 617 | Sun N Fun Complex | 141.1 |
| 100 | Non-Aviation Commercial Building | 162.5 | 618 | Sun N Fun Complex | 150.5 |
| 103 | Aviation Offices | 145.9 | 619 | Sun N Fun Complex | 146.2 |
| 104 | Conv. Hangar / Av. + Non Av. Offices | 171.0 | 620 | Sun N Fun Complex | 142.2 |
| 110 | Conv. Hangar / Av. + Non Av. Offices | 198.3 | 621 | Sun N Fun Complex | 140.4 |
| 111 | Conventional Hangar | 190.2 | 622 | Sun N Fun Complex | 145.7 |
| 113 | Conventional Hangar | 167.5 | 623 | Sun N Fun Complex | 146.3 |
| 114 | Conventional Hangar | 152.4 | 624 | Sun N Fun Complex | 132.6 |
| 501 | Conventional Hangar | 162.7 | 625 | Sun N Fun Complex | 138.1 |
| 505 | Hotel | 182.1 | 626 | Sun N Fun Complex | 136.6 |
| 506 | Hotel | 181.4 | 627 | Sun N Fun Complex | 134.9 |
| 507 | Conventional Hangar | 165.8 | 628 | Sun N Fun Complex | 132.2 |
| 509 | Conventional Hangar | 161.0 | 629 | Sun N Fun Complex | 133.5 |
| 511 | Conventional Hangar | 170.9 | 630 | Sun N Fun Complex | 131.8 |
| 525 | Nested Box Hangars | 148.1 | 631 | Sun N Fun Complex | 132.2 |
| 527 | Nested Box Hangars | 147.3 | 632 | Sun N Fun Complex | 133.7 |
| 531 | Conventional Hangar | 163.9 | 633 | Sun N Fun Complex | 133.5 |
| 535 | Conventional Hangar | 153.5 | 634 | Sun N Fun Complex | 136.9 |
| 539 | Conventional Hangar | 164.6 | 635 | Sun N Fun Complex | 136.7 |
| 540 | Non-Aviation Commercial Building | 152.3 | 636 | Sun N Fun Complex | 141.4 |
| 541 | Non-Aviation Commercial Building | 148.1 | 637 | Sun N Fun Complex | 139.0 |
| 542 | Non-Aviation Commercial Building | 156.3 | 638 | Sun N Fun Complex | 140.8 |
| 543 | Army National Guard | 156.1 | 639 | Sun N Fun Complex | 150.4 |
| 544 | Cargo Facility | 136 | 640 | Sun N Fun Complex | 143.3 |

REVISIONS

| DATE | DESCRIPTION |
|---|---|
| | |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

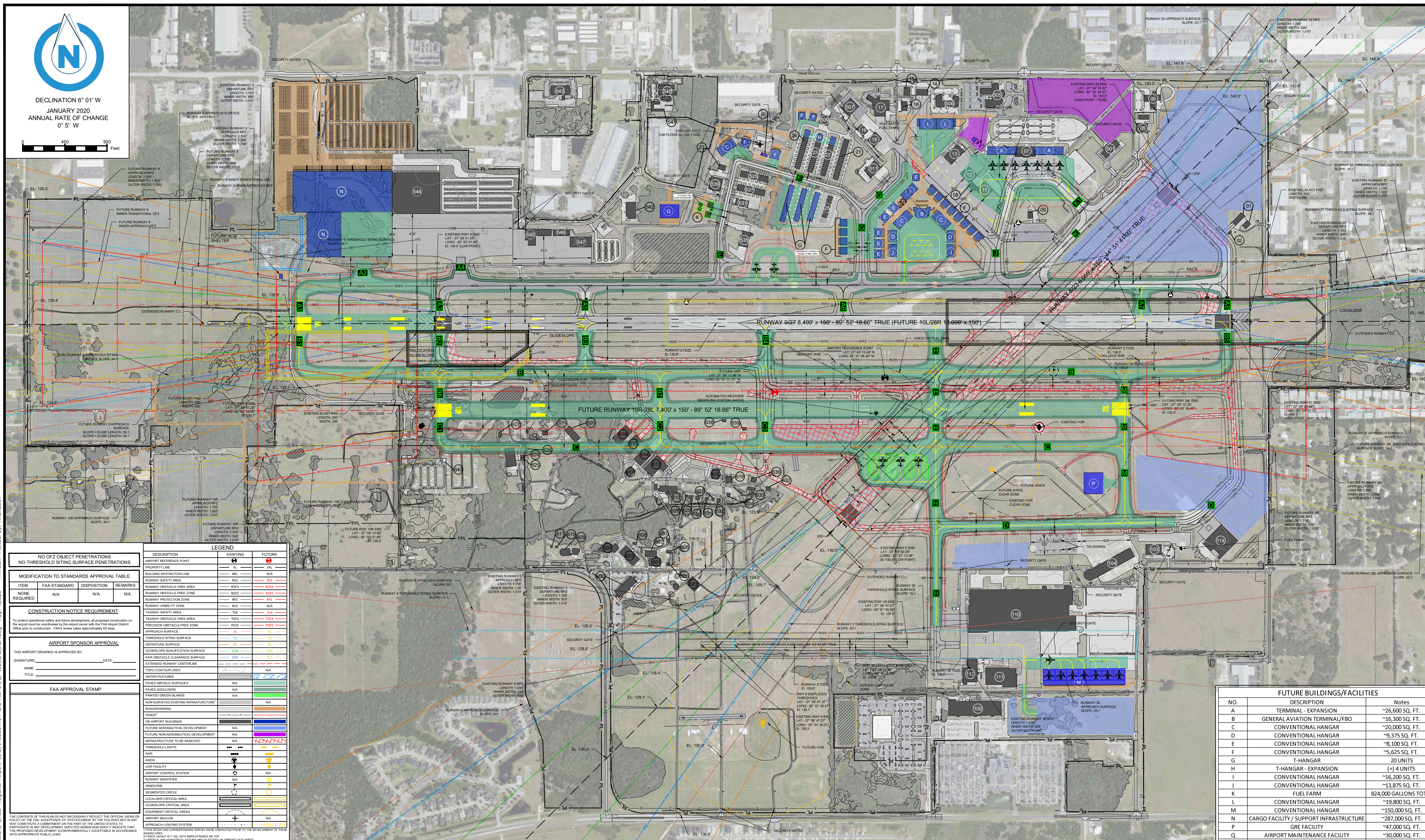
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

# EXISTING CONDITIONS

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020




| NO OFZ OBJECT PENETRATIONS<br>NO THRESHOLD SITING SURFACE PENETRATIONS |
|---|

**MODIFICATION TO STANDARDS APPROVAL TABLE**

| ITEM | FAA STANDARD | DISPOSITION | REMARKS |
|---|---|---|---|
| NONE REQUIRED | N/A | N/A | N/A |

**CONSTRUCTION NOTICE REQUIREMENT**

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airport District Office prior to construction. FAA's review takes approximately 60 days.

**AIRPORT SPONSOR APPROVAL**

THIS AIRPORT DRAWING IS APPROVED BY:

(SIGNATURE) ____________________ DATE: ________

NAME: ____________________

TITLE: ____________________

**FAA APPROVAL STAMP**

THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

**LEGEND**

| DESCRIPTION | EXISTING | FUTURE |
|---|---|---|
| AIRPORT REFERENCE POINT | | |
| PROPERTY LINE | PL | FPL |
| BUILDING RESTRICTION LINE | BRL | N/A |
| RUNWAY SAFETY AREA | RSA | RSA |
| RUNWAY OBSTACLE FREE AREA | ROFA | ROFA |
| RUNWAY OBSTACLE FREE ZONE | ROFZ | ROFZ |
| RUNWAY PROTECTION ZONE | RPZ | RPZ |
| RUNWAY VISIBILITY ZONE | RVZ | N/A |
| TAXIWAY SAFETY AREA | TSA | TSA |
| TAXIWAY OBSTACLE FREE AREA | TOFA | TOFA |
| PRECISION OBSTACLE FREE ZONE | POFZ | POFZ |
| APPROACH SURFACE | AS | AS |
| THRESHOLD SITING SURFACE | TSS | TSS |
| DEPARTURE SURFACE | DS | DS |
| GLIDESLOPE QUALIFICATION SURFACE | GQS | GQS |
| PAPI OBSTACLE CLEARANCE SURFACE | OCS | OCS |
| EXTENDED RUNWAY CENTERLINE | | |
| TOPO CONTOUR LINES | | N/A |
| WATER FEATURES | | |
| PAVED AIRFIELD SURFACES | N/A | |
| PAVED SHOULDERS | N/A | |
| PAINTED GREEN ISLANDS | N/A | |
| NON-SURVEYED EXISTING INFRASTURCTURE[1] | | N/A |
| ROADS/PARKING | | |
| FENCE[2] | X X | X X |
| ON AIRPORT BUILDINGS | | |
| FUTURE AERONAUTICAL DEVELOPMENT | N/A | |
| FUTURE NON-AERONAUTICAL DEVELOPMENT | N/A | |
| INFRASTRUCTURE TO BE REMOVED | N/A | |
| THRESHOLD LIGHTS | | |
| PAPI | | |
| AWOS | | |
| VOR FACILITY | | |
| AIRPORT CONTROL STATION | | N/A |
| RUNWAY IDENTIFIER | N/A | |
| WINDCONE | | |
| SEGMENTED CIRCLE | | |
| LOCALIZER CRITICAL AREA | | |
| GLIDESLOPE CRITICAL AREA | | |
| EQUIPMENT CRITICAL AREAS | | |
| AIRPORT BEACON | | N/A |
| APPROACH LIGHTING SYSTEM | | |

1/ THIS STUDY AND CORRESPONDING SURVEY WERE COMPLETED PRIOR TO THE DEVELOPMENT OF THESE SHADED ARES.
2/ FENCE HEIGHT IS 7' AGL WITH BARB STRANDS ON TOP.
3/ VERTICAL AND HORIZONTAL DATUMS ARE AS STATED ON AIRPORT DATA SHEET.
4/ ROADWAY ELEVATIONS SHOWN INCLUDE FAA ADJUSTMENT OF 23/17/15/10 FEET FOR RAILWAYS/HIGHWAYS/PUBLIC ROADS/PRIVATE ROADS RESPECTIVELY

**FUTURE BUILDINGS/FACILITIES**

| NO. | DESCRIPTION | Notes |
|---|---|---|
| A | TERMINAL - EXPANSION | ~26,600 SQ. FT. |
| B | GENERAL AVIATION TERMINAL/FBO | ~16,300 SQ. FT. |
| C | CONVENTIONAL HANGAR | ~20,000 SQ. FT. |
| D | CONVENTIONAL HANGAR | ~9,375 SQ. FT. |
| E | CONVENTIONAL HANGAR | ~8,100 SQ. FT. |
| F | CONVENTIONAL HANGAR | ~5,625 SQ. FT. |
| G | T-HANGAR | 20 UNITS |
| H | T-HANGAR - EXPANSION | (+) 4 UNITS |
| I | CONVENTIONAL HANGAR | ~16,200 SQ. FT. |
| J | CONVENTIONAL HANGAR | ~13,875 SQ. FT. |
| K | FUEL FARM | 824,000 GALLONS TOTAL |
| L | CONVENTIONAL HANGAR | ~19,800 SQ. FT. |
| M | CONVENTIONAL HANGAR | ~150,000 SQ. FT. |
| N | CARGO FACILITY / SUPPORT INFRASTRUCTURE | ~287,000 SQ. FT. |
| P | GRE FACILITY | ~47,000 SQ. FT. |
| Q | AIRPORT MAINTENANCE FACILITY | ~30,000 SQ. FT. |
| R | AIRPORT LIGHTING VAULT | ~1,800 SQ. FT. |

\\tsmbs1000\Aviation\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\ALP\03_LAL_ALP.dwg Aug14,2020 – 11:15am Plotted By: HASK8597

**REVISIONS**

| DATE | DESCRIPTION |
|---|---|
| | |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

# AIRPORT LAYOUT PLAN


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

SHEET 3 OF 23

| AIRPORT DATA TABLE | | | |
|---|---|---|---|
| ITEM | | EXISTING | PROPOSED |
| AIRPORT REFERENCE CODE (ARC) | | C-III | C-IV |
| MEAN MAX. TEMP OF HOTTEST MONTH | | 89.6°F ; JULY | SAME |
| AIRPORT ELEVATION (MSL) | | 142.0' | SAME |
| NAVAIDS | | ILS / PAPI / GPS / VOR / BEACON / RVR | |
| AIRPORT REFERENCE POINT | LATITUDE | 27° 59' 15.49" N | 27° 59' 13.98" N |
| | LONGITUDE | 082° 01' 08.38" W | 082° 01' 21.51" W |
| MISC. FACILITIES | | SEGMENTED CIRCLE / LIGHTED WIND CONE / AWOS | |
| CRITICAL AIRCRAFT | | BOEING 737-700 | BOEING 767-300F |
| WINGSPAN | | 112' 7" | 156' 1" |
| MAIN GEAR WIDTH/COCKPIT TO MAIN GEAR | | 18' 9" / 41' 4" | 30' 6" / 74' 8" |
| APPROACH SPEED | | 130 KTS | 140 KTS |
| MAGNETIC VARIATION (DEC 2019) | | 6° 0' | 0°5' WEST PER YEAR |
| NPIAS SERVICE LEVEL | | RELIEVER/NATIONAL | SAME |
| STATE EQUIVALENT SERVICE LEVEL | | RELIEVER | SAME |
| CBP SERVICE LEVEL | | USER FEE AIRPORT | LANDING RIGHTS AIRPORT |

NOTE:
1/ SOURCE: WWW.NGDC.NOAA.GOV

| DECLARED DISTANCES - EXISTING | | | | |
|---|---|---|---|---|
| | TODA | TORA | LDA | ASDA |
| **RUNWAY 9** | 8,499' | 8,499' | 8,414' | 8,414' |
| **RUNWAY 27** | 8,499' | 8,499' | 8,499' | 8,499' |
| **RUNWAY 5** | 5,005' | 5,005' | 5,005' | 5,005' |
| **RUNWAY 23** | 5,005' | 5,005' | 5,005' | 5,005' |
| **RUNWAY 8** | 2,010' | 1,650' | 1,845' | 2,205' |
| **RUNWAY 26** | 2,205' | 1,845' | 1,650' | 2,205' |

| DECLARED DISTANCES - PROPOSED | | | | |
|---|---|---|---|---|
| | TODA | TORA | LDA | ASDA |
| **RUNWAY 10L** | 10,000' | 10,000' | 9,915' | 9,915' |
| **RUNWAY 28R** | 10,000' | 10,000' | 10,000' | 10,000' |
| **RUNWAY 10R** | 7,400' | 7,400' | 7,400' | 7,400' |
| **RUNWAY 28L** | 7,400' | 7,400' | 7,400' | 7,400' |
| **RUNWAY 9** | SAME | SAME | SAME | SAME |
| **RUNWAY 27** | SAME | SAME | SAME | SAME |

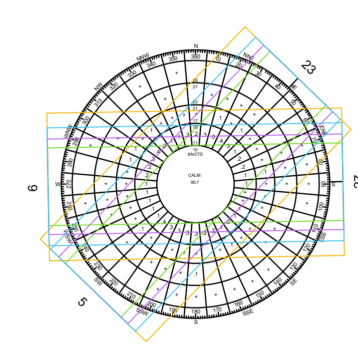
| EXISTING TAXIWAY/TAXILANE DATA | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TAXIWAY / TAXILANE | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **J** | **K** | **P** | **E1** | **E2** | **M** |
| | EX | EX | EX | EX | EX | EX | EX | EX | EX | EX | EX | EX | EX | EX |
| TAXIWAY DESIGN GROUP | 4 | 3/5 | 5 | 3 | 3 | 3 | 3 | 2/3 | 4 | 4 | 3 | 3 | 2 | 5 |
| TAXIWAY & TAXILANE WIDTH | 75' | 50'/75' | 75' | 60' | 50' | 50' | 50' | 35'/50' | 75' | 75' | 50' | 50' | 35' | 75' |
| TAXIWAY EDGE SAFETY MARGIN | 10' | 10'/15' | 15' | 10' | 10' | 10' | 10' | 10' | 10' | 10' | 10' | 10' | 7.5' | 15' |
| TAXIWAY SHOULDER WIDTH | 30' | N/A | 30' | 20' | 20' | 20' | 20' | 20' | 20' | 20' | 20' | 20' | 10' | 30' |
| AIRPLANE DESIGN GROUP | IV | III | III | III | III | III | III | II | III | III | III | III | III | IV |
| TAXIWAY & TAXILANE SAFETY AREA WIDTH | 171' | 118' | 118' | 118' | 118' | 118' | 118' | 79' | 118' | 118' | 118' | 118' | 118' | 171' |
| TAXIWAY OBJECT FREE AREA | 259' | 186' | 186' | 186' | 186' | 186' | N/A | N/A | 186' | 186' | 186' | 186' | 186' | 259' |
| TAXILANE OBJECT FREE AREA | N/A | N/A | N/A | N/A | N/A | N/A | 162' | 115' | N/A | N/A | N/A | N/A | N/A | N/A |
| TAXIWAY TO TAXIWAY / TAXILANE SEPARATION | 215' | 152' | 152' | 152' | 152' | 152' | 152' | 105' | 152' | 152' | 152' | 152' | 152' | 215' |
| TAXIWAY / TAXILANE LIGHTING | MITL | MITL | MITL | MITL | N/A | N/A | MITL | MITL | MITL | MITL | N/A | N/A | N/A | MITL |

| RUNWAY DATA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ITEM | | RUNWAY 9 / 27 | RUNWAY 10L / 28R | RUNWAY 5 / 23 | | RUNWAY 8 / 26 | RUNWAY 9 / 27 | RUNWAY 10R / 28L | |
| | | EXISTING | PROPOSED | EXISTING | PROPOSED | EXISTING | PROPOSED | EXISTING | PROPOSED[4] |
| DESIGN AIRCRAFT | | BOEING 737-700 | BOEING 767-300F | BOEING 737-700 | N/A | CESSNA 172 | SAME | N/A | TBD |
| RUNWAY DESIGN CODE (RDC) | | C-III | C-IV | C-III | N/A | A-I-VIS | SAME | N/A | C-III |
| RUNWAY APPROACH REFERENCE CODE (APRC) | | C-III-2400 | C-IV-1600 | C-III-4000 | N/A | N/A | SAME | N/A | C-III-4000 |
| RUNWAY DEPARTURE REFERENCE CODE (DPRC) | | C-III | C-IV | C-III | N/A | N/A | SAME | N/A | C-III |
| PAVEMENT STRENGTH | SINGLE WHEEL | 50,000 | SAME | 94,000 | N/A | N/A | SAME | N/A | TBD |
| | DUAL WHEEL | 250,000 | SAME | 150,000 | N/A | N/A | SAME | N/A | TBD |
| | 2D WHEELS IN TANDEM | 550,000 | SAME | N/A | N/A | N/A | SAME | N/A | TBD |
| | 2D WHEELS IN DOUBLE TANDEM | 1,120,000 | SAME | N/A | N/A | N/A | SAME | N/A | TBD |
| | PCN | 79/F/A/X/T | SAME | 35/F/A/X/T | N/A | N/A | SAME | N/A | TBD |
| RUNWAY SURFACE TYPE | | ASPHALT | SAME | ASPHALT | N/A | TURF | SAME | N/A | ASPHALT |
| RUNWAY SURFACE TREATMENT | | GROOVED | SAME | GROOVED | N/A | NONE | SAME | N/A | GROOVED |
| % EFFECTIVE GRADIENT[1] | | 0.10% | SAME | 0.10% | N/A | 0.1% | SAME | N/A | TBD |
| % MAXIMUM GRADIENT | | 2.00% | SAME | 2.00% | N/A | 2.00% | SAME | N/A | 2.00% |
| % WIND COVERAGE (ALL) | 10.5 KNOTS | 97.22% | SAME | 96.97% | N/A | 97.22% | SAME | N/A | 97.22% |
| | 13.0 KNOTS | 98.57% | SAME | 98.43% | N/A | 98.57% | SAME | N/A | 98.57% |
| | 16.0 KNOTS | 99.65% | SAME | 99.61% | N/A | 99.65% | SAME | N/A | 99.65% |
| | 20.0 KNOTS | 99.89% | SAME | 99.89% | N/A | 99.89% | SAME | N/A | 99.89% |
| RUNWAY LENGTH | | 8,499' | 10,000' | 5,005' | N/A | 2,205' | SAME | N/A | 7,400' |
| RUNWAY WIDTH | | 150' | SAME | 150' | N/A | 60' | SAME | N/A | 150' |
| BLAST PAD LENGTH | | 200' / 200' | SAME | N/A | N/A | N/A | SAME | N/A | N/A |
| BLAST PAD WIDTH | | 200' / 200' | SAME | N/A | N/A | N/A | SAME | N/A | N/A |
| DISPLACED THRESHOLD | | N/A | SAME | N/A | N/A | 360' / 555' | SAME | N/A | N/A |
| THRESHOLD ELEVATION | | 130.0' / 140.1' | 133.7' / SAME | 130.0' / 140.0' | N/A | 130' / 130.5' | SAME | N/A | 129.0' / 132.0' |
| RUNWAY SAFETY AREA | BEYOND RUNWAY END | 1,000' | SAME | 1,000' | N/A | 240' | SAME | N/A | 1,000' |
| | WIDTH | 500' | SAME | 500' | N/A | 120' | SAME | N/A | 500' |
| RUNWAY END COORDINATES (NAD 1983) | LATITUDE | 27° 59' 21.25" N / 27° 59' 21.46" N | 27° 59' 21.22" N / 27° 59' 21.46" N | 27° 59' 00.39" N / 27° 59' 35.52" N | N/A | 27° 58' 47.27" N / 27° 58' 47.27" N | SAME | N/A | 27° 59' 12.05" N / 27° 59' 12.23" N |
| | LONGITUDE | 082° 02' 01.93" W / 082° 00' 27.12" W | 082° 02' 18.69" W / 082° 00' 27.12" W | 082° 01' 13.38" W / 082° 00' 34.01" W | N/A | 82° 01' 30.31" W / 82° 01' 05.59" W | SAME | N/A | 082° 02' 01.95" / 082° 00' 39.40" |
| ELEVATIONS OF RUNWAY END (NAVD88) | | 130.0' / 140.1' | 133.7' / SAME | 130.0' / 140.0' | N/A | 126.0' / 130.2' | SAME | N/A | 129.0' / 132.0' (STC)[4] |
| RUNWAY LIGHTING | | HIRL | SAME | HIRL | N/A | N/A | SAME | N/A | MIRL |
| RUNWAY PROTECTION ZONE | LENGTH | 2,500 / 1,700' | SAME | 1,700' | N/A | 1,000' | SAME | N/A | 1,700' |
| | INNER WIDTH | 1,000' | SAME | 1,000' / 500' | N/A | 250' | SAME | N/A | 1,000' |
| | OUTER WIDTH | 1,750' / 1,510' | SAME | 1,510' / 1,010' | N/A | 450' | SAME | N/A | 1,510' |
| MARKINGS | | PRECISION / NON-PRECISION | SAME | PRECISION / NON-PRECISION | N/A | NONE | SAME | N/A | NON-PRECISION |
| PART 77 APPROACH CATEGORY (SLOPE) | | 50:1 & 40:1 / 34:1 | SAME | 34:1 | N/A | 20:1 | SAME | N/A | 34:1 |
| FAR PART 77 APPROACH TYPE | | PRECISION / NON-PRECISION | SAME | NON-PRECISION | N/A | VISUAL | SAME | N/A | NON-PRECISION |
| APPROACH VISIBILITY MINIMUMS | | 1/2 MILE / 3/4 MILE | < 1/4 MILE | > 3/4 MILE | N/A | VISUAL | SAME | N/A | > 3/4 MILE |
| AERONAUTICAL SURVEY REQUIRED FOR APPROACH | | NVGS | SAME | NVGS | N/A | NONE | SAME | N/A | NVGS |
| RUNWAY DEPARTURE SURFACE | | YES | SAME | YES | N/A | N/A | SAME | N/A | YES |
| RUNWAY OFA | BEYOND RUNWAY END | 1,000' | SAME | 1,000' | N/A | 240' | SAME | N/A | 1,000' |
| | WIDTH | 800' | SAME | 800' | N/A | 250' | SAME | N/A | 800' |
| RUNWAY OFZ | BEYOND RUNWAY END | 200' | SAME | 200' | N/A | 200' | SAME | N/A | 200' |
| | WIDTH | 400' | SAME | 400' | N/A | 120' | SAME | N/A | 400' |
| INNER APPROACH OFZ | | YES / NO | SAME | NO / NO | N/A | N/A | SAME | N/A | NO / NO |
| INNER TRANSITIONAL OFZ | | YES / NO | SAME | NO / NO | N/A | N/A | SAME | N/A | NO /NO |
| PRECISION OFZ | | YES / NO | SAME | NO / NO | N/A | N/A | SAME | N/A | NO /NO |
| THRESHOLD SITING SURFACE[3] | | RUNWAY TYPE 5 | SAME | RUNWAY TYPE 4 | N/A | RUNWAY TYPE 1 | SAME | N/A | RUNWAY TYPE 4 |
| NAVIGATIONAL AIDS | | GPS+VOR+ILS / GPS+VOR | +RVR | GPS | N/A | N/A | SAME | N/A | GPS |
| VISUAL AIDS | | MALSR + PAPI-4L / PAPI-4L | ALSF-2 + PAPI-4L / SAME | PAPI-4L | N/A | N/A | SAME | N/A | PAPI-4L |
| TOUCHDOWN ZONE ELEVATION (TDZE) | | 133.6' / 140.1' | 133.7' / SAME | 136.0' / 140.0' | N/A | 129.9' / 132.0' | SAME | N/A | TBD |
| VERTICAL & HORIZONTAL DATUM | | NAVD88 / NAD83 EAST FL | SAME | NAVD88 / NAD83 EAST FL | N/A | NAVD88 / NAD83 EAST FL | SAME | N/A | NAVD88 / NAD83 EAST FL |

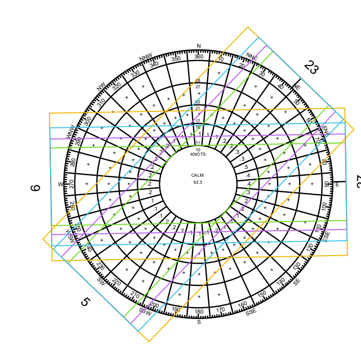
NOTES:
1/ ALL RUNWAYS MEET LINE-OF-SIGHT REQUIREMENTS.
2/ ALL LATITUDE AND LONGITUDE COORDINATES ARE DEPICTED IN NAD83 AND NAVD88 COORDINATE SYSTEMS. VERTICAL CONTROL DATUM IS DEPICTED IN NAVD88.
3/ SEE INNER APPROACH SHEETS FOR TSS PENETRATIONS. TSS DIMENSIONAL STANDARDS WERE UPDATED BY FAA ENGINEERING BRIEF NO 99 IN SEPTEMBER 2018.
4/ PROPOSED RUNWAY ATTRIBUTES SUBJECT TO CHANGE
5/ TO BE DETERMINED

| FUTURE TAXIWAY/TAXILANE DATA | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TAXIWAY / TAXILANE | A | B | **C** | **D** | **E** | **F** | **G** | **H** | **J** | **K** | **M** | **N** |
| | PROP | PROP | PROP | PROP | PROP | PROP | PROP | PROP | PROP | PROP | PROP | PROP |
| TAXIWAY DESIGN GROUP | 5 | 5 | 5 | 5 | 3 | 3 | 3 | 5 | 5 | 5 | 5 | 5 |
| TAXIWAY & TAXILANE WIDTH | 75' | 75' | 75' | 75' | 50' | 50' | 50' | 50' | 75' | 75' | 75' | 75' |
| TAXIWAY EDGE SAFETY MARGIN | 15' | 15' | 15' | 15' | 10' | 10' | 10' | 10' | 15' | 15' | 15' | 15' |
| TAXIWAY SHOULDER WIDTH | 30' | 30' | 30' | 30' | 20' | 20' | 20' | 20' | 30' | 30' | 30' | 30' |
| AIRPLANE DESIGN GROUP | IV | IV | III | III | II | II | III | III / IV | IV | IV | III | IV |
| TAXIWAY & TAXILANE SAFETY AREA WIDTH | 171' | 171' | 118' | 118' | 79' | 79' | 118' | 118' / 171' | 171' | 171' | 118' | 171' |
| TAXIWAY OBJECT FREE AREA | 259' | 259' | 186' | 186' | N/A | N/A | N/A | 186' / 259' | 259' | 259' | 186' | 259' |
| TAXILANE OBJECT FREE AREA | N/A | N/A | N/A | N/A | 115' | 115' | 162' | N/A | N/A | N/A | N/A | N/A |
| TAXIWAY TO TAXIWAY / TAXILANE SEPARATION | 215' | 215' | 152' | 152' | 105' | 105' | 152' | 152' / 215' | 215' | 215' | 152' | 215' |
| TAXIWAY / TAXILANE LIGHTING | MITL | MITL | MITL | MITL | MITL | MITL | MITL | MITL | MITL | MITL | MITL | MITL |

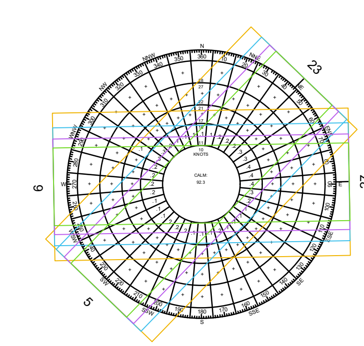
IFR WIND COVERAGE



VFR WIND COVERAGE



ALL WEATHER WIND COVERAGE



| IFR WIND COVERAGE | | | |
|---|---|---|---|
| CROSSWIND COMPONENT | RUNWAY 9/27 | RUNWAY 5/23 | COMBINED COVERAGE |
| 10.5 KTS | 94.94% | 96.11% | 98.14% |
| 13 KTS | 97.18% | 97.69% | 99.16% |
| 16 KTS | 99.11% | 99.05% | 99.66% |
| 20 KTS | 99.58% | 99.66% | 99.87% |

| VFR WIND COVERAGE | | | |
|---|---|---|---|
| CROSSWIND COMPONENT | RUNWAY 9/27 | RUNWAY 5/23 | COMBINED COVERAGE |
| 10.5 KTS | 97.47% | 96.83% | 98.94% |
| 13 KTS | 98.75% | 98.38% | 99.63% |
| 16 KTS | 99.72% | 99.62% | 99.92% |
| 20 KTS | 99.92% | 99.90% | 99.98% |

| ALL WEATHER WIND COVERAGE | | | |
|---|---|---|---|
| CROSSWIND COMPONENT | RUNWAY 9/27 | RUNWAY 5/23 | COMBINED COVERAGE |
| 10.5 KTS | 97.22% | 96.97% | 98.89% |
| 13 KTS | 98.57% | 98.43% | 99.60% |
| 16 KTS | 99.65% | 99.61% | 99.90% |
| 20 KTS | 99.89% | 99.89% | 99.97% |

NOTES:
1/ WIND DATA DERIVED FROM NOAA'S INTEGRATED SURFACE DATABASE (ISD); COVERING YEARS 2010 - 2019.
2/ WIND ANALYSIS COMPLETED JANUARY 2020.
3/ RUNWAY TRUE ORIENTATION USED FOR ANALYSIS, SEE A/C 150/5300-13A, FIGURE A-24.

| MODIFICATIONS TO STANDARDS | | | |
|---|---|---|---|
| APPROVAL DATE | AIRSPACE CASE | STANDARD TO BE MODIFIED | DESCRIPTION |
| TBD | NO | RUNWAY 5/23 ROFA | ACCESS ROADS WITHIN ROFA BOUNDARY BEYOND RUNWAY 5 END AND RUNWAY 23 END |
| TBD | TBD | TBD | TBD |
| TBD | TBD | TBD | TBD |

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

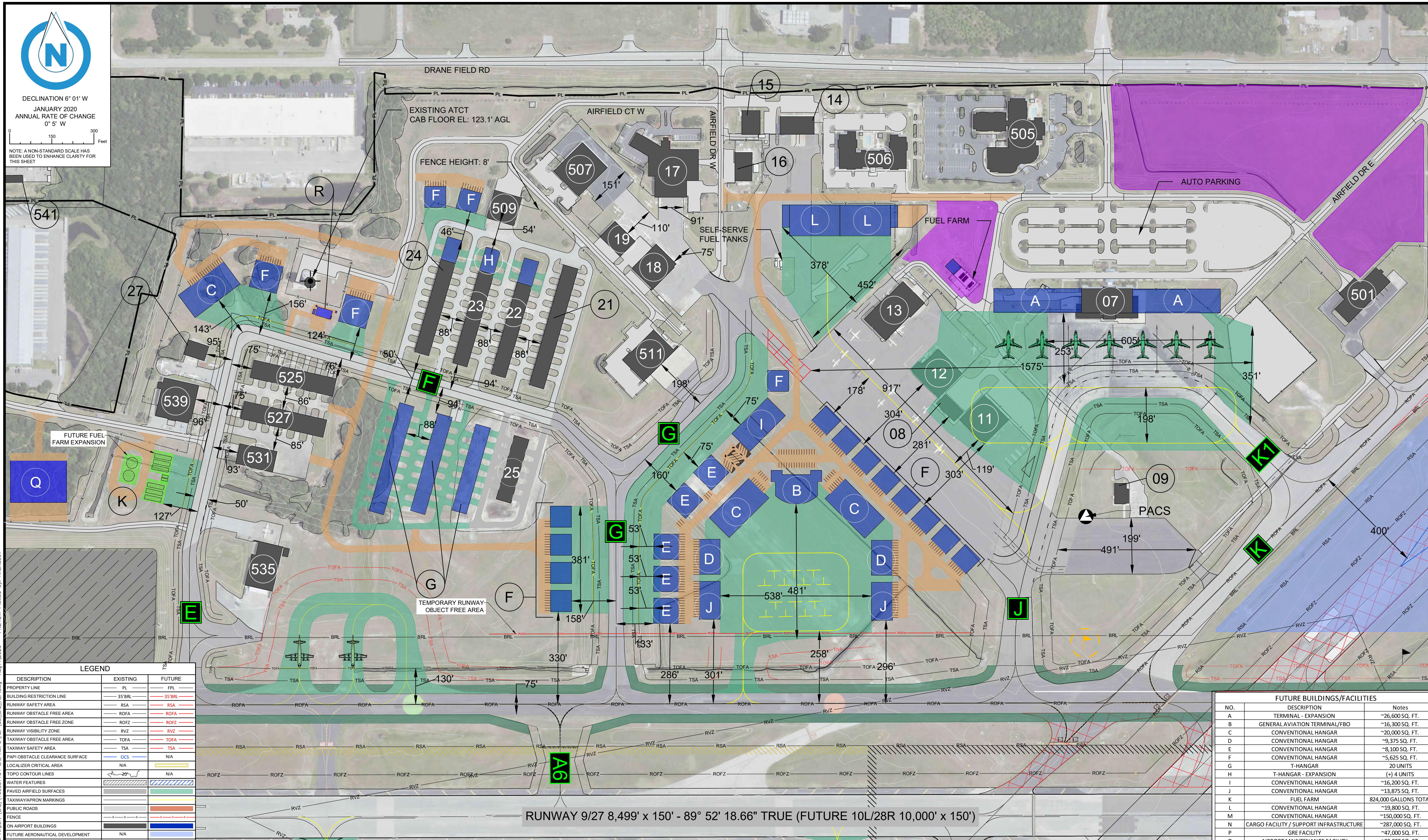
CLIENT
FlyLakeland Lakeland Linder International Airport

PROJECT
AIRPORT MASTER PLAN UPDATE
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE
DATA SHEET

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020




## LEGEND

| DESCRIPTION | EXISTING | FUTURE |
|---|---|---|
| PROPERTY LINE | PL | FPL |
| BUILDING RESTRICTION LINE | 35'BRL | 35'BRL |
| RUNWAY SAFETY AREA | RSA | RSA |
| RUNWAY OBSTACLE FREE AREA | ROFA | ROFA |
| RUNWAY OBSTACLE FREE ZONE | ROFZ | ROFZ |
| RUNWAY VISIBILITY ZONE | RVZ | RVZ |
| TAXIWAY OBSTACLE FREE AREA | TOFA | TOFA |
| TAXIWAY SAFETY AREA | TSA | TSA |
| PAPI OBSTACLE CLEARANCE SURFACE | OCS | N/A |
| LOCALIZER CRITICAL AREA | N/A | |
| TOPO CONTOUR LINES | 20' | N/A |
| WATER FEATURES | | |
| PAVED AIRFIELD SURFACES | | |
| TAXIWAY/APRON MARKINGS | | |
| PUBLIC ROADS | | |
| FENCE | x x x | x x x |
| ON AIRPORT BUILDINGS | | |
| FUTURE AERONAUTICAL DEVELOPMENT | N/A | |
| FUTURE NON-AERONAUTICAL DEVELOPMENT | N/A | |

## FUTURE BUILDINGS/FACILITIES

| NO. | DESCRIPTION | Notes |
|---|---|---|
| A | TERMINAL - EXPANSION | ~26,600 SQ. FT. |
| B | GENERAL AVIATION TERMINAL/FBO | ~16,300 SQ. FT. |
| C | CONVENTIONAL HANGAR | ~20,000 SQ. FT. |
| D | CONVENTIONAL HANGAR | ~9,375 SQ. FT. |
| E | CONVENTIONAL HANGAR | ~8,100 SQ. FT. |
| F | CONVENTIONAL HANGAR | ~5,625 SQ. FT. |
| G | T-HANGAR | 20 UNITS |
| H | T-HANGAR - EXPANSION | (+) 4 UNITS |
| I | CONVENTIONAL HANGAR | ~16,200 SQ. FT. |
| J | CONVENTIONAL HANGAR | ~13,875 SQ. FT. |
| K | FUEL FARM | 824,000 GALLONS TOTAL |
| L | CONVENTIONAL HANGAR | ~19,800 SQ. FT. |
| M | CONVENTIONAL HANGAR | ~150,000 SQ. FT. |
| N | CARGO FACILITY / SUPPORT INFRASTRUCTURE | ~287,000 SQ. FT. |
| P | GRE FACILITY | ~47,000 SQ. FT. |
| Q | AIRPORT MAINTENANCE FACILITY | ~30,000 SQ. FT. |

REVISIONS

| DATE | DESCRIPTION |
|---|---|
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

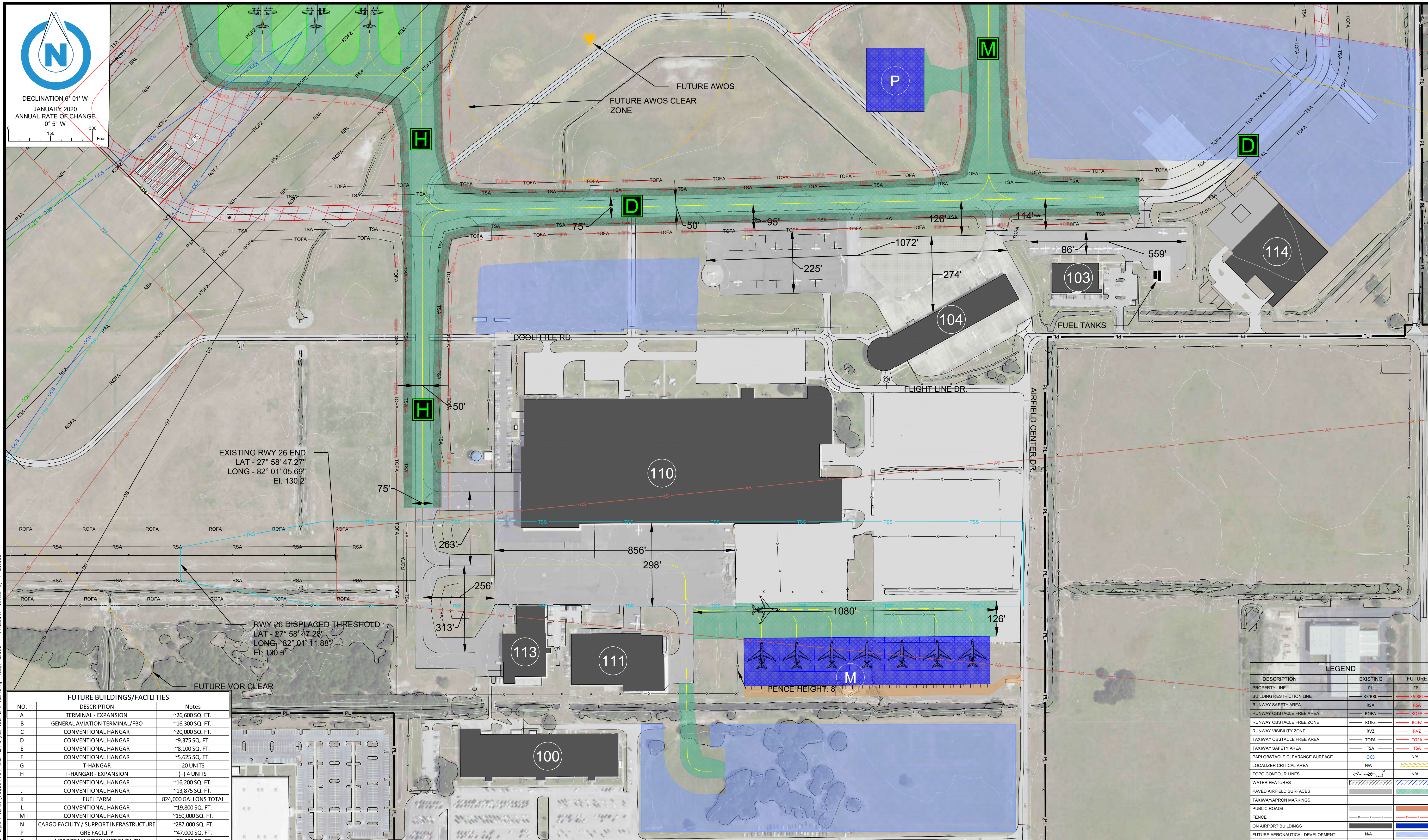
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

# TERMINAL LAYOUT PLAN NORTH

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020




FUTURE BUILDINGS/FACILITIES

| NO. | DESCRIPTION | Notes |
|---|---|---|
| A | TERMINAL - EXPANSION | ~26,600 SQ. FT. |
| B | GENERAL AVIATION TERMINAL/FBO | ~16,300 SQ. FT. |
| C | CONVENTIONAL HANGAR | ~20,000 SQ. FT. |
| D | CONVENTIONAL HANGAR | ~9,375 SQ. FT. |
| E | CONVENTIONAL HANGAR | ~8,100 SQ. FT. |
| F | CONVENTIONAL HANGAR | ~5,625 SQ. FT. |
| G | T-HANGAR | 20 UNITS |
| H | T-HANGAR - EXPANSION | (+) 4 UNITS |
| I | CONVENTIONAL HANGAR | ~16,200 SQ. FT. |
| J | CONVENTIONAL HANGAR | ~13,875 SQ. FT. |
| K | FUEL FARM | 824,000 GALLONS TOTAL |
| L | CONVENTIONAL HANGAR | ~19,800 SQ. FT. |
| M | CONVENTIONAL HANGAR | ~150,000 SQ. FT. |
| N | CARGO FACILITY / SUPPORT INFRASTRUCTURE | ~287,000 SQ. FT. |
| P | GRE FACILITY | ~47,000 SQ. FT. |
| Q | AIRPORT MAINTENANCE FACILITY | ~30,000 SQ. FT. |

LEGEND

| DESCRIPTION | EXISTING | FUTURE |
|---|---|---|
| PROPERTY LINE | PL | FPL |
| BUILDING RESTRICTION LINE | 35'BRL | 35'BRL |
| RUNWAY SAFETY AREA | RSA | RSA |
| RUNWAY OBSTACLE FREE AREA | ROFA | ROFA |
| RUNWAY OBSTACLE FREE ZONE | ROFZ | ROFZ |
| RUNWAY VISIBILITY ZONE | RVZ | RVZ |
| TAXIWAY OBSTACLE FREE AREA | TOFA | TOFA |
| TAXIWAY SAFETY AREA | TSA | TSA |
| PAPI OBSTACLE CLEARANCE SURFACE | OCS | N/A |
| LOCALIZER CRITICAL AREA | N/A | |
| TOPO CONTOUR LINES | 20' | N/A |
| WATER FEATURES | | |
| PAVED AIRFIELD SURFACES | | |
| TAXIWAY/APRON MARKINGS | | |
| PUBLIC ROADS | | |
| FENCE | x x x | x x x |
| ON AIRPORT BUILDINGS | | |
| FUTURE AERONAUTICAL DEVELOPMENT | N/A | |
| FUTURE NON-AERONAUTICAL DEVELOPMENT | N/A | |

REVISIONS

| DATE | DESCRIPTION |
|---|---|
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

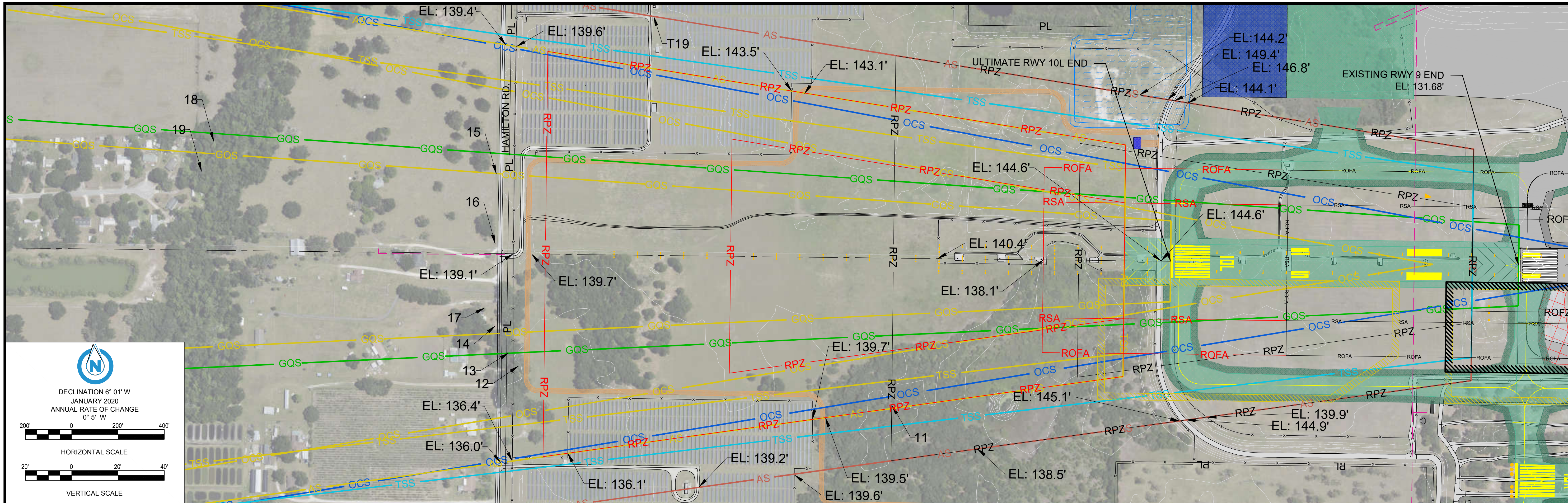
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

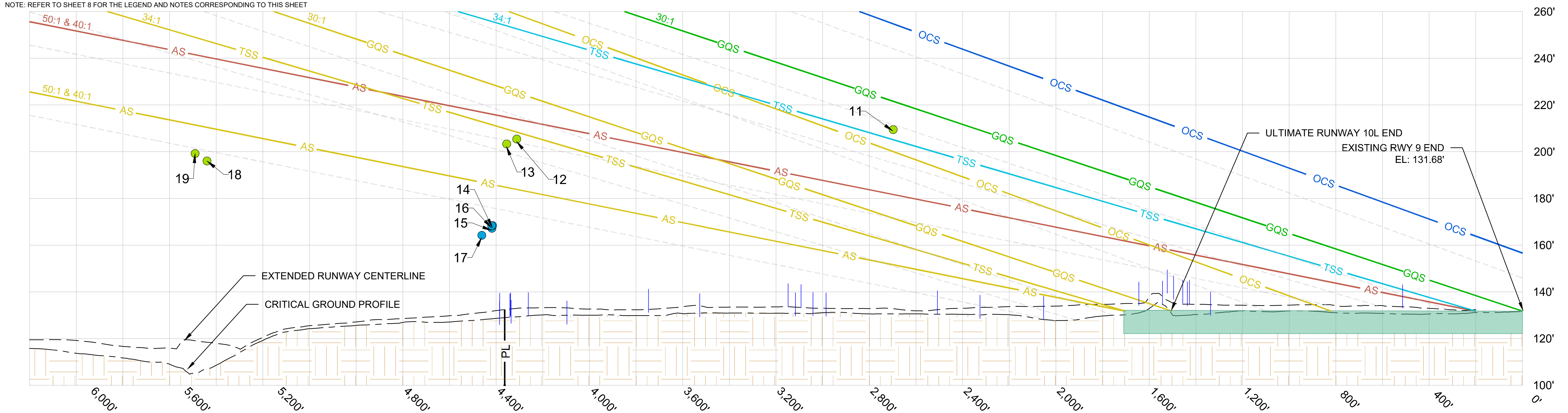
# TERMINAL LAYOUT PLAN SOUTH


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020




NOTE: REFER TO SHEET 8 FOR THE LEGEND AND NOTES CORRESPONDING TO THIS SHEET




| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

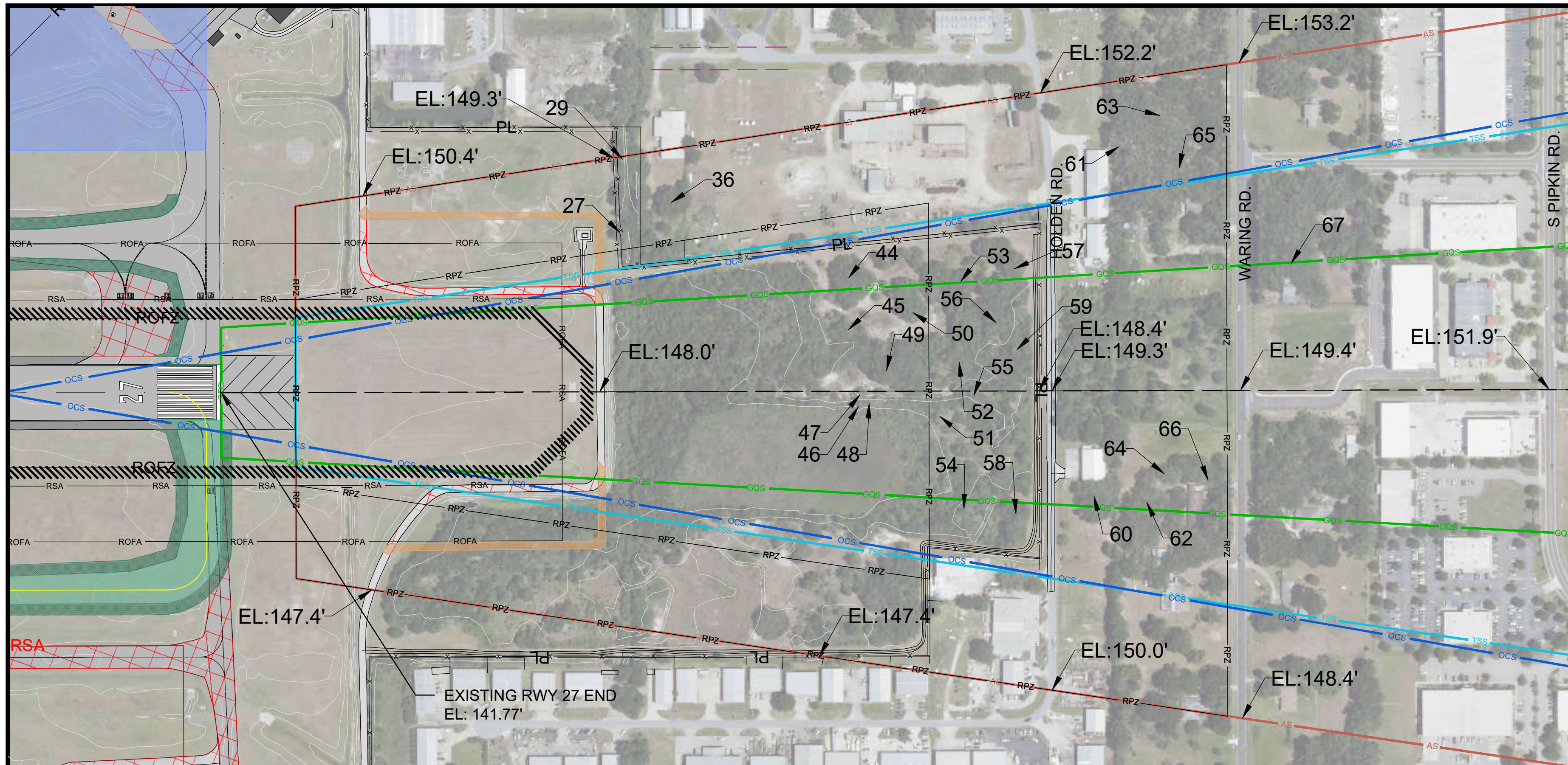
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

# INNER-APPROACH PLAN & PROFILE RUNWAY 9 (ULTIMATE RUNWAY 10L)


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd. Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

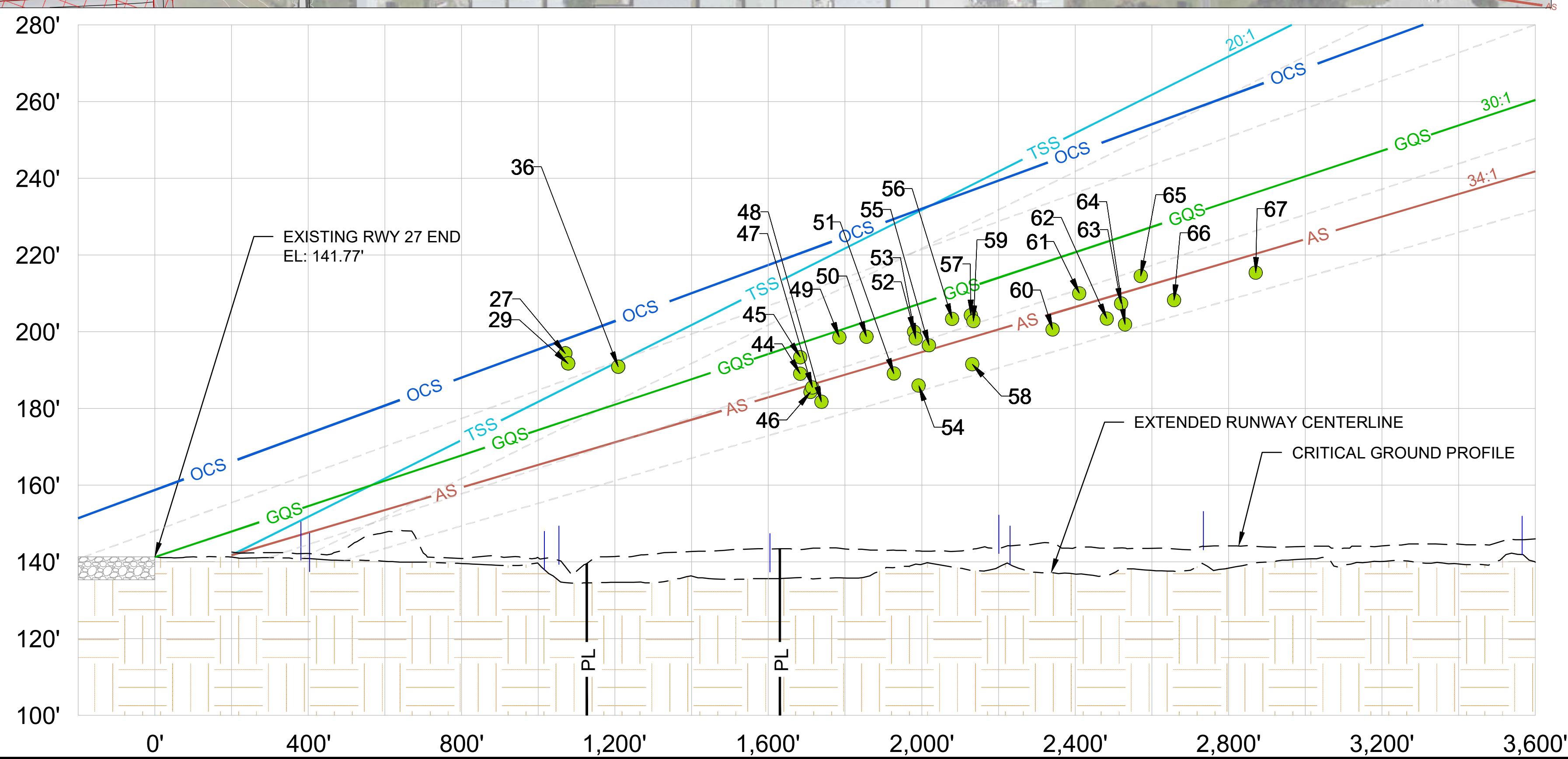



DECLINATION 6° 01' W
JANUARY 2020
ANNUAL RATE OF CHANGE
0° 5' W

HORIZONTAL SCALE (200' 0 200' 400')

VERTICAL SCALE (20' 0 20' 40')

| LEGEND | | |
|---|---|---|
| EXISTING | PROPOSED | DESCRIPTION |
| AS | AS | APPROACH SURFACE |
| TSS | TSS | THRESHOLD SITING SURFACE |
| GQS | GQS | GLIDESLOPE QUALIFICATION SURFACE |
| OCS | OCS | PAPI OBSTACLE CLEARANCE SURFACE |
| | | 10 FOOT OFFSET OF AIRSPACE SURFACES |
| RSA | RSA | RUNWAY SAFETY AREA |
| ROFA | ROFA | RUNWAY OBSTACLE FREE AREA |
| ROFZ | ROFZ | RUNWAY OBSTACLE FREE ZONE |
| RPZ | RPZ | RUNWAY PROTECTION ZONE |
| | | NAVAID CRITICAL AREA |
| PL | NA | PROPERTY LINE |
| X | NA | FENCE |
| | NA | EASEMENTS |
| | | APPROACH LIGHTING SYSTEM |
| NA | | PAPI |
| | NA | EXTENDED RUNWAY CENTERLINE |
| | | RUNWAY |
| | NA | EXTENDED CENTERLINE GROUND PROFILE |
| NA | | AIRFIELD PAVEMENT |
| NA | | AIRPORT ACCESS ROAD |
| NA | | PAVEMENT TO BE REMOVED |
| | NA | CRITICAL GROUND PROFILE |
| | NA | VEGETATION OBSTACLES |
| | NA | OTHER OBSTACLES |
| | NA | TRAVERSEWAY AND FENCE INTERSECTIONS |




| RUNWAY 27 SIGNIFICANT OBJECT TABLE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING PART 77 APPROACH SURFACE PENETRATION | EXISTING 34:1 THRESHOLD SITING SURFACE PENETRATION | EXISTING 30:1 GLIDESLOPE QUALIFICATION SURFACE PENETRATION | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
| 27 | TREE | 2/12/2019 | 22.71 | N/A | N/A | 194.16 | 57.77 | NONE | REMOVE/TRIM |
| 29 | TREE | 2/12/2019 | 19.09 | 19.09 | 8.34 | 191.51 | 54.84 | NONE | REMOVE/TRIM |
| 36 | TREE | 2/12/2019 | 4.95 | 4.95 | -78.77 | 190.36 | 55.19 | NONE | REMOVE/TRIM |
| 44 | TREE | 2/12/2019 | -2.41 | -2.41 | -16.06 | 191.75 | 55.38 | NONE | REMOVE/TRIM |
| 45 | TREE | 2/12/2019 | -7.42 | -7.42 | -108.16 | 186.87 | 47.03 | NONE | REMOVE/TRIM |
| 46 | TREE | 2/12/2019 | -5.78 | -5.78 | -106.92 | 188.72 | 47.50 | NONE | REMOVE/TRIM |
| 47 | TREE | 2/12/2019 | -2.29 | -2.29 | -16.10 | 193.01 | 52.85 | NONE | REMOVE/TRIM |
| 48 | TREE | 2/12/2019 | -13.11 | -13.11 | -27.15 | 183.97 | 48.67 | NONE | REMOVE/TRIM |
| 49 | TREE | 2/12/2019 | -13.41 | -13.41 | -122.25 | 185.10 | 49.60 | NONE | REMOVE/TRIM |
| 50 | TREE | 2/12/2019 | -17.24 | -17.24 | -126.26 | 181.37 | 46.00 | NONE | REMOVE/TRIM |
| 51 | TREE | 2/12/2019 | -0.52 | -0.52 | -14.78 | 198.19 | 61.64 | NONE | REMOVE/TRIM |
| 52 | TREE | 2/12/2019 | -6.46 | -6.46 | -21.53 | 198.32 | 56.87 | NONE | REMOVE/TRIM |
| 53 | TREE | 2/12/2019 | -18.16 | N/A | N/A | 188.68 | 52.46 | NONE | REMOVE/TRIM |
| 54 | TREE | 2/12/2019 | -9.36 | -9.36 | -24.99 | 199.58 | 60.30 | NONE | REMOVE/TRIM |
| 55 | TREE | 2/12/2019 | -12.23 | N/A | N/A | 197.81 | 57.02 | NONE | REMOVE/TRIM |
| 56 | TREE | 2/12/2019 | -24.78 | -24.78 | -40.59 | 185.56 | 46.31 | NONE | REMOVE/TRIM |
| 57 | TREE | 2/12/2019 | -15.51 | N/A | N/A | 196.04 | 56.44 | NONE | REMOVE/TRIM |
| 58 | TREE | 2/12/2019 | -11.20 | -11.20 | -149.96 | 202.91 | 63.15 | NONE | REMOVE/TRIM |
| 59 | TREE | 2/12/2019 | -16.50 | -16.50 | -33.64 | 203.87 | 63.25 | NONE | REMOVE/TRIM |
| 60 | TREE | 2/12/2019 | 191.12 | 191.12 | 191.12 | 191.12 | 51.76 | NONE | REMOVE/TRIM |
| 61 | TREE | 2/12/2019 | 202.36 | 202.36 | 202.36 | 202.36 | 64.20 | NONE | REMOVE/TRIM |
| 62 | TREE | 2/12/2019 | 200.11 | 200.11 | 200.11 | 200.11 | 60.16 | NONE | REMOVE/TRIM |
| 63 | TREE | 2/12/2019 | 209.47 | 209.47 | 209.47 | 209.47 | 66.95 | NONE | REMOVE/TRIM |
| 64 | TREE | 2/12/2019 | 202.89 | 202.89 | 202.89 | 202.89 | 63.48 | NONE | REMOVE/TRIM |
| 65 | TREE | 2/12/2019 | 206.82 | 206.82 | 206.82 | 206.82 | 64.95 | NONE | REMOVE/TRIM |
| 66 | TREE | 2/12/2019 | 201.37 | 201.37 | 201.37 | 201.37 | 62.81 | NONE | REMOVE/TRIM |
| 67 | TREE | 2/12/2019 | 214.01 | 214.01 | 214.01 | 214.01 | 72.46 | NONE | REMOVE/TRIM |
| 68 | TREE | 2/12/2019 | 207.69 | 207.69 | 207.69 | 207.69 | 67.98 | NONE | REMOVE/TRIM |
| 69 | TREE | 2/12/2019 | 214.80 | 214.80 | 214.80 | 214.80 | 72.97 | NONE | REMOVE/TRIM |

| RUNWAY 9 SIGNIFICANT OBJECT TABLE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING PART 77 APPROACH SURFACE PENETRATION | FUTURE PART 77 APPROACH SURFACE PENETRATION | EXISTING 34:1 THRESHOLD SITING SURFACE PENETRATION | FUTURE 34:1 THRESHOLD SITING SURFACE PENETRATION | EXISTING 30:1 GLIDESLOPE QUALIFICATION SURFACE PENETRATION | FUTURE 30:1 GLIDESLOPE QUALIFICATIO N SURFACE PENETRATION | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITON |
| 11 | TREE | 2/12/2019 | 27.21 | 3.68 | 3.68 | N/A | N/A | N/A | 208.88 | 79.33 | NONE | REMOVE/TRIM |
| 12 | TREE | 2/12/2019 | -9.50 | 20.56 | -48.21 | -4.00 | -48.21 | N/A | 204.45 | 76.53 | NONE | REMOVE/TRIM |
| 13 | TREE | 2/12/2019 | -12.46 | 17.60 | -51.58 | -7.37 | -74.54 | -24.44 | 202.35 | 73.95 | NONE | REMOVE/TRIM |
| 14 | POLE | 2/12/2019 | -48.62 | -18.56 | -88.30 | -44.09 | -111.49 | -61.39 | 167.38 | 38.56 | NONE | NONE |
| 15 | POLE | 2/12/2019 | -49.82 | -19.76 | -89.52 | -45.32 | -112.74 | -62.63 | 166.25 | 36.21 | NONE | NONE |
| 16 | POLE | 2/12/2019 | -48.70 | -18.64 | -88.42 | -44.21 | -111.64 | -61.54 | 167.38 | 38.79 | NONE | NONE |
| 17 | POLE | 2/12/2019 | -53.71 | -23.65 | -93.83 | -49.62 | -117.21 | -67.10 | 163.22 | 34.81 | NONE | NONE |
| 18 | TREE | 2/12/2019 | -45.72 | -15.66 | -96.93 | -52.73 | -124.94 | N/A | 194.78 | 86.14 | NONE | NONE |
| 19 | TREE | 2/12/2019 | -43.59 | -13.52 | -95.27 | -51.07 | -123.48 | -73.38 | 197.94 | 90.93 | NONE | NONE |

NOTES:
1/ THE CORRESPONDING RUNWAY 10 PLAN AND PROFILE ARE SHOWN ON THE PREVIOUS SHEET TO MAXIMIZE SPACE AVAILABLE
2/ ALL PRIVATE ROADS, PUBLIC ROADS, INTERSTATE HIGHWAYS, AND RAILWAYS ARE DEPICTED AT THE TRAVERSEWAY ELEVATION PLUS THE CORRESPONDING ADJSTMENT OF 10', 15', 17', AND 23' RESPECTIVELY
3/ ALL SURVEYED OBSTRUCTIONS WITHIN 10' OF THE APPROACH SURFACE HAVE BEEN DEPICTED
4/ SUPPLEMENTAL TOPOGRAPHIC DATA USED IN THIS STUDY WAS DERIVED FROM ASTER GDEM V2 30M DEM DATA. ASTER GDEM IS A PRODUCT OF METI AND NASA LAND PROCESSES DISTRIBUTED ACTIE ARCHIVE CENTER (LP DAAC). FOR MORE INFORMATION VISIT: HTTPS://LPDAAC.USGS.GOV
5/ SINCE THE COMPLETION OF THE AGIS SURVEY, SOME CLOSE IN OBSTRUCTIONS HAVE BEEN CLEAR CUT AND THEREFORE HAVE BEEN REMOVED FROM THE ALP

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT: FlyLakeland — Lakeland Linder International Airport

PROJECT: AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

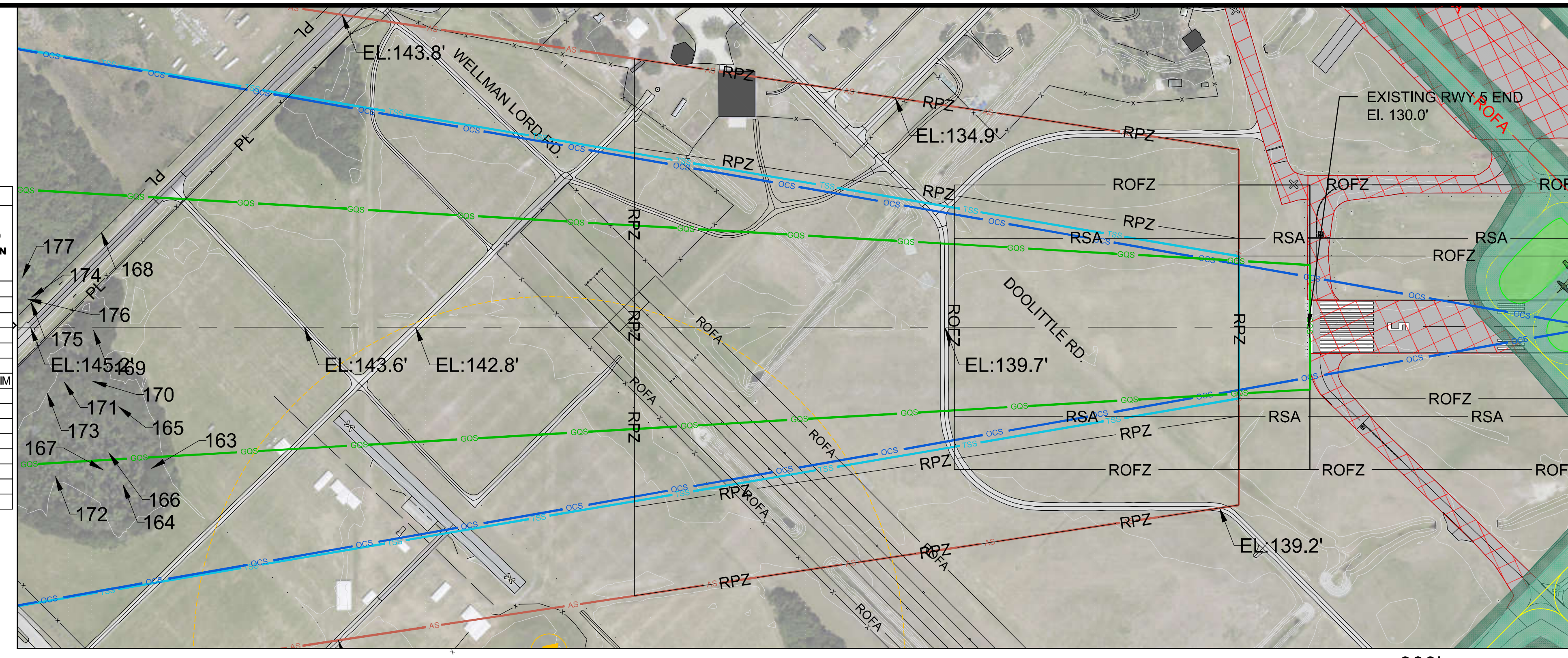
SHEET TITLE: INNER-APPROACH PLAN & PROFILE RUNWAY 27 (ULTIMATE RUNWAY 28R)

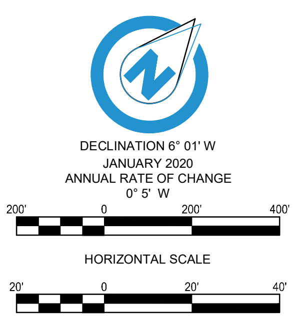

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

RUNWAY 5 SIGNIFICANT OBJECT TABLE

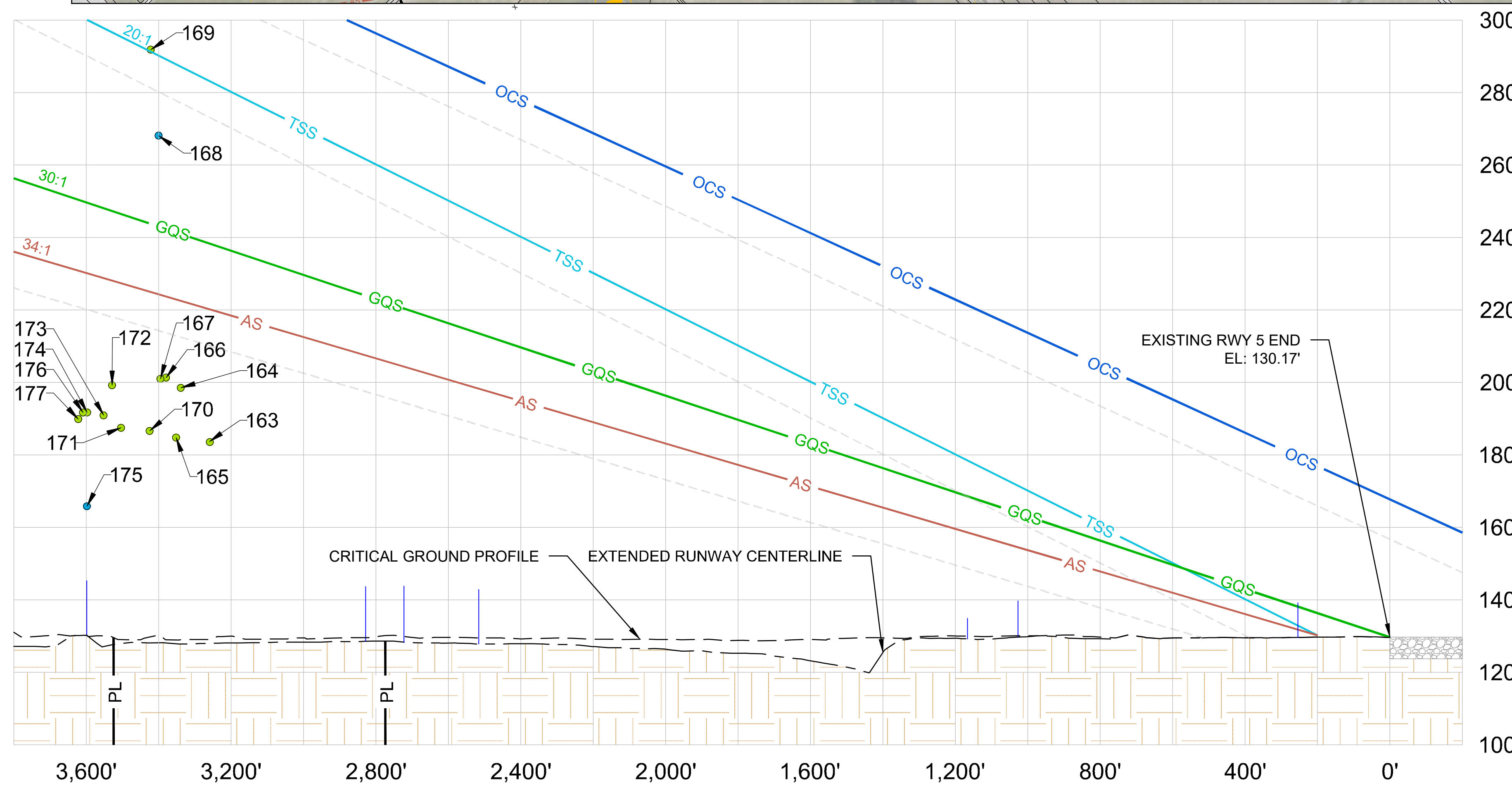
| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING PART 77 APPROACH SURFACE PENETRATION | EXISTING 34:1 THRESHOLD SITING SURFACE PENETRATION | EXISTING 30:1 GLIDESLOPE QULIFICAION SURFACE PENETRATION | EXISTING PAPI OBSTACLE CLEARANCE SURFACE PENETRATION | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|---|---|
| 163 | TREE | 2/12/2019 | -36.58 | -36.58 | N/A | -134.85 | 183.54 | 55.88 | NONE | NONE |
| 164 | TREE | 2/12/2019 | -23.97 | -23.97 | N/A | -123.76 | 198.51 | 71.63 | NONE | NONE |
| 165 | TREE | 2/12/2019 | -38.10 | -38.10 | -57.12 | -137.29 | 184.76 | 57.58 | NONE | NONE |
| 166 | TREE | 2/12/2019 | -22.39 | -22.39 | -41.52 | -122.44 | 201.29 | 74.68 | NONE | NONE |
| 167 | TREE | 2/12/2019 | -23.16 | -23.17 | N/A | -123.67 | 200.98 | 74.26 | NONE | NONE |
| 168 | POLE | 2/12/2019 | 43.81 | 43.81 | 24.59 | -56.31 | 268.09 | 140.12 | NONE | REMOVE |
| 169 | TREE | 2/12/2019 | rea | 66.87 | 47.57 | -33.20 | 291.78 | 163.70 | NONE | REMOVE/TRIM |
| 170 | TREE | 2/12/2019 | -38.40 | -38.40 | -57.71 | -138.65 | 186.62 | 59.18 | NONE | NONE |
| 171 | TREE | 2/12/2019 | -39.88 | -39.88 | -59.50 | -141.43 | 187.46 | 59.98 | NONE | NONE |
| 172 | TREE | 2/12/2019 | -28.86 | -28.86 | N/A | -131.62 | 199.21 | 72.19 | NONE | NONE |
| 173 | TREE | 2/12/2019 | -37.86 | -37.86 | -57.67 | -140.27 | 190.90 | 63.23 | NONE | NONE |
| 174 | TREE | 2/12/2019 | -38.37 | -38.37 | -58.36 | -141.38 | 191.72 | 64.35 | NONE | NONE |
| 175 | POLE | 2/12/2019 | -64.30 | -64.30 | -84.29 | -167.31 | 165.81 | 37.90 | NONE | NONE |
| 176 | TREE | 2/12/2019 | -38.75 | -38.75 | -58.78 | -141.94 | 191.67 | 64.41 | NONE | NONE |
| 177 | TREE | 2/12/2019 | -40.93 | -40.93 | -61.01 | -144.41 | 189.88 | 62.95 | NONE | NONE |




LEGEND

| EXISTING | PROPOSED | DESCRIPTION |
|---|---|---|
| AS | NA | APPROACH SURFACE |
| TSS | NA | THRESHOLD SITING SURFACE |
| GQS | NA | GLIDESLOPE QUALIFICATION SURFACE |
| OCS | NA | PAPI OBSTACLE CLEARANCE SURFACE |
| | NA | 10 FOOT OFFSET OF AIRSPACE SURFACES |
| RSA | RSA | RUNWAY SAFETY AREA |
| ROFA | ROFA | RUNWAY OBSTACLE FREE AREA |
| ROFZ | ROFZ | RUNWAY OBSTACLE FREE ZONE |
| RPZ | RPZ | RUNWAY PROTECTION ZONE |
| PL | NA | PROPERTY LINE |
| X | NA | FENCE |
| | NA | EXTENDED RUNWAY CENTERLINE |
| | | RUNWAY |
| | NA | EXTENDED CENTERLINE GROUND PROFILE |
| NA | | AIRFIELD PAVEMENT |
| NA | | PAVEMENT TO BE REMOVED |
| | NA | CRITICAL GROUND PROFILE |
| | NA | VEGETATION OBSTACLES |
| | NA | OTHER OBSTACLES |
| | NA | TRAVERSEWAY AND FENCE INTERSECTIONS |
| NA | | VOR CRITICAL AREA |




| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

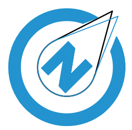
SHEET TITLE

INNER-APPROACH PLAN & PROFILE RUNWAY 5


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

SHEET 9 OF 23



DECLINATION 6° 01' W
JANUARY 2020
ANNUAL RATE OF CHANGE
0° 5' W

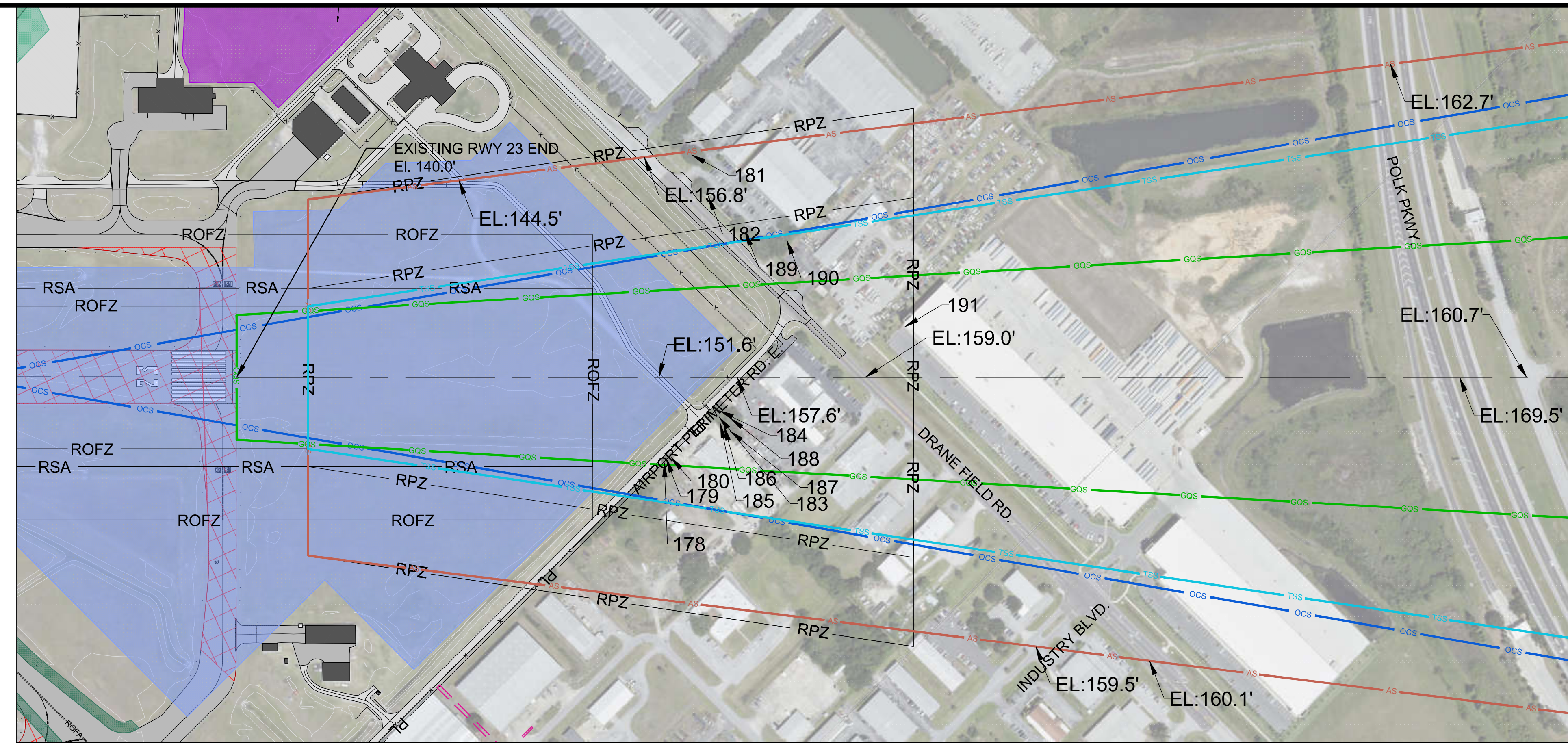
200' 0 200' 400'

HORIZONTAL SCALE

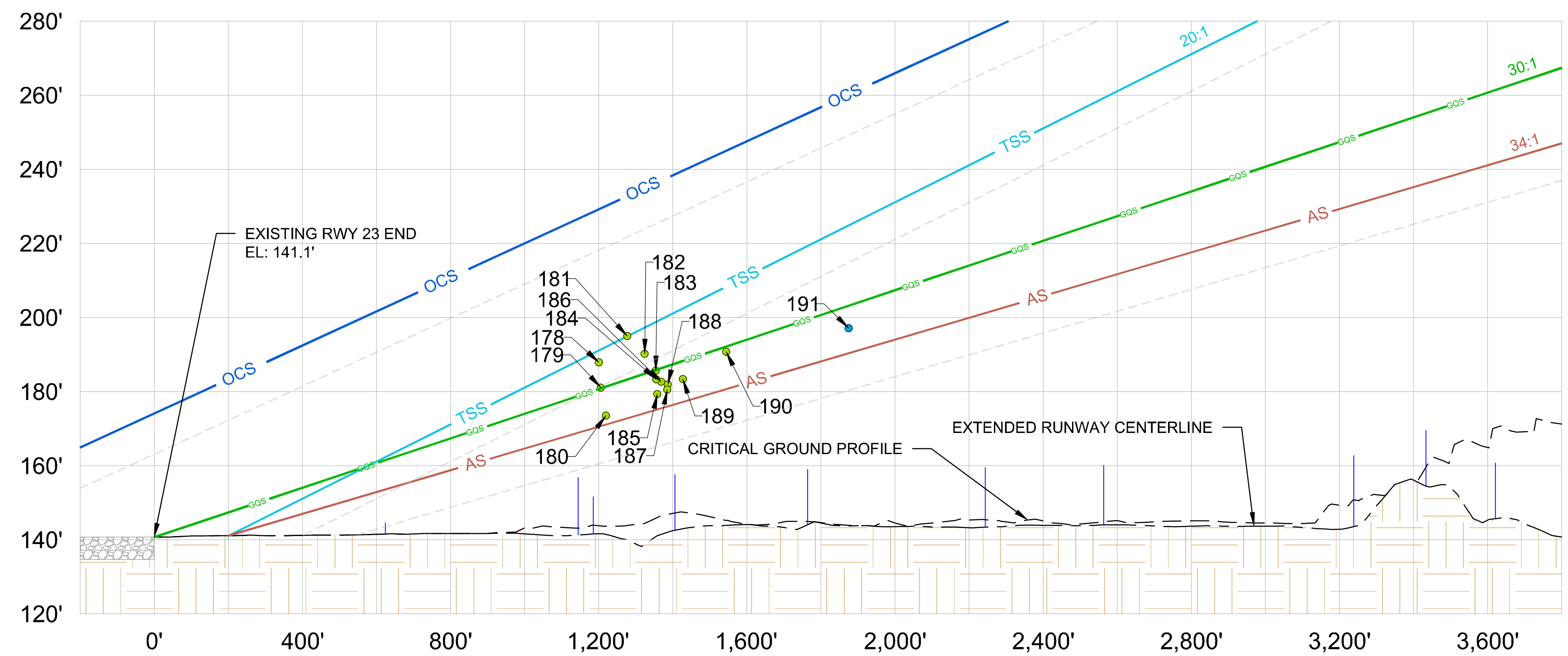
20' 0 20' 40'

VERTICAL SCALE

| LEGEND | | |
|---|---|---|
| EXISTING | PROPOSED | DESCRIPTION |
| AS | NA | APPROACH SURFACE |
| TSS | NA | THRESHOLD SITING SURFACE |
| GQS | NA | GLIDESLOPE QUALIFICATION SURFACE |
| OCS | NA | PAPI OBSTACLE CLEARANCE SURFACE |
| | | 10 FOOT OFFSET OF AIRSPACE SURFACES |
| RSA | RSA | RUNWAY SAFETY AREA |
| ROFA | ROFA | RUNWAY OBSTACLE FREE AREA |
| ROFZ | ROFZ | RUNWAY OBSTACLE FREE ZONE |
| RPZ | RPZ | RUNWAY PROTECTION ZONE |
| PL | NA | PROPERTY LINE |
| X | NA | FENCE |
| | NA | EXTENDED RUNWAY CENTERLINE |
| | | RUNWAY |
| | NA | EXTENDED CENTERLINE GROUND PROFILE |
| NA | | AIRFIELD PAVEMENT |
| NA | | PAVEMENT TO BE REMOVED |
| | NA | CRITICAL GROUND PROFILE |
| | NA | VEGETATION OBSTACLES |
| | NA | OTHER OBSTACLES |
| | NA | TRAVERSEWAY AND FENCE INTERSECTIONS |
| | NA | EASEMENTS |
| NA | | FUTURE AERONAUTICAL DEVELOPMENT |
| NA | | FUTURE NON-AERONAUTICAL DEVELOPMENT |




| RUNWAY 23 SIGNIFICANT OBJECT TABLE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING PART 77 APPROACH SURFACE PENETRATION | EXISTING 34:1 THRESHOLD SITING SURFACE PENETRATION | EXISTING 30:1 GLIDESLOPE QULIFICAION SURFACE PENETRATION | EXISTING PAPI OBSTACLE CLEARANCE SURFACE PENETRATION | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
| 178 | TREE | 2/12/2019 | 17.35 | -3.26 | 6.76 | -42.03 | 187.88 | 47.33 | NONE | REMOVE/TRIM |
| 179 | TREE | 2/12/2019 | 10.39 | -10.32 | -0.22 | -49.00 | 181.07 | 39.56 | NONE | REMOVE/TRIM |
| 180 | TREE | 2/12/2019 | 2.41 | -18.59 | -8.26 | -57.20 | 173.49 | 31.50 | NONE | REMOVE/TRIM |
| 181 | TREE | 2/12/2019 | 22.24 | N/A | N/A | N/A | 195.01 | 52.12 | NONE | REMOVE/TRIM |
| 182 | TREE | 2/12/2019 | 16.05 | N/A | N/A | N/A | 190.21 | 47.61 | NONE | REMOVE/TRIM |
| 183 | TREE | 2/12/2019 | 10.60 | -13.17 | -0.60 | -50.78 | 185.63 | 42.30 | NONE | REMOVE/TRIM |
| 184 | TREE | 2/12/2019 | 8.20 | -15.61 | -3.00 | -53.18 | 183.28 | 40.19 | NONE | REMOVE/TRIM |
| 185 | TREE | 2/12/2019 | 4.18 | -19.67 | -7.03 | -57.31 | 179.35 | 35.93 | NONE | REMOVE/TRIM |
| 186 | TREE | 2/12/2019 | 7.20 | -16.87 | -4.05 | -54.50 | 182.67 | 39.28 | NONE | REMOVE/TRIM |
| 187 | TREE | 2/12/2019 | 4.57 | -19.83 | -6.74 | -57.43 | 180.53 | 37.15 | NONE | REMOVE/TRIM |
| 188 | TREE | 2/12/2019 | 5.92 | -18.52 | -5.40 | -56.00 | 181.92 | 38.50 | NONE | REMOVE/TRIM |
| 189 | TREE | 2/12/2019 | 6.20 | N/A | N/A | N/A | 183.40 | 40.83 | NONE | REMOVE/TRIM |
| 190 | TREE | 2/12/2019 | 10.08 | -17.61 | N/A | -55.78 | 190.72 | 47.00 | NONE | REMOVE/TRIM |
| 191 | BUILDING | 2/12/2019 | 6.76 | -27.74 | -6.48 | -63.28 | 197.12 | 53.86 | NONE | LIGHT |




M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\ALP\07-09_LAL_P&P.dwg Aug11,2020 - 1:24pm Plotted By: HASK8597

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

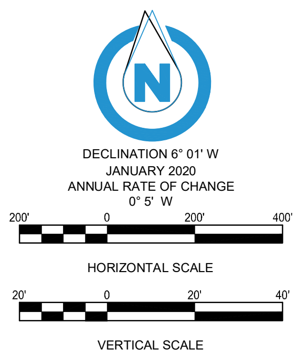
SHEET TITLE

INNER-APPROACH
PLAN & PROFILE
RUNWAY 23

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

SHEET 10 OF 23

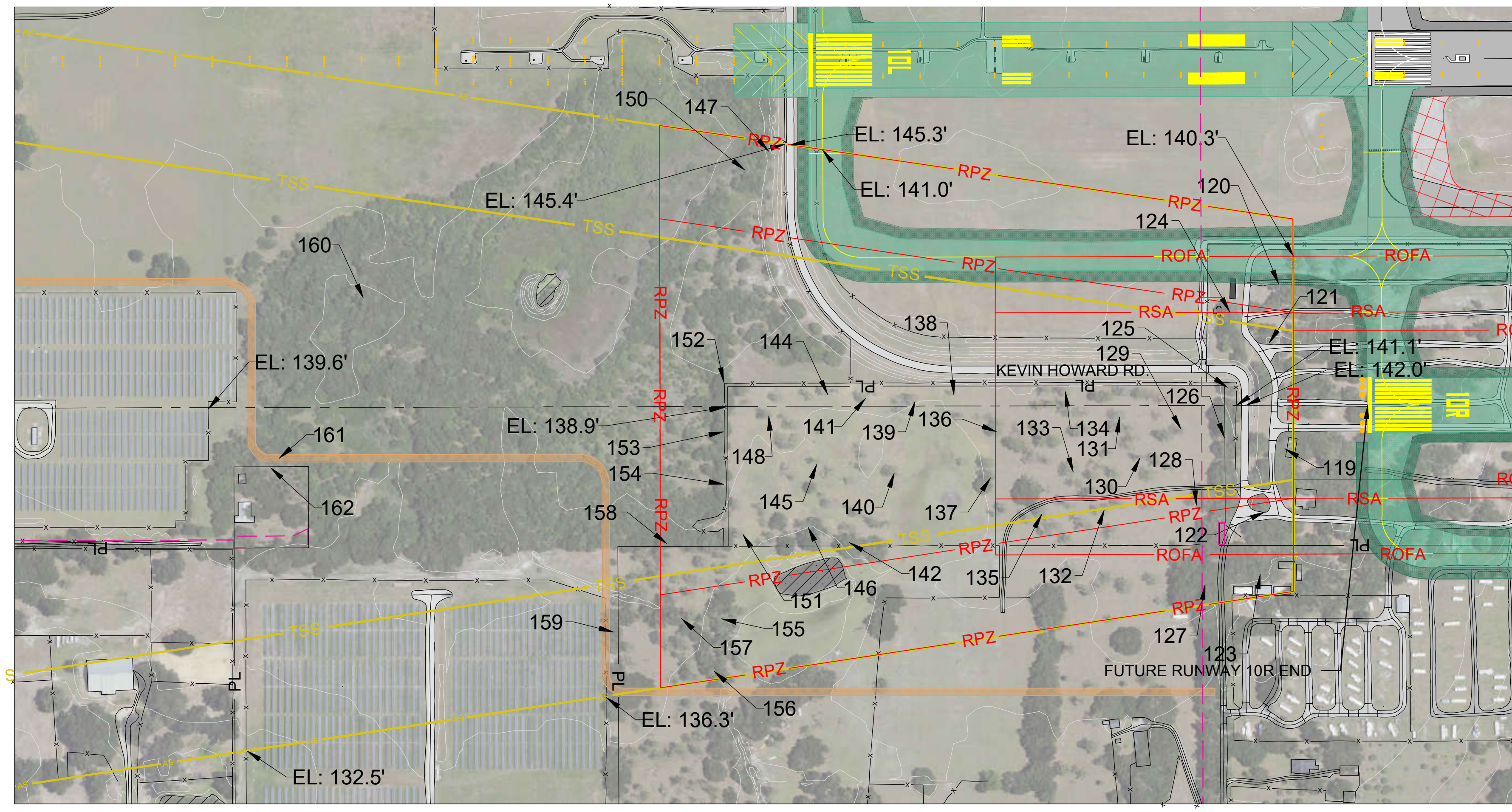


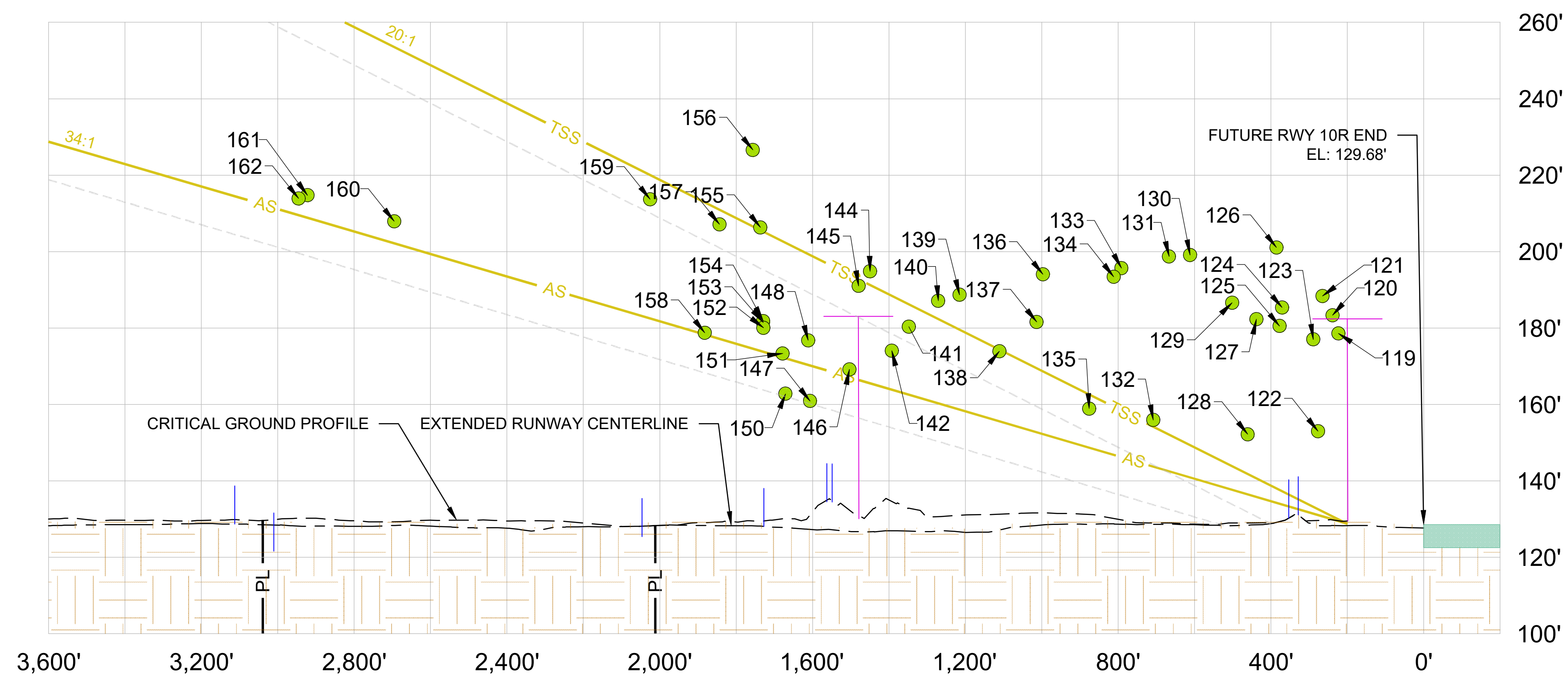

| LEGEND | | |
|---|---|---|
| EXISTING | PROPOSED | DESCRIPTION |
| NA | AS | APPROACH SURFACE |
| NA | TSS | THRESHOLD SITING SURFACE |
| NA | GQS | GLIDESLOPE QUALIFICATION SURFACE |
| NA | OCS | PAPI OBSTACLE CLEARANCE SURFACE |
| | | 10 FOOT OFFSET OF AIRSPACE SURFACES |
| NA | RSA | RUNWAY SAFETY AREA |
| NA | ROFA | RUNWAY OBSTACLE FREE AREA |
| NA | ROFZ | RUNWAY OBSTACLE FREE ZONE |
| NA | RPZ | RUNWAY PROTECTION ZONE |
| NA | | NAVAID CRITICAL AREA |
| PL | NA | PROPERTY LINE |
| X | NA | FENCE |
| NA | | EXTENDED RUNWAY CENTERLINE |
| NA | | RUNWAY |
| NA | | EXTENDED CENTERLINE GROUND PROFILE |
| NA | | AIRFIELD PAVEMENT |
| NA | | PAVEMENT TO BE REMOVED |
| | NA | CRITICAL GROUND PROFILE |
| NA | | VEGETATION OBSTACLES |
| NA | | TRAVERSEWAY AND FENCE INTERSECTIONS |
| NA | | AIRCRAFT TAIL HEIGHT |
| | NA | EASEMENTS |

NOTE: 1/ AIRCRAFT TAIL HEIGHTS BASED ON FUTURE AIRCRAFT B767-300F
2/ SINCE THE COMPLETION OF THE AGIS SURVEY, SOME CLOSE IN OBSTRUCTIONS HAVE BEEN CLEAR CUT AND THEREFORE HAVE BEEN REMOVED FROM THE ALP

**FUTURE RUNWAY 10R SIGNIFICANT OBJECT TABLE**

| OBJECT ID | DESCRIPTION | SURVEY DATE | FUTURE 34:1 PART 77 APPROACH SURFACE PENETRATION | FUTURE 20:1 THRESHOLD SITING SURFACE PENETRATION | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITON |
|---|---|---|---|---|---|---|---|---|
| 119 | TREE | 2/12/2019 | 50.02 | 48.67 | 179.50 | 50.36 | NEW RUNWAY | REMOVE/TRIM |
| 120 | TREE | 2/12/2019 | 54.29 | N/A | 184.22 | 53.92 | NEW RUNWAY | REMOVE/TRIM |
| 121 | TREE | 2/12/2019 | 58.56 | 56.35 | 189.27 | 59.41 | NEW RUNWAY | REMOVE/TRIM |
| 122 | TREE | 2/12/2019 | 22.84 | N/A | 153.88 | 25.13 | NEW RUNWAY | REMOVE/TRIM |
| 123 | TREE | 2/12/2019 | 46.51 | N/A | 177.93 | 50.03 | NEW RUNWAY | REMOVE/TRIM |
| 124 | TREE | 2/12/2019 | 52.43 | N/A | 186.24 | 56.36 | NEW RUNWAY | REMOVE/TRIM |
| 125 | TREE | 2/12/2019 | 47.43 | 42.90 | 181.43 | 50.95 | NEW RUNWAY | REMOVE/TRIM |
| 126 | TREE | 2/12/2019 | 67.69 | 62.99 | 201.94 | 72.11 | NEW RUNWAY | REMOVE/TRIM |
| 127 | TREE | 2/12/2019 | 47.43 | N/A | 183.22 | 55.04 | NEW RUNWAY | REMOVE/TRIM |
| 128 | TREE | 2/12/2019 | 16.60 | N/A | 153.06 | 24.33 | NEW RUNWAY | REMOVE/TRIM |
| 129 | TREE | 2/12/2019 | 49.84 | 42.75 | 187.50 | 58.19 | NEW RUNWAY | REMOVE/TRIM |
| 130 | TREE | 2/12/2019 | 59.09 | 49.74 | 200.00 | 70.69 | NEW RUNWAY | REMOVE/TRIM |
| 131 | TREE | 2/12/2019 | 57.09 | 46.60 | 199.62 | 70.11 | NEW RUNWAY | REMOVE/TRIM |
| 132 | TREE | 2/12/2019 | 13.07 | N/A | 156.81 | 27.86 | NEW RUNWAY | REMOVE/TRIM |
| 133 | TREE | 2/12/2019 | 50.40 | 37.35 | 196.59 | 67.50 | NEW RUNWAY | REMOVE/TRIM |
| 134 | TREE | 2/12/2019 | 47.54 | 34.07 | 194.32 | 64.41 | NEW RUNWAY | REMOVE/TRIM |
| 135 | TREE | 2/12/2019 | 11.12 | -3.67 | 159.79 | 31.10 | NEW RUNWAY | REMOVE/TRIM |
| 136 | TREE | 2/12/2019 | 42.72 | 25.44 | 194.95 | 65.84 | NEW RUNWAY | REMOVE/TRIM |
| 137 | TREE | 2/12/2019 | 29.73 | 12.10 | 182.45 | 54.36 | NEW RUNWAY | REMOVE/TRIM |
| 138 | TREE | 2/12/2019 | 19.23 | -0.41 | 174.81 | 46.48 | NEW RUNWAY | REMOVE/TRIM |
| 139 | TREE | 2/12/2019 | 30.92 | 9.14 | 189.57 | 61.77 | NEW RUNWAY | REMOVE/TRIM |
| 140 | TREE | 2/12/2019 | 27.70 | 4.77 | 188.00 | 61.04 | NEW RUNWAY | REMOVE/TRIM |
| 141 | TREE | 2/12/2019 | 18.70 | -5.82 | 181.26 | 53.18 | NEW RUNWAY | REMOVE/TRIM |
| 142 | TREE | 2/12/2019 | 11.06 | -14.37 | 174.94 | 48.89 | NEW RUNWAY | REMOVE/TRIM |
| 144 | TREE | 2/12/2019 | 30.15 | 3.54 | 195.70 | 67.64 | NEW RUNWAY | REMOVE/TRIM |
| 145 | TREE | 2/12/2019 | 25.49 | -1.73 | 191.92 | 65.21 | NEW RUNWAY | REMOVE/TRIM |
| 146 | TREE | 2/12/2019 | 2.93 | -24.79 | 170.06 | 44.39 | NEW RUNWAY | REMOVE/TRIM |
| 147 | TREE | 2/12/2019 | -8.38 | N/A | 161.79 | 30.12 | NEW RUNWAY | REMOVE/TRIM |
| 148 | TREE | 2/12/2019 | 22.45 | -7.43 | 192.67 | 64.57 | NEW RUNWAY | REMOVE/TRIM |
| 150 | TREE | 2/12/2019 | -8.37 | N/A | 163.69 | 34.38 | NEW RUNWAY | REMOVE/TRIM |
| 151 | TREE | 2/12/2019 | 1.94 | -29.38 | 174.23 | 47.91 | NEW RUNWAY | REMOVE/TRIM |
| 152 | TREE | 2/12/2019 | 7.17 | -25.19 | 180.93 | 51.77 | NEW RUNWAY | REMOVE/TRIM |
| 153 | TREE | 2/12/2019 | 8.55 | -23.82 | 182.32 | 53.84 | NEW RUNWAY | REMOVE/TRIM |
| 154 | TREE | 2/12/2019 | 8.93 | -23.44 | 182.70 | 54.90 | NEW RUNWAY | REMOVE/TRIM |
| 155 | TREE | 2/12/2019 | 33.21 | N/A | 207.20 | 82.84 | NEW RUNWAY | REMOVE/TRIM |
| 156 | TREE | 2/12/2019 | 52.88 | N/A | 227.46 | 103.65 | NEW RUNWAY | REMOVE/TRIM |
| 157 | TREE | 2/12/2019 | 30.87 | N/A | 208.01 | 83.06 | NEW RUNWAY | REMOVE/TRIM |
| 158 | TREE | 2/12/2019 | 1.38 | -34.14 | 179.65 | 52.15 | NEW RUNWAY | REMOVE/TRIM |
| 159 | TREE | 2/12/2019 | 32.16 | N/A | 214.64 | 87.88 | NEW RUNWAY | REMOVE/TRIM |
| 160 | TREE | 2/12/2019 | 6.69 | -45.57 | 208.88 | 79.33 | NEW RUNWAY | REMOVE/TRIM |
| 161 | TREE | 2/12/2019 | 6.82 | -50.12 | 215.69 | 87.31 | NEW RUNWAY | REMOVE/TRIM |
| 162 | TREE | 2/12/2019 | 5.27 | -52.15 | 214.83 | 86.62 | NEW RUNWAY | REMOVE/TRIM |




| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

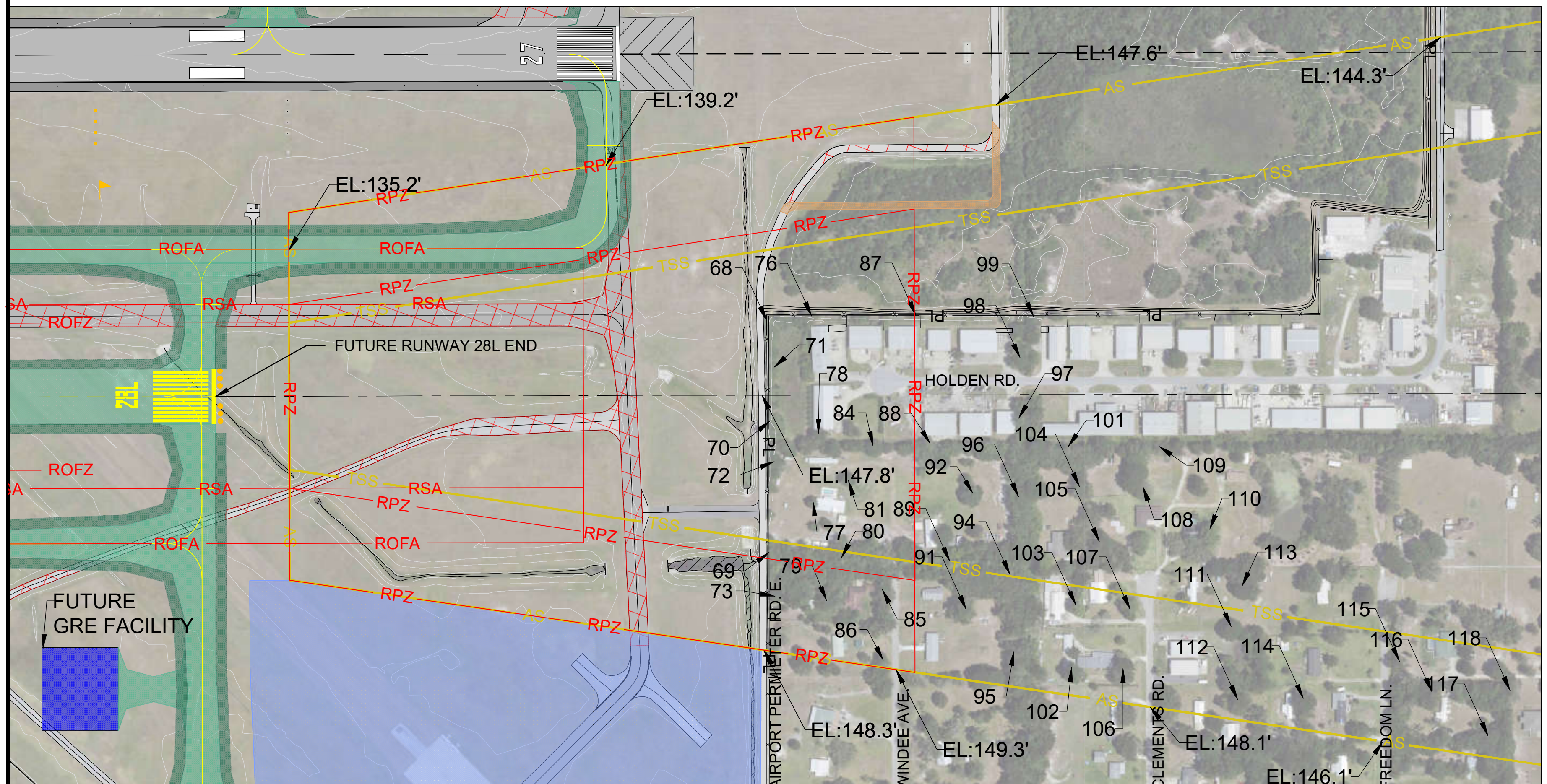
SHEET TITLE

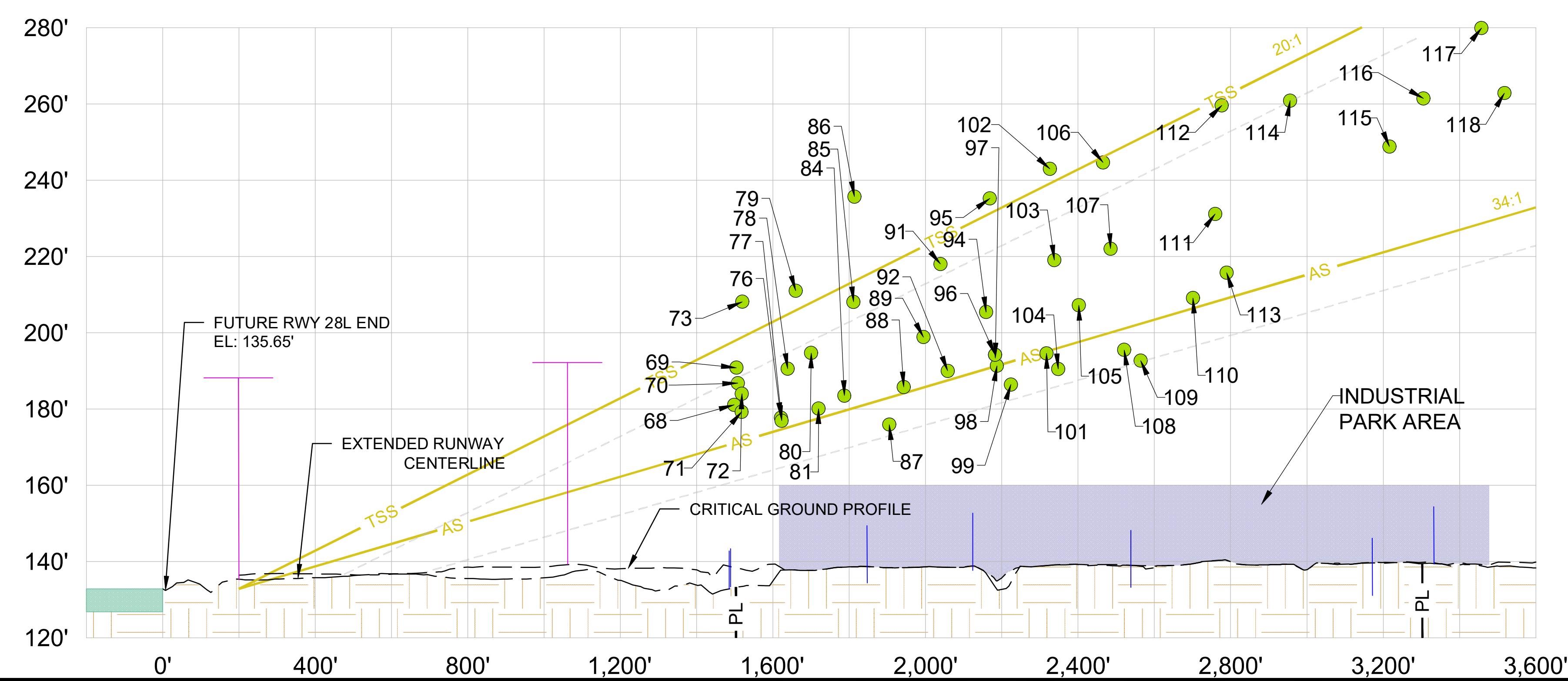
INNER-APPROACH PLAN & PROFILE FUTURE RUNWAY 10R

ATKINS
Member of the SNC-Lavalin Group

4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020




DECLINATION 6° 01' W
JANUARY 2020
ANNUAL RATE OF CHANGE
0° 5' W

200' 0 200' 400'

HORIZONTAL SCALE

20' 0 20' 40'

VERTICAL SCALE

| LEGEND | | |
|---|---|---|
| EXISTING | PROPOSED | DESCRIPTION |
| NA | AS | APPROACH SURFACE |
| NA | TSS | THRESHOLD SITING SURFACE |
| NA | GQS | GLIDESLOPE QUALIFICATION SURFACE |
| NA | OCS | PAPI OBSTACLE CLEARANCE SURFACE |
| | | 10 FOOT OFFSET OF AIRSPACE SURFACES |
| NA | RSA | RUNWAY SAFETY AREA |
| NA | ROFA | RUNWAY OBSTACLE FREE AREA |
| NA | ROFZ | RUNWAY OBSTACLE FREE ZONE |
| NA | RPZ | RUNWAY PROTECTION ZONE |
| NA | | NAVAID CRITICAL AREA |
| PL | NA | PROPERTY LINE |
| X | NA | FENCE |
| NA | | EXTENDED RUNWAY CENTERLINE |
| NA | | RUNWAY |
| NA | | EXTENDED CENTERLINE GROUND PROFILE |
| NA | | AIRFIELD PAVEMENT |
| NA | | AIRPORT ACCESS ROAD |
| NA | | PAVEMENT TO BE REMOVED |
| | NA | CRITICAL GROUND PROFILE |
| NA | | VEGETATION OBSTACLES |
| NA | | TRAVERSEWAY AND FENCE INTERSECTIONS |
| NA | | AIRCRAFT TAIL HEIGHT |

NOTE: 1/ AIRCRAFT TAIL HEIGHTS BASED ON FUTURE AIRCRAFT B767-300F
2/ SINCE THE COMPLETION OF THE AGIS SURVEY, SOME CLOSE IN OBSTRUCTIONS HAVE BEEN CLEAR CUT AND THEREFORE HAVE BEEN REMOVED FROM THE ALP

**FUTURE RUNWAY 28L SIGNIFICANT OBJECT TABLE**

| OBJECT ID | DESCRIPTION | SURVEY DATE | FUTURE 34:1 PART 77 APPROACH SURFACE PENETRATION | FUTURE 20:1 THRESHOLD SITING SURFACE PENETRATION | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITON |
|---|---|---|---|---|---|---|---|---|
| 68 | TREE | 2/12/2019 | 11.31 | -19.51 | 181.06 | 45.56 | NEW RUNWAY | REMOVE/TRIM |
| 69 | TREE | 2/12/2019 | 20.88 | N/A | 190.81 | 59.57 | NEW RUNWAY | REMOVE/TRIM |
| 70 | TREE | 2/12/2019 | 16.71 | -14.31 | 186.74 | 53.49 | NEW RUNWAY | REMOVE/TRIM |
| 71 | TREE | 2/12/2019 | 8.91 | -22.31 | 179.24 | 45.61 | NEW RUNWAY | REMOVE/TRIM |
| 72 | TREE | 2/12/2019 | 13.62 | -17.62 | 183.96 | 47.97 | NEW RUNWAY | REMOVE/TRIM |
| 73 | TREE | 2/12/2019 | 37.71 | N/A | 208.09 | 72.46 | NEW RUNWAY | REMOVE/TRIM |
| 76 | TREE | 2/12/2019 | 4.29 | -29.06 | 177.65 | 40.81 | NEW RUNWAY | REMOVE/TRIM |
| 77 | TREE | 2/12/2019 | 3.48 | -29.91 | 176.89 | 40.44 | NEW RUNWAY | REMOVE/TRIM |
| 78 | TREE | 2/12/2019 | 16.65 | -17.05 | 190.53 | 53.23 | NEW RUNWAY | REMOVE/TRIM |
| 79 | TREE | 2/12/2019 | 36.49 | N/A | 210.99 | 74.80 | NEW RUNWAY | REMOVE/TRIM |
| 80 | TREE | 2/12/2019 | 18.97 | N/A | 194.66 | 61.80 | NEW RUNWAY | REMOVE/TRIM |
| 81 | TREE | 2/12/2019 | 3.79 | -31.59 | 180.05 | 42.04 | NEW RUNWAY | REMOVE/TRIM |
| 84 | TREE | 2/12/2019 | 5.21 | -31.56 | 183.46 | 47.90 | NEW RUNWAY | REMOVE/TRIM |
| 85 | TREE | 2/12/2019 | 29.09 | N/A | 208.04 | 71.42 | NEW RUNWAY | REMOVE/TRIM |
| 86 | TREE | 2/12/2019 | 56.64 | N/A | 235.66 | 101.17 | NEW RUNWAY | REMOVE/TRIM |
| 87 | TREE | 2/12/2019 | -5.83 | -45.03 | 175.88 | 39.82 | NEW RUNWAY | REMOVE/TRIM |
| 88 | TREE | 2/12/2019 | 2.90 | -37.07 | 185.73 | 50.10 | NEW RUNWAY | REMOVE/TRIM |
| 89 | TREE | 2/12/2019 | 14.46 | -26.58 | 198.82 | 67.49 | NEW RUNWAY | REMOVE/TRIM |
| 91 | TREE | 2/12/2019 | 32.30 | N/A | 217.96 | 82.58 | NEW RUNWAY | REMOVE/TRIM |
| 92 | TREE | 2/12/2019 | 3.73 | -38.62 | 189.96 | 54.74 | NEW RUNWAY | REMOVE/TRIM |
| 94 | TREE | 2/12/2019 | 16.20 | -28.21 | 205.38 | 74.11 | NEW RUNWAY | REMOVE/TRIM |
| 95 | TREE | 2/12/2019 | 45.71 | N/A | 235.18 | 104.26 | NEW RUNWAY | REMOVE/TRIM |
| 96 | TREE | 2/12/2019 | 4.31 | -40.60 | 194.19 | 63.88 | NEW RUNWAY | REMOVE/TRIM |
| 97 | TREE | 2/12/2019 | 3.42 | -41.49 | 193.31 | 62.80 | NEW RUNWAY | REMOVE/TRIM |
| 98 | TREE | 2/12/2019 | 1.27 | -43.73 | 191.29 | 56.59 | NEW RUNWAY | REMOVE/TRIM |
| 99 | TREE | 2/12/2019 | -4.74 | -50.51 | 186.36 | 48.90 | NEW RUNWAY | REMOVE/TRIM |
| 101 | TREE | 2/12/2019 | 0.73 | -46.95 | 194.57 | 58.43 | NEW RUNWAY | REMOVE/TRIM |
| 102 | TREE | 2/12/2019 | 48.87 | N/A | 242.97 | 107.87 | NEW RUNWAY | REMOVE/TRIM |
| 103 | TREE | 2/12/2019 | 24.58 | N/A | 219.02 | 83.63 | NEW RUNWAY | REMOVE/TRIM |
| 104 | TREE | 2/12/2019 | -4.29 | -52.60 | 190.45 | 53.83 | NEW RUNWAY | REMOVE/TRIM |
| 105 | TREE | 2/12/2019 | 10.87 | -38.56 | 207.19 | 71.30 | NEW RUNWAY | REMOVE/TRIM |
| 106 | TREE | 2/12/2019 | 46.43 | N/A | 244.62 | 109.87 | NEW RUNWAY | REMOVE/TRIM |
| 107 | TREE | 2/12/2019 | 23.21 | N/A | 221.99 | 87.22 | NEW RUNWAY | REMOVE/TRIM |
| 108 | TREE | 2/12/2019 | -4.37 | -56.24 | 195.45 | 58.97 | NEW RUNWAY | REMOVE/TRIM |
| 109 | TREE | 2/12/2019 | -8.42 | -61.19 | 192.67 | 57.07 | NEW RUNWAY | REMOVE/TRIM |
| 110 | TREE | 2/12/2019 | 3.94 | -51.65 | 209.09 | 72.28 | NEW RUNWAY | REMOVE/TRIM |
| 111 | TREE | 2/12/2019 | 24.26 | N/A | 231.11 | 96.38 | NEW RUNWAY | REMOVE/TRIM |
| 112 | TREE | 2/12/2019 | 52.25 | N/A | 259.60 | 126.90 | NEW RUNWAY | REMOVE/TRIM |
| 113 | TREE | 2/12/2019 | 8.01 | -49.39 | 215.73 | 80.18 | NEW RUNWAY | REMOVE/TRIM |
| 114 | TREE | 2/12/2019 | 48.20 | N/A | 260.81 | 128.17 | NEW RUNWAY | REMOVE/TRIM |
| 115 | TREE | 2/12/2019 | 28.49 | N/A | 248.79 | 115.38 | NEW RUNWAY | REMOVE/TRIM |
| 116 | TREE | 2/12/2019 | 38.51 | N/A | 261.41 | 127.50 | NEW RUNWAY | REMOVE/TRIM |
| 117 | TREE | 2/12/2019 | 52.52 | N/A | 279.90 | 146.20 | NEW RUNWAY | REMOVE/TRIM |
| 118 | TREE | 2/12/2019 | 33.68 | N/A | 262.83 | 127.74 | NEW RUNWAY | REMOVE/TRIM |

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

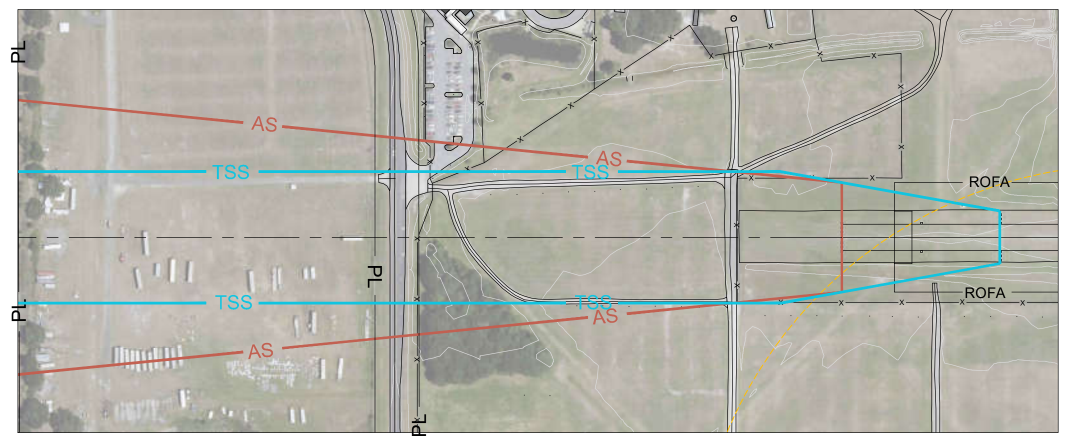
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

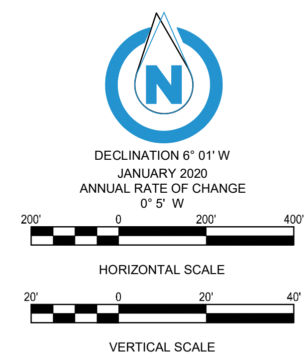
SHEET TITLE

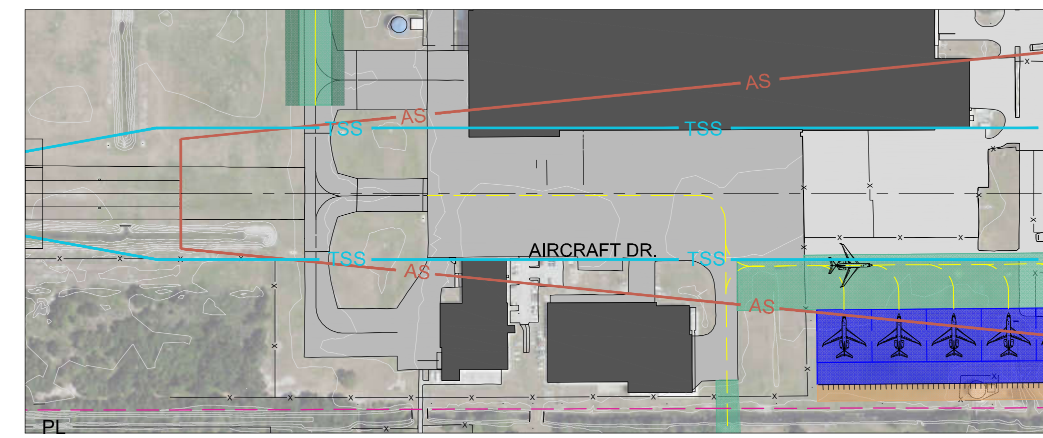
INNER-APPROACH
PLAN & PROFILE
FUTURE RUNWAY 28L

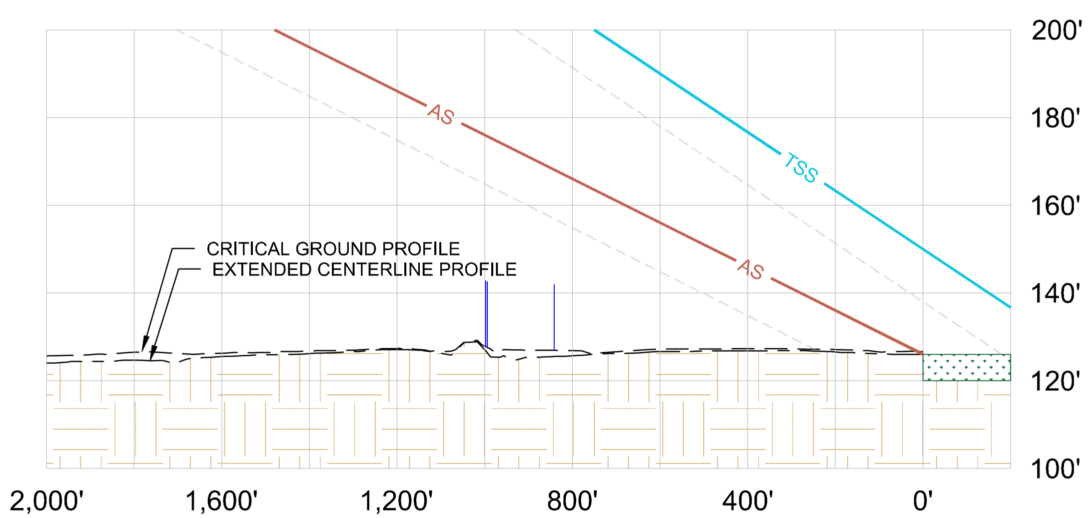
ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020



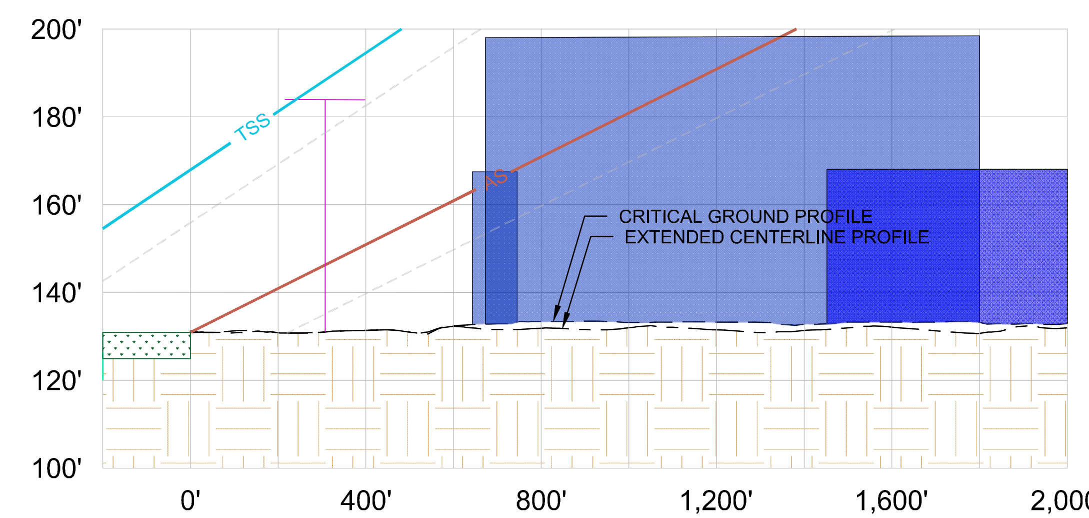




| LEGEND | | |
|---|---|---|
| EXISTING | PROPOSED | DESCRIPTION |
| AS | NA | APPROACH SURFACE |
| TSS | NA | THRESHOLD SITING SURFACE |
| RSA | NA | RUNWAY SAFETY AREA |
| ROFA | NA | RUNWAY OBSTACLE FREE AREA |
| ROFZ | NA | RUNWAY OBSTACLE FREE ZONE |
| RPZ | NA | RUNWAY PROTECTION ZONE |
| PL | NA | PROPERTY LINE |
| X | NA | FENCE |
| | NA | EXTENDED RUNWAY CENTERLINE |
| | NA | RUNWAY |
| | NA | EXTENDED CENTERLINE GROUND PROFILE |
| NA | | AIRFIELD PAVEMENT |
| | NA | CRITICAL GROUND PROFILE |
| | | SIGNIFICANT BUILDINGS |
| | NA | TRAVERSEWAY AND FENCE INTERSECTIONS |
| | NA | AIRCRAFT TAIL HEIGHT |

NOTES:
1/ AIRCRAFT TAIL HEIGHTS BASED ON FUTURE AIRCRAFT B767-300F
2/ NO OBSTACLES WERE FOUND BY THE SURVEY FOR RUNWAY 8-26




NOTES:
1/ FUTURE BUILDING HEIGHT IN THIS EXHIBIT IS PORTRAYED AS 35' AGL TO ACCOMMODATE FOR THE GULFSTREAM G550 TAIL HEIGHT OF APPROXIMATELY 25'

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

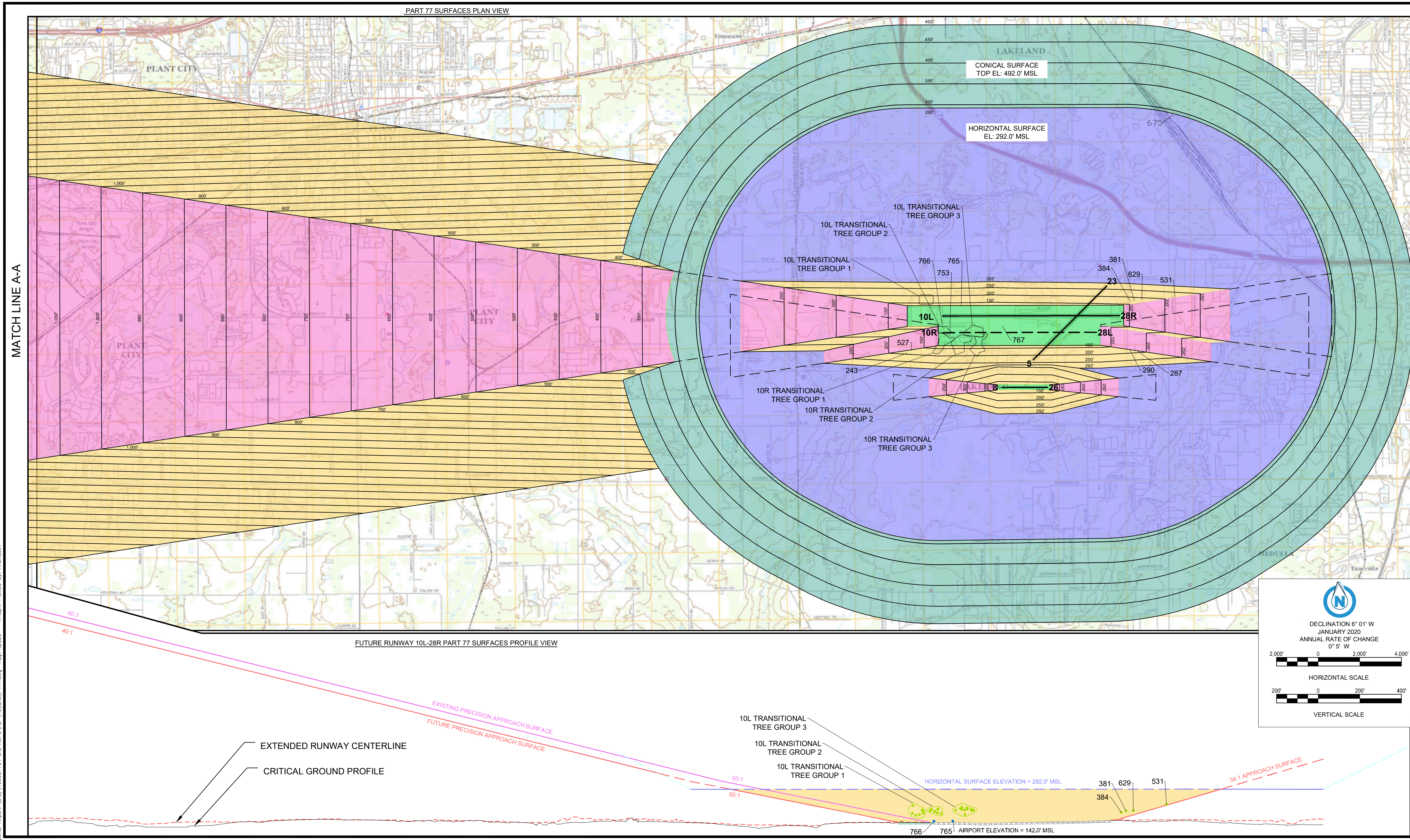
INNER-APPROACH
PLAN & PROFILE
RUNWAY 8-26

ATKINS
Member of the SNC-Lavalin Group

4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

SHEET 13 OF 23




| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

AIRPORT AIRSPACE - 1

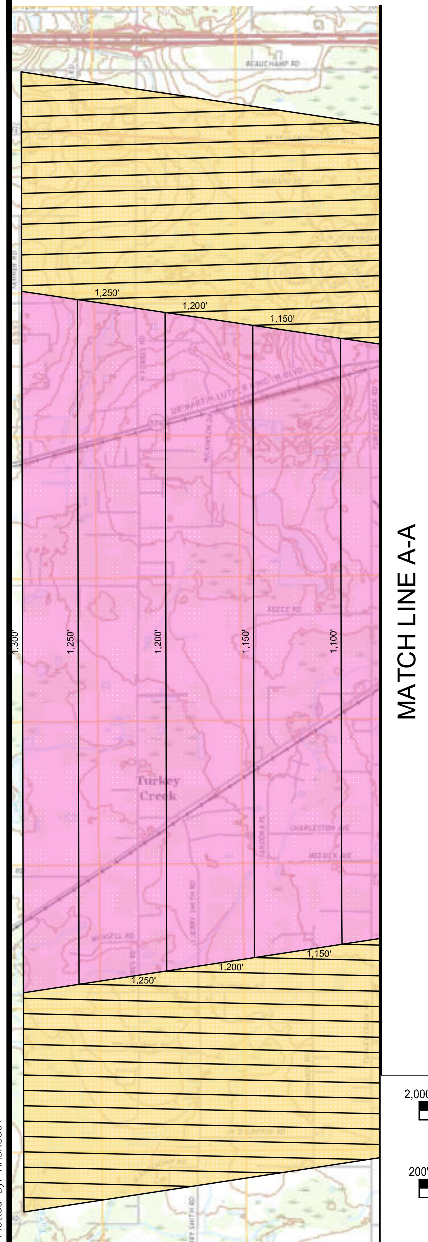
ATKINS
Member of the SNC-Lavalin Group

4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

SHEET 14 OF 23

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\ALP\10_LAL_PT77.dwg Aug11,2020 – 1:45pm Plotted By: HASK8597




HORIZONTAL SCALE: 2,000' 0 2,000' 4,000'

VERTICAL SCALE: 200' 0 200' 400'

| DIM | ITEM | DIMENSIONAL STANDARDS (FEET) | | | | | |
|---|---|---|---|---|---|---|---|
| | | VISUAL RUNWAY | | NON-PRECISION INSTRUMENT RUNWAY | | | PRECISION INSTRUMENT RUNWAY |
| | | A | B | A | B | | |
| | | | | | C | D | |
| A | WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END | 250 | 500 | 500 | 500 | 1,000 | 1,000 |
| B | RADIUS OF HORIZONTAL SURFACE | 5,000 | 5,000 | 5,000 | 10,000 | 10,000 | 10,000 |
| | | VISUAL RUNWAY | | NON-PRECISION INSTRUMENT RUNWAY | | | PRECISION INSTRUMENT RUNWAY |
| | | A | B | A | B | | |
| | | | | | C | D | |
| C | APPROACH SURFACE WIDTH AT END | 1,250 | 1,500 | 2,000 | 3,500 | 4,000 | 16,000 |
| D | APPROACH SURFACE LENGTH | 5,000 | 5,000 | 5,000 | 10,000 | 10,000 | * |
| E | APPROACH SLOPE | 20:1 | 20:1 | 20:1 | 34:1 | 34:1 | * |
| F | APPROACH FLARE | 0.1:1 | 0.1:1 | 0.15:1 | 0.15:1 | 0.15:1 | 0.15:1 |

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILES
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

## LEGEND

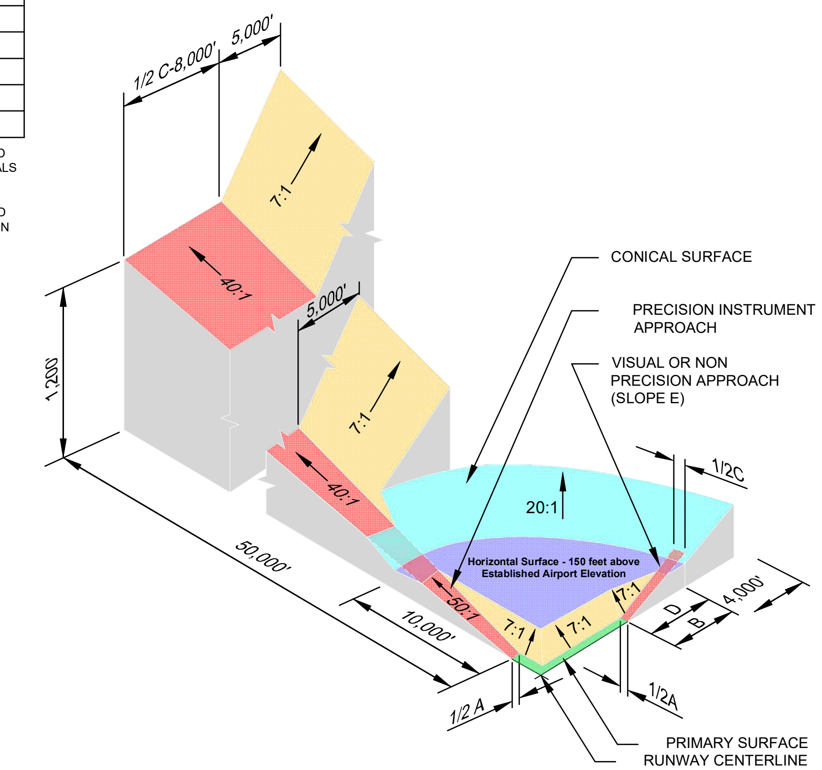
| EXISTING | PROPOSED | DESCRIPTION |
|---|---|---|
| | | CRITICAL APPROACH SURFACE |
| | | CRITICAL HORIZONTAL SURFACE |
| | | CONICAL SURFACE |
| | NA | COMPOSITE GROUND PROFILE[1] |
| | | EXTENDED CENTERLINE PROFILE |
| | NA | RUNWAY |
| | | VEGETATION PENETRATIONS[2] |
| | | OTHER PENETRATIONS[2] |

1. THE COMPOSITE CRITICAL GROUND PROFILE FOR EACH SURFACE WAS GENERATED FROM THE CRITICAL GROUND PROFILES OF ALIGNMENTS SET AT SPECIFIC INTERVALS WITHIN THE SURFACE ALONG THE SURVEYED GROUND TOPOGRAPHY.
2. ONLY TRANSITIONAL SURFACE PENETRATIONS ARE SHOWN ON SURFACE PROFILE VIEWS TO ENSURE CLARITY. NO APPROACH SURFACE PENETRATIONS WERE FOUND OUTSIDE THE EXTENTS OF THE INNER APPROACH SHEETS. FOR MORE INFORMATION SEE THE INNER APPROACH SHEETS WITHIN THIS ALP SET.

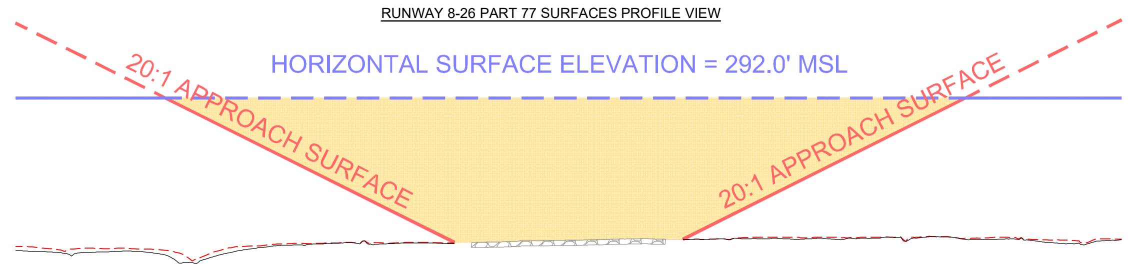
## PART 77 SURFACES

- Primary Surface
- Approach Surface
- Transitional Surface
- Horizontal Surface
- Conical Surface

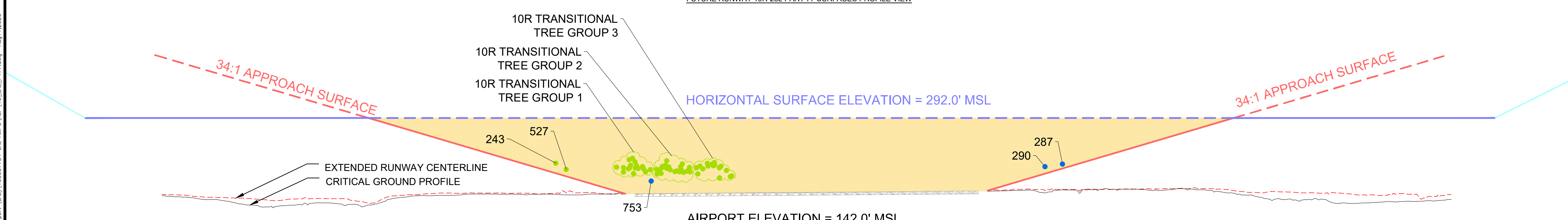
## SAMPLE ISOMETRIC VIEW OF SECTION




RUNWAY 8-26 PART 77 SURFACES PROFILE VIEW




FUTURE RUNWAY 10R-28L PART 77 SURFACES PROFILE VIEW




| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT: FlyLakeland Lakeland Linder International Airport

PROJECT: AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE: AIRPORT AIRSPACE - 2

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

| RUNWAY 10L-28R AIRSPACE PENETRATIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBJECT ID | GROUP | DESCRIPTION | SURVEY DATE | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | SURFACE BEING PENETRATED | EXTENT OF PENETRATION | PROPOSED DISPOSITION |
| 318 | GROUP 1 | TREE | 2/12/2019 | 134.38 | 188.13 | 53.75 | TRANSITIONAL | 18.39 | REMOVE/TRIM |
| 319 | GROUP 1 | TREE | 2/12/2019 | 134.34 | 190.79 | 56.45 | TRANSITIONAL | 4.72 | REMOVE/TRIM |
| 320 | GROUP 1 | TREE | 2/12/2019 | 134.14 | 169.20 | 35.06 | TRANSITIONAL | 21.95 | REMOVE/TRIM |
| 323 | GROUP 1 | TREE | 2/12/2019 | 134.15 | 213.13 | 78.98 | TRANSITIONAL | 12.60 | REMOVE/TRIM |
| 329 | GROUP 1 | TREE | 2/12/2019 | 134.14 | 176.05 | 41.91 | TRANSITIONAL | 21.34 | REMOVE/TRIM |
| 334 | GROUP 1 | TREE | 2/12/2019 | 134.1 | 166.07 | 31.97 | TRANSITIONAL | 18.19 | REMOVE/TRIM |
| 442 | GROUP 1 | TREE | 2/12/2019 | 133.46 | 176.12 | 42.66 | TRANSITIONAL | 25.69 | REMOVE/TRIM |
| 223 | GROUP 2 | TREE | 2/12/2019 | 128.9 | 196.76 | 67.86 | TRANSITIONAL | 32.93 | REMOVE/TRIM |
| 224 | GROUP 2 | TREE | 2/12/2019 | 129.44 | 178.49 | 49.05 | TRANSITIONAL | 38.85 | REMOVE/TRIM |
| 641 | GROUP 2 | TREE | 2/12/2019 | 128.39 | 195.46 | 67.07 | TRANSITIONAL | 13.38 | REMOVE/TRIM |
| 642 | GROUP 2 | TREE | 2/12/2019 | 130.04 | 194.96 | 64.92 | TRANSITIONAL | 40.94 | REMOVE/TRIM |
| 643 | GROUP 2 | TREE | 2/12/2019 | 130.3 | 187.38 | 57.08 | TRANSITIONAL | 54.34 | REMOVE/TRIM |
| 645 | GROUP 2 | TREE | 2/12/2019 | 129.83 | 190.79 | 60.96 | TRANSITIONAL | 21.75 | REMOVE/TRIM |
| 646 | GROUP 2 | TREE | 2/12/2019 | 130.03 | 185.23 | 55.20 | TRANSITIONAL | 44.02 | REMOVE/TRIM |
| 647 | GROUP 2 | TREE | 2/12/2019 | 129.24 | 183.34 | 54.10 | TRANSITIONAL | 18.79 | REMOVE/TRIM |
| 648 | GROUP 2 | TREE | 2/12/2019 | 128.14 | 175.01 | 46.87 | TRANSITIONAL | 10.06 | REMOVE/TRIM |
| 610 | GROUP 3 | TREE | 2/12/2019 | 122.56 | 204.80 | 82.24 | TRANSITIONAL | 20.80 | REMOVE/TRIM |
| 611 | GROUP 3 | TREE | 2/12/2019 | 124.92 | 198.74 | 73.82 | TRANSITIONAL | 39.81 | REMOVE/TRIM |
| 612 | GROUP 3 | TREE | 2/12/2019 | 114.46 | 201.77 | 87.31 | TRANSITIONAL | 37.99 | REMOVE/TRIM |
| 613 | GROUP 3 | TREE | 2/12/2019 | 114.49 | 194.70 | 80.21 | TRANSITIONAL | 21.53 | REMOVE/TRIM |
| 614 | GROUP 3 | TREE | 2/12/2019 | 114.26 | 189.65 | 75.39 | TRANSITIONAL | 42.21 | REMOVE/TRIM |
| 615 | GROUP 3 | TREE | 2/12/2019 | 114.3 | 200.26 | 85.96 | TRANSITIONAL | 52.41 | REMOVE/TRIM |
| 616 | GROUP 3 | TREE | 2/12/2019 | 118.72 | 195.21 | 76.49 | TRANSITIONAL | 55.19 | REMOVE/TRIM |
| 617 | GROUP 3 | TREE | 2/12/2019 | 114.47 | 195.71 | 81.24 | TRANSITIONAL | 6.93 | REMOVE/TRIM |
| 618 | GROUP 3 | TREE | 2/12/2019 | 116.8 | 191.67 | 74.87 | TRANSITIONAL | 0.12 | REMOVE/TRIM |
| 620 | GROUP 3 | TREE | 2/12/2019 | 114.28 | 190.66 | 76.38 | TRANSITIONAL | 26.15 | REMOVE/TRIM |
| 621 | GROUP 3 | TREE | 2/12/2019 | 116.09 | 169.96 | 53.87 | TRANSITIONAL | 36.13 | REMOVE/TRIM |
| 649 | GROUP 3 | TREE | 2/12/2019 | 126.17 | 191.17 | 65.00 | TRANSITIONAL | 9.85 | REMOVE/TRIM |
| 381 | N/A | TREE | 2/12/2019 | 138.61 | 187.13 | 48.52 | TRANSITIONAL | 9.85 | REMOVE/TRIM |
| 384 | N/A | TREE | 2/12/2019 | 137.84 | 180.50 | 42.66 | TRANSITIONAL | 4.89 | REMOVE/TRIM |
| 531 | N/A | TREE | 2/12/2019 | 142.72 | 219.44 | 76.72 | TRANSITIONAL | 3.21 | REMOVE/TRIM |
| 629 | N/A | TREE | 2/12/2019 | 137.13 | 188.86 | 51.73 | TRANSITIONAL | 4.31 | REMOVE/TRIM |
| 691 | N/A | SIGN | 2/12/2019 | 133.08 | 136.63 | 3.55 | TRANSITIONAL | 2.33 | REMOVE/TRIM |
| 765 | N/A | STREET SIGN | 2/12/2019 | 131.13 | 138.12 | 6.99 | TRANSITIONAL | 2.79 | REMOVE |
| 766 | N/A | FENCE | 2/12/2019 | 130.06 | 138.04 | 7.98 | TRANSITIONAL | 6.35 | RELOCATE |

## NOTES:

1. FEDERAL AVIATION REGULATIONS PART 77, STATES THAT A STRUCTURE IS PRESUMED TO HAVE A SUBSTANTIAL ADVERSE EFFECT UPON THE SAFE AND EFFICIENT USE OF NAVIGABLE AIRSPACE IF ITS HEIGHT EXCEEDS THE FOLLOWING STANDARDS:

1.1. A HEIGHT OF FIVE HUNDRED (500) FEET ABOVE GROUND LEVEL AT THE SITE OF THE OBJECT ANYWHERE IN THE STATE.

1.2. A HEIGHT THAT IS TWO HUNDRED (200) FEET ABOVE GROUND LEVEL OR ABOVE THE ESTABLISHED AIRPORT ELEVATION, WHICHEVER IS HIGHER, WITHIN THREE (3) NAUTICAL MILES OF THE ESTABLISHED REFERENCED POINT OF A PUBLIC-USE AIRPORT, EXCLUDING HELIPORTS, AND THE HEIGHT INCREASES IN THE PROPORTION OF ONE HUNDRED (100) FEET FOR EACH ADDITIONAL NAUTICAL MILE OF DISTANCE FROM THE AIRPORT UP TO A MAXIMUM OF FIVE HUNDRED (500) FEET.

1.3. A HEIGHT WITHIN A TERMINAL OBSTACLE CLEARANCE AREA, INCLUDING AN INITIAL APPROACH SEGMENT, A DEPARTURE AREA, AND A CIRCLING APPROACH AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, WHICH WOULD RESULT IN THE VERTICAL DISTANCE BETWEEN ANY POINT ON THE OBJECT AND AN ESTABLISHED MINIMUM INSTRUMENT FLIGHT ALTITUDE WITHIN THAT AREA OR SEGMENT TO BE LESS THAN THE REQUIRED OBSTACLE CLEARANCE.

1.4. A HEIGHT WITHIN AN EN ROUTE OBSTACLE CLEARANCE AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, INCLUDING TURN AND TERMINATION AREAS, OF A FEDERAL AIRWAY OR APPROVED OFF-AIRWAY ROUTE, THAT WOULD INCREASE THE MINIMUM OBSTACLE CLEARANCE ALTITUDE.

1.5. THE SURFACE OF A TAKEOFF AND LANDING AREA OF A PUBLIC-USE AIRPORT OR ANY IMAGINARY SURFACE AS ESTABLISHED BY FAR PART 77. HOWEVER, NO PART OF THE TAKEOFF OR LANDING AREA ITSELF WILL BE CONSIDERED TO BE AN OBSTRUCTION.

2. CHAPTER 333 OF TITLE XXV - SECTIONS 01 THROUGH 135 OF THE 2018 FLORIDA STATUTES CONTAINS FURTHER INFORMATION REGARDING THE PROTECTION OF LAND USE WITHIN AIRPORT AIRSPACE.

3. FAR PART 77 IMAGINARY SURFACES ARE AS SHOWN ON THESE SHEETS FOR LAKELAND LINDER INTERNATIONAL AIRPORT (LAL). THESE SURFACES ARE DEPICTED BASED UPON ULTIMATE AIRPORT DEVELOPMENT PER FAA ARP STANDARD OPERATING PROCEDURE 2.00.

4. SUPPLEMENTAL GROUND TOPOGRAPHY DATA WAS DERIVED FROM ASTER GLOBAL DIGITAL ELEVATION MODEL (GDEM) V2 30M DEM DATA. ASTER GDEM IS A PRODUCT OF THE MINISTRY OF ECONOMY, TRADE, AND INDUSTRY OF JAPAN (METI) AND THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION'S (NASA) LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER (LP DAAC)

| RUNWAY 10R-28L AIRSPACE PENETRATIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBJECT ID | GROUP | DESCRIPTION | SURVEY DATE | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | SURFACE BEING PENETRATED | EXTENT OF PENETRATION | PROPOSED DISPOSITION |
| 222 | GROUP 1 | TREE | 2/12/2019 | 128.69 | 173.26 | 44.57 | TRANSITIONAL | 43.45 | REMOVE/TRIM |
| 229 | GROUP 1 | TREE | 2/12/2019 | 126.46 | 177.02 | 50.56 | TRANSITIONAL | 47.02 | REMOVE/TRIM |
| 230 | GROUP 1 | TREE | 2/12/2019 | 127.48 | 184.27 | 56.79 | TRANSITIONAL | 54.39 | REMOVE/TRIM |
| 231 | GROUP 1 | TREE | 2/12/2019 | 124.71 | 187.02 | 62.31 | TRANSITIONAL | 8.40 | REMOVE/TRIM |
| 251 | GROUP 1 | TREE | 2/12/2019 | 127.95 | 203.11 | 75.16 | TRANSITIONAL | 73.38 | REMOVE/TRIM |
| 252 | GROUP 1 | TREE | 2/12/2019 | 128.09 | 190.99 | 62.90 | TRANSITIONAL | 61.23 | REMOVE/TRIM |
| 253 | GROUP 1 | TREE | 2/12/2019 | 128.04 | 190.61 | 62.57 | TRANSITIONAL | 60.76 | REMOVE/TRIM |
| 254 | GROUP 1 | TREE | 2/12/2019 | 127.11 | 183.29 | 56.18 | TRANSITIONAL | 53.31 | REMOVE/TRIM |
| 255 | GROUP 1 | TREE | 2/12/2019 | 126.38 | 188.21 | 61.83 | TRANSITIONAL | 58.26 | REMOVE/TRIM |
| 256 | GROUP 1 | TREE | 2/12/2019 | 127.32 | 198.69 | 71.37 | TRANSITIONAL | 68.86 | REMOVE/TRIM |
| 258 | GROUP 1 | TREE | 2/12/2019 | 126.19 | 185.31 | 59.12 | TRANSITIONAL | 44.59 | REMOVE/TRIM |
| 278 | GROUP 1 | TREE | 2/12/2019 | 126.75 | 176.37 | 49.62 | TRANSITIONAL | 32.62 | REMOVE/TRIM |
| 428 | GROUP 1 | TREE | 2/12/2019 | 128.79 | 185.48 | 56.69 | TRANSITIONAL | 55.74 | REMOVE/TRIM |
| 517 | GROUP 1 | TREE | 2/12/2019 | 123.85 | 172.18 | 48.33 | TRANSITIONAL | 41.98 | REMOVE/TRIM |
| 518 | GROUP 1 | TREE | 2/12/2019 | 124.85 | 181.77 | 56.92 | TRANSITIONAL | 51.69 | REMOVE/TRIM |
| 519 | GROUP 1 | TREE | 2/12/2019 | 127.15 | 206.01 | 78.86 | TRANSITIONAL | 76.22 | REMOVE/TRIM |
| 524 | GROUP 1 | TREE | 2/12/2019 | 125.26 | 186.06 | 60.80 | TRANSITIONAL | 3.66 | REMOVE/TRIM |
| 644 | GROUP 1 | TREE | 2/12/2019 | 129.1 | 183.59 | 54.49 | TRANSITIONAL | 53.87 | REMOVE/TRIM |
| 225 | GROUP 2 | TREE | 2/12/2019 | 125.77 | 175.93 | 50.16 | TRANSITIONAL | 45.30 | REMOVE/TRIM |
| 226 | GROUP 2 | TREE | 2/12/2019 | 124.25 | 177.13 | 52.88 | TRANSITIONAL | 46.40 | REMOVE/TRIM |
| 227 | GROUP 2 | TREE | 2/12/2019 | 119.87 | 176.23 | 56.36 | TRANSITIONAL | 45.99 | REMOVE/TRIM |
| 228 | GROUP 2 | TREE | 2/12/2019 | 122.49 | 181.33 | 58.84 | TRANSITIONAL | 50.92 | REMOVE/TRIM |
| 259 | GROUP 2 | TREE | 2/12/2019 | 123.32 | 178.87 | 55.55 | TRANSITIONAL | 48.35 | REMOVE/TRIM |
| 260 | GROUP 2 | TREE | 2/12/2019 | 125.95 | 186.44 | 60.49 | TRANSITIONAL | 55.71 | REMOVE/TRIM |
| 261 | GROUP 2 | TREE | 2/12/2019 | 123.6 | 172.68 | 49.08 | TRANSITIONAL | 41.81 | REMOVE/TRIM |
| 277 | GROUP 2 | TREE | 2/12/2019 | 124.18 | 178.66 | 54.48 | TRANSITIONAL | 47.97 | REMOVE/TRIM |
| 504 | GROUP 2 | TREE | 2/12/2019 | 124.5 | 185.68 | 61.18 | TRANSITIONAL | 54.84 | REMOVE/TRIM |
| 505 | GROUP 2 | TREE | 2/12/2019 | 124.34 | 194.02 | 69.68 | TRANSITIONAL | 63.41 | REMOVE/TRIM |
| 506 | GROUP 2 | TREE | 2/12/2019 | 123.52 | 187.83 | 64.31 | TRANSITIONAL | 57.25 | REMOVE/TRIM |
| 507 | GROUP 2 | TREE | 2/12/2019 | 120.84 | 177.23 | 56.39 | TRANSITIONAL | 46.16 | REMOVE/TRIM |
| 508 | GROUP 2 | TREE | 2/12/2019 | 118.55 | 183.03 | 64.48 | TRANSITIONAL | 24.54 | REMOVE/TRIM |
| 509 | GROUP 2 | TREE | 2/12/2019 | 121.35 | 184.55 | 63.20 | TRANSITIONAL | 54.20 | REMOVE/TRIM |
| 510 | GROUP 2 | TREE | 2/12/2019 | 119.67 | 185.81 | 66.14 | TRANSITIONAL | 55.54 | REMOVE/TRIM |
| 511 | GROUP 2 | TREE | 2/12/2019 | 120.36 | 190.86 | 70.50 | TRANSITIONAL | 60.53 | REMOVE/TRIM |
| 512 | GROUP 2 | TREE | 2/12/2019 | 117.55 | 200.96 | 83.41 | TRANSITIONAL | 47.70 | REMOVE/TRIM |
| 513 | GROUP 2 | TREE | 2/12/2019 | 113.86 | 187.33 | 73.47 | TRANSITIONAL | 1.65 | REMOVE/TRIM |
| 514 | GROUP 2 | TREE | 2/12/2019 | 116.51 | 188.84 | 72.33 | TRANSITIONAL | 18.02 | REMOVE/TRIM |
| 515 | GROUP 2 | TREE | 2/12/2019 | 119.34 | 173.69 | 54.35 | TRANSITIONAL | 30.00 | REMOVE/TRIM |
| 516 | GROUP 2 | TREE | 2/12/2019 | 121.31 | 182.28 | 60.97 | TRANSITIONAL | 52.09 | REMOVE/TRIM |
| 609 | GROUP 2 | TREE | 2/12/2019 | 123.32 | 177.53 | 54.21 | TRANSITIONAL | 47.04 | REMOVE/TRIM |
| 262 | GROUP 3 | TREE | 2/12/2019 | 110.44 | 196.92 | 86.48 | TRANSITIONAL | 65.78 | REMOVE/TRIM |
| 263 | GROUP 3 | TREE | 2/12/2019 | 121.37 | 166.75 | 45.38 | TRANSITIONAL | 35.35 | REMOVE/TRIM |
| 264 | GROUP 3 | TREE | 2/12/2019 | 112.13 | 190.23 | 78.10 | TRANSITIONAL | 59.11 | REMOVE/TRIM |
| 265 | GROUP 3 | TREE | 2/12/2019 | 110.3 | 191.74 | 81.44 | TRANSITIONAL | 50.68 | REMOVE/TRIM |
| 266 | GROUP 3 | TREE | 2/12/2019 | 111.08 | 194.77 | 83.69 | TRANSITIONAL | 26.00 | REMOVE/TRIM |
| 267 | GROUP 3 | TREE | 2/12/2019 | 112.15 | 193.26 | 81.11 | TRANSITIONAL | 1.49 | REMOVE/TRIM |
| 268 | GROUP 3 | TREE | 2/12/2019 | 115.19 | 189.47 | 74.28 | TRANSITIONAL | 32.40 | REMOVE/TRIM |
| 269 | GROUP 3 | TREE | 2/12/2019 | 116.84 | 191.37 | 74.53 | TRANSITIONAL | 54.99 | REMOVE/TRIM |
| 270 | GROUP 3 | TREE | 2/12/2019 | 115.26 | 189.47 | 74.21 | TRANSITIONAL | 35.96 | REMOVE/TRIM |
| 271 | GROUP 3 | TREE | 2/12/2019 | 116.14 | 185.68 | 69.54 | TRANSITIONAL | 54.46 | REMOVE/TRIM |
| 272 | GROUP 3 | TREE | 2/12/2019 | 120.51 | 180.13 | 59.62 | TRANSITIONAL | 20.50 | REMOVE/TRIM |
| 273 | GROUP 3 | TREE | 2/12/2019 | 114.42 | 188.84 | 74.42 | TRANSITIONAL | 30.32 | REMOVE/TRIM |
| 275 | GROUP 3 | TREE | 2/12/2019 | 114.07 | 183.41 | 69.34 | TRANSITIONAL | 10.36 | REMOVE/TRIM |
| 276 | GROUP 3 | TREE | 2/12/2019 | 116.61 | 164.10 | 47.49 | TRANSITIONAL | 32.87 | REMOVE/TRIM |
| 503 | GROUP 3 | TREE | 2/12/2019 | 117.69 | 195.28 | 77.59 | TRANSITIONAL | 64.26 | REMOVE/TRIM |
| 619 | GROUP 3 | TREE | 2/12/2019 | 117.72 | 168.44 | 50.72 | TRANSITIONAL | 37.02 | REMOVE/TRIM |
| 243 | N/A | TREE | 2/12/2019 | 123.31 | 195.66 | 72.35 | TRANSITIONAL | 2.76 | REMOVE/TRIM |
| 287 | N/A | TREE | 2/12/2019 | 134.48 | 192.55 | 58.07 | TRANSITIONAL | 3.25 | REMOVE/TRIM |
| 290 | N/A | TREE | 2/12/2019 | 134.57 | 186.99 | 52.42 | TRANSITIONAL | 8.41 | REMOVE/TRIM |
| 527 | N/A | TREE | 2/12/2019 | 124.9 | 182.02 | 57.12 | TRANSITIONAL | 9.72 | REMOVE/TRIM |
| 753 | N/A | POLE UTIL | 2/12/2019 | 126.26 | 157.21 | 30.95 | TRANSITIONAL | 27.11 | REMOVE/LIGHT |
| 675 | N/A | CELL TOWER | 2/12/2019 | 137.98 | 294.63 | 156.64 | HORIZONTAL | 2.63 | LIGHT |

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

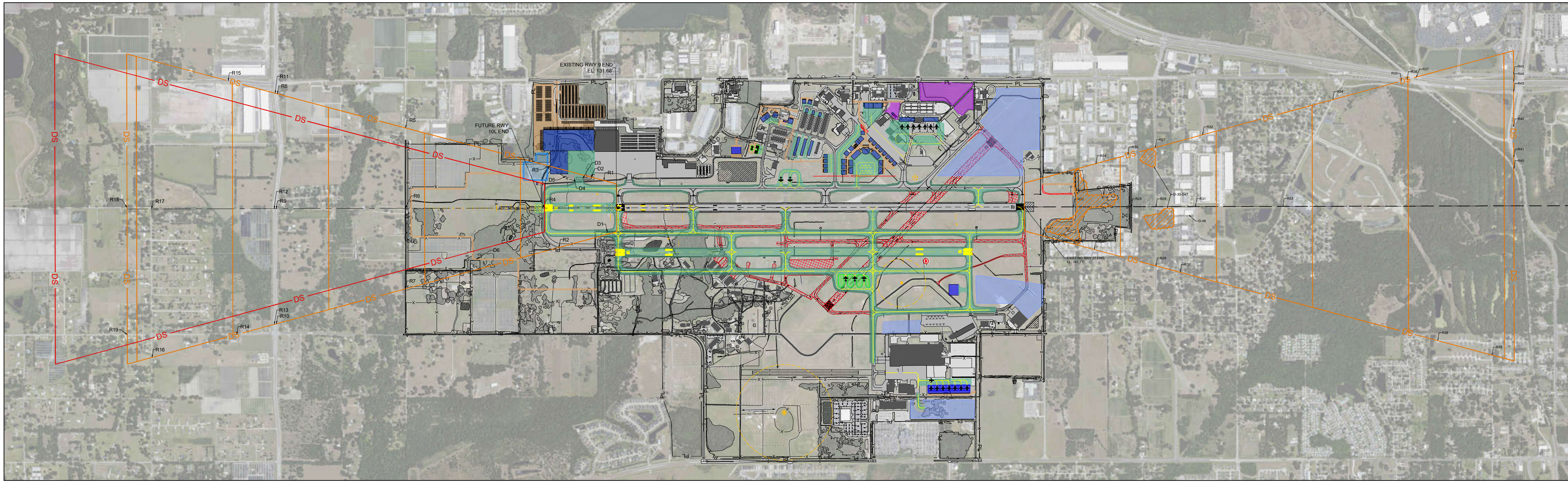
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

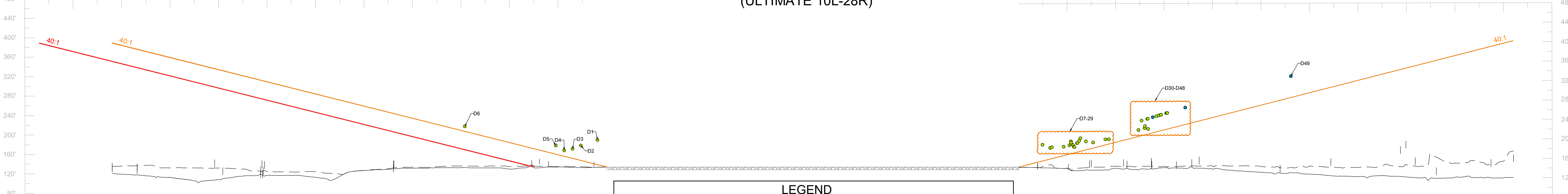
AIRPORT AIRSPACE - 3

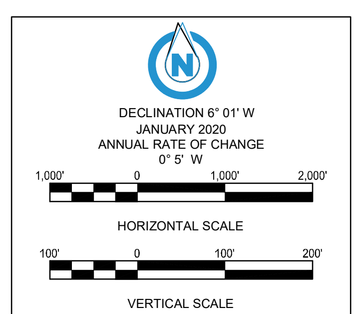
ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020



## RUNWAY 9-27
## (ULTIMATE 10L-28R)






### LEGEND

| EXISTING | PROPOSED | DESCRIPTION |
|---|---|---|
| | | 40:1 DEPARTURE SURFACE |
| | NA | COMPOSITE GROUND PROFILE[1] |
| | NA | EXTENDED CENTERLINE PROFILE |
| PL | NA | PROPERTY LINE |
| | NA | RUNWAY |
| NA | | PROPOSED AIRFIELD PAVEMENT |
| NA | | PROPOSED BUILDINGS |
| | SAME | VEGETATION PENETRATIONS TO 40:1 DEPARTURE SURFACE |
| | SAME | OTHER PENETRATIONS TO 40:1 DEPARTURE SURFACE |
| | NA | ROADWAY INTERSECTIONS[2,3] |
| | NA | WATERWAY INTERSECTIONS TO EXTENDED RUNWAY CENTERLINE |
| | NA | CLUSTERED DEPARTURE SURFACE PENETRATIONS |

1. THE COMPOSITE CRITICAL GROUND PROFILE FOR EACH SURFACE WAS GENERATED FROM THE CRITICAL GROUND PROFILES OF ALIGNMENTS SET AT SPECIFIC INTERVALS WITHIN THE SURFACE ALONG THE SURVEYED GROUND TOPOGRAPHY.
2. ROADWAY INTERSECTIONS SHOWN REPRESENT ESTIMATED ROADWAY CENTERLINE INTERSECTIONS WITH THE EXTENDED RUNWAY CENTERLINE FOR MAJOR ROADWAYS ONLY. MINOR ROADWAYS WERE EVALUATED AND DETERMINED TO NEED NO REPRESENTATION.
3. ALL PRIVATE ROADS/ROADWAYS/INTERSTATES/RAILROADS/WATERWAYS ARE DEPICTED 10/15/17/23/23 FEET HIGHER, RESPECTIVELY, THAN THE SURVEYED LOCATION PER FAA SOP NO. 200.

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

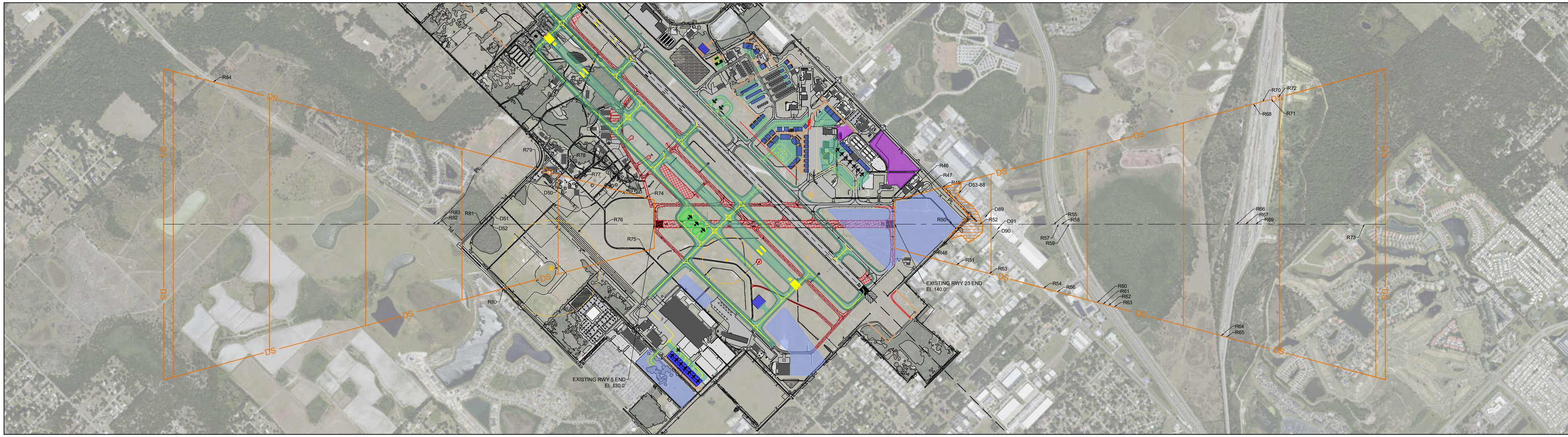
DEPARTURE SURFACE
DRAWING RUNWAY 9-27


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

SHEET 17 OF 23

\\tsmbc1000\Aviation\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\ALP\11-13_LAL_DEP.dwg Aug17,2020 - 12:54pm Plotted By: HASK8597



DECLINATION 6° 01' W
JANUARY 2020
ANNUAL RATE OF CHANGE
0° 5' W

HORIZONTAL SCALE (1,000' 0 1,000' 2,000')

VERTICAL SCALE (100' 0 100' 200')

## LEGEND

| EXISTING | PROPOSED | DESCRIPTION |
|---|---|---|
| | | 40:1 DEPARTURE SURFACE |
| | NA | COMPOSITE GROUND PROFILE[1] |
| | NA | EXTENDED CENTERLINE PROFILE |
| PL | NA | PROPERTY LINE |
| | NA | RUNWAY |
| NA | | PROPOSED AIRFIELD PAVEMENT |
| NA | | PROPOSED BUILDINGS |
| | SAME | VEGETATION PENETRATIONS TO 40:1 DEPARTURE SURFACE |
| | SAME | OTHER PENETRATIONS TO 40:1 DEPARTURE SURFACE |
| | NA | ROADWAY INTERSECTIONS[2,3] |
| | NA | WATERWAY INTERSECTIONS TO EXTENDED RUNWAY CENTERLINE |
| | NA | CLUSTERED DEPARTURE SURFACE PENETRATIONS |

1. THE COMPOSITE CRITICAL GROUND PROFILE FOR EACH SURFACE WAS GENERATED FROM THE CRITICAL GROUND PROFILES OF ALIGNMENTS SET AT SPECIFIC INTERVALS WITHIN THE SURFACE ALONG THE SURVEYED GROUND TOPOGRAPHY.
2. ROADWAY INTERSECTIONS SHOWN REPRESENT ESTIMATED ROADWAY CENTERLINE INTERSECTIONS WITH THE EXTENDED RUNWAY CENTERLINE FOR MAJOR ROADWAYS ONLY. MINOR ROADWAYS WERE EVALUATED AND DETERMINED TO NEED NO REPRESENTATION.
3. ALL PRIVATE ROADS/ROADWAYS/INTERSTATES/RAILROADS/WATERWAYS ARE DEPICTED 10/15/17/23/23 FEET HIGHER, RESPECTIVELY, THAN THE SURVEYED LOCATION PER FAA SOP NO. 200.

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT
FlyLakeland Lakeland Linder International Airport

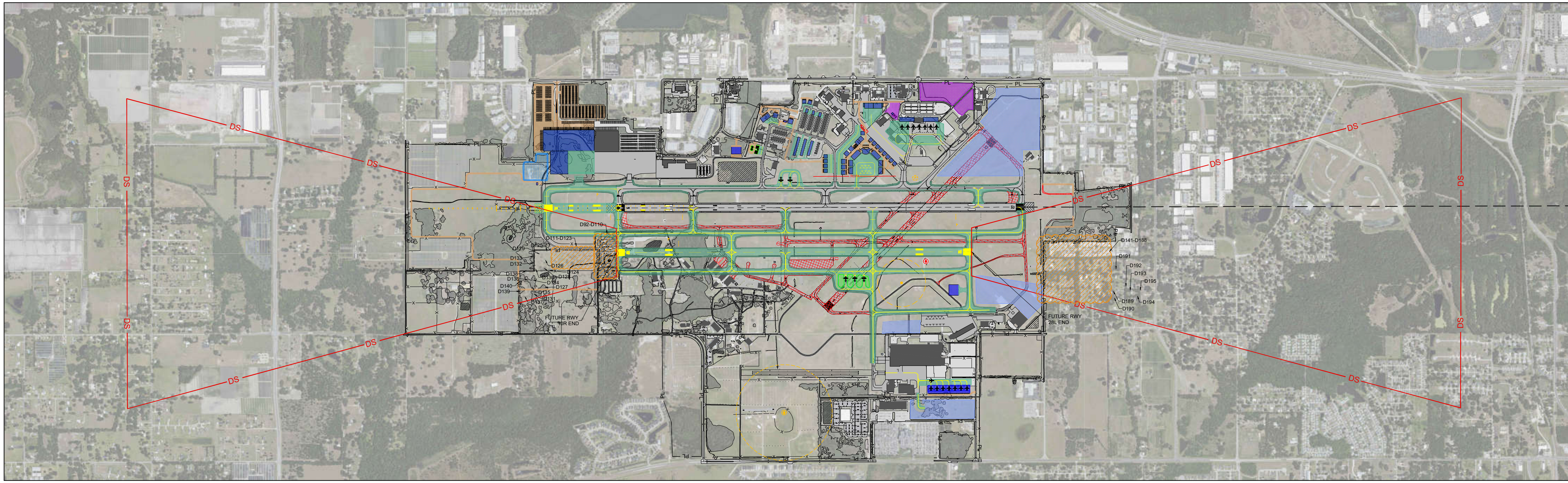
PROJECT
AIRPORT MASTER PLAN UPDATE
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE
DEPARTURE SURFACE DRAWING RUNWAY 5-23

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

SHEET 18 OF 23





DECLINATION 6° 01' W
JANUARY 2020
ANNUAL RATE OF CHANGE
0° 5' W

1,000' 0 1,000' 2,000'

HORIZONTAL SCALE

100' 0 100' 200'

VERTICAL SCALE

## LEGEND

| EXISTING | PROPOSED | DESCRIPTION |
|---|---|---|
| NA | | 40:1 DEPARTURE SURFACE |
| | NA | COMPOSITE GROUND PROFILE[1] |
| | NA | EXTENDED CENTERLINE PROFILE |
| PL | NA | PROPERTY LINE |
| NA | | RUNWAY |
| NA | | PROPOSED AIRFIELD PAVEMENT |
| NA | | PROPOSED BUILDINGS |
| | SAME | VEGETATION PENETRATIONS TO 40:1 DEPARTURE SURFACE |
| | SAME | OTHER PENETRATIONS TO 40:1 DEPARTURE SURFACE |
| | NA | ROADWAY INTERSECTIONS[2,3] |
| | NA | TAXIWAY INTERSECTIONS[4] |
| | NA | WATERWAY INTERSECTIONS TO EXTENDED RUNWAY CENTERLINE |
| | NA | CLUSTERED DEPARTURE SURFACE PENETRATIONS |

1. THE COMPOSITE CRITICAL GROUND PROFILE FOR EACH SURFACE WAS GENERATED FROM THE CRITICAL GROUND PROFILES OF ALIGNMENTS SET AT SPECIFIC INTERVALS WITHIN THE SURFACE ALONG THE SURVEYED GROUND TOPOGRAPHY.
2. ROADWAY INTERSECTIONS SHOWN REPRESENT ESTIMATED ROADWAY CENTERLINE INTERSECTIONS WITH THE EXTENDED RUNWAY CENTERLINE FOR MAJOR ROADWAYS ONLY. MINOR ROADWAYS WERE EVALUATED AND DETERMINED TO NEED NO REPRESENTATION.
3. ALL PRIVATE ROADS/ROADWAYS/INTERSTATES/RAILROADS/WATERWAYS ARE DEPICTED 10/15/17/23/23 FEET HIGHER, RESPECTIVELY, THAN THE SURVEYED LOCATION PER FAA SOP NO. 200.
4. TAXIWAY INTERSECTION HEIGHTS ARE BASED ON AIRCRAFT TAIL HEIGHT OF THE FUTURE CRITICAL AIRCRAFT, THE B767-300F.

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

# DEPARTURE SURFACE DRAWING FUTURE RUNWAY 10R-28L


ATKINS
Member of the SNC-Lavalin Group

4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

## RUNWAY 5 SIGNIFICANT OBJECT TABLE

| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING 40:1 DEPARTURE SURFACE PENETRATION | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|
| D-50 | TREE | 2/12/2019 | 22.12 | 125.65 | 200.92 | 75.27 | NONE | REMOVE/TRIM |
| D-51 | POLE | 2/12/2019 | 52.92 | 127.97 | 268.09 | 140.12 | NONE | REMOVE |
| D-52 | TREE | 2/12/2019 | 76.07 | 128.08 | 291.78 | 163.70 | NONE | REMOVE/TRIM |

## RUNWAY 23 SIGNIFICANT OBJECT TABLE

| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING 40:1 DEPARTURE SURFACE PENETRATION | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|
| D-53 | TREE | 2/12/2019 | 15.07 | 143.09 | 183.78 | 40.69 | NONE | REMOVE/TRIM |
| D-54 | TREE | 2/12/2019 | -7.15 | 140.42 | 163.61 | 23.19 | NONE | REMOVE/TRIM |
| D-55 | TREE | 2/12/2019 | 16.76 | 140.55 | 187.88 | 47.33 | NONE | REMOVE/TRIM |
| D-56 | TREE | 2/12/2019 | 9.83 | 141.51 | 181.07 | 39.56 | NONE | REMOVE/TRIM |
| D-57 | TREE | 2/12/2019 | 1.90 | 141.99 | 173.49 | 31.50 | NONE | REMOVE/TRIM |
| D-58 | TREE | 2/12/2019 | 21.98 | 142.89 | 195.01 | 52.12 | NONE | REMOVE/TRIM |
| D-59 | BUILDING | 2/12/2019 | -5.11 | 144.11 | 168.63 | 24.52 | NONE | LIGHT |
| D-60 | TREE | 2/12/2019 | 16.00 | 142.6 | 190.21 | 47.61 | NONE | REMOVE/TRIM |
| D-61 | TREE | 2/12/2019 | 14.14 | 142.34 | 188.45 | 46.11 | NONE | REMOVE/TRIM |
| D-62 | TREE | 2/12/2019 | 10.68 | 143.33 | 185.63 | 42.30 | NONE | REMOVE/TRIM |
| D-63 | TREE | 2/12/2019 | 8.28 | 143.09 | 183.28 | 40.19 | NONE | REMOVE/TRIM |
| D-64 | TREE | 2/12/2019 | 4.29 | 143.42 | 179.35 | 35.93 | NONE | REMOVE/TRIM |
| D-65 | TREE | 2/12/2019 | 7.35 | 143.39 | 182.67 | 39.28 | NONE | REMOVE/TRIM |
| D-66 | TREE | 2/12/2019 | 4.80 | 143.38 | 180.53 | 37.15 | NONE | LIGHT |
| D-67 | TREE | 2/12/2019 | 6.15 | 143.42 | 181.92 | 38.50 | NONE | REMOVE/TRIM |
| D-68 | POLE | 2/12/2019 | -8.39 | 143.35 | 168.25 | 24.90 | NONE | REMOVE/LIGHT |
| D-69 | TREE | 2/12/2019 | 6.62 | 142.57 | 183.40 | 40.83 | NONE | REMOVE/TRIM |
| D-70 | POLE | 2/12/2019 | -9.35 | 143.45 | 168.64 | 25.19 | NONE | REMOVE/LIGHT |
| D-71 | TREE | 2/12/2019 | -8.62 | 142.93 | 169.75 | 26.82 | NONE | REMOVE/TRIM |
| D-72 | TREE | 2/12/2019 | -9.20 | 143.32 | 169.70 | 26.38 | NONE | REMOVE/TRIM |
| D-73 | TREE | 2/12/2019 | -6.85 | 143.58 | 172.10 | 28.52 | NONE | REMOVE/TRIM |
| D-74 | POLE | 2/12/2019 | -3.72 | 143.43 | 175.56 | 32.13 | NONE | REMOVE/LIGHT |
| D-75 | POLE | 2/12/2019 | -8.32 | 143.08 | 171.14 | 28.06 | NONE | REMOVE/LIGHT |
| D-76 | TREE | 2/12/2019 | 11.01 | 143.72 | 190.72 | 47.00 | NONE | REMOVE/TRIM |
| D-77 | TREE | 2/12/2019 | -6.25 | 143.7 | 173.95 | 30.25 | NONE | REMOVE/TRIM |
| D-78 | POLE | 2/12/2019 | -7.94 | 143.44 | 172.40 | 28.96 | NONE | REMOVE/LIGHT |
| D-79 | TREE | 2/12/2019 | -4.98 | 143.19 | 175.75 | 32.56 | NONE | REMOVE/TRIM |
| D-80 | POLE | 2/12/2019 | -6.02 | 144.05 | 175.93 | 31.88 | NONE | REMOVE/LIGHT |
| D-81 | POLE | 2/12/2019 | -9.76 | 143.42 | 172.62 | 29.20 | NONE | REMOVE/LIGHT |
| D-82 | TREE | 2/12/2019 | -0.52 | 143.6 | 182.50 | 38.90 | NONE | REMOVE/TRIM |
| D-83 | POLE | 2/12/2019 | -9.24 | 144.66 | 174.06 | 29.40 | NONE | REMOVE/LIGHT |
| D-84 | POLE | 2/12/2019 | -9.13 | 144.76 | 175.43 | 30.67 | NONE | REMOVE/LIGHT |
| D-85 | STREET SIGN | 2/12/2019 | -8.80 | 144.58 | 176.14 | 31.56 | NONE | REMOVE/LIGHT |
| D-86 | POLE | 2/12/2019 | -7.90 | 144.48 | 177.45 | 32.97 | NONE | REMOVE/LIGHT |
| D-87 | POLE | 2/12/2019 | -7.58 | 144.28 | 177.95 | 33.67 | NONE | REMOVE/LIGHT |
| D-88 | POLE | 2/12/2019 | -2.35 | 144.08 | 183.81 | 39.73 | NONE | REMOVE/LIGHT |
| D-89 | BUILDING | 2/12/2019 | 9.14 | 143.26 | 197.12 | 53.86 | NONE | LIGHT |
| D-90 | POLE | 2/12/2019 | -4.63 | 143.59 | 186.88 | 43.29 | NONE | REMOVE/LIGHT |
| D-91 | BUILDING | 2/12/2019 | 1.92 | 143.41 | 196.37 | 52.96 | NONE | LIGHT |

## RUNWAY 9 SIGNIFICANT OBJECT TABLE

| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING 40:1 DEPARTURE SURFACE PENETRATION | FUTURE 40:1 DEPARTURE SURFACE PENETRATION | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|---|
| D-1 | TREE | 2/12/2019 | 50.91 | N/A | 130.30 | 187.38 | 57.08 | NONE | REMOVE/TRIM |
| D-2 | TREE | 2/12/2019 | 31.06 | N/A | 133.46 | 176.12 | 42.66 | NONE | REMOVE/TRIM |
| D-3 | TREE | 2/12/2019 | 19.90 | N/A | 134.14 | 169.20 | 35.06 | NONE | REMOVE/TRIM |
| D-4 | TREE | 2/12/2019 | 12.44 | N/A | 134.10 | 166.07 | 31.97 | NONE | REMOVE/TRIM |
| D-5 | TREE | 2/12/2019 | 18.08 | N/A | 134.14 | 176.05 | 41.91 | NONE | REMOVE/TRIM |
| D-6 | TREE | 2/12/2019 | 10.84 | 48.03 | 128.38 | 215.69 | 87.31 | NONE | REMOVE/TRIM |

## RUNWAY 27 SIGNIFICANT OBJECT TABLE

| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING 40:1 DEPARTURE SURFACE PENETRATION | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|
| D-7 | TREE | 2/12/2019 | 33.44 | 134.91 | 187.37 | 52.46 | NONE | REMOVE/TRIM |
| D-8 | TREE | 2/12/2019 | 22.69 | 134.62 | 180.55 | 45.93 | NONE | REMOVE/TRIM |
| D-9 | TREE | 2/12/2019 | 23.51 | 134.62 | 182.32 | 47.70 | NONE | REMOVE/TRIM |
| D-10 | TREE | 2/12/2019 | 18.37 | 136.95 | 183.21 | 46.26 | NONE | REMOVE/TRIM |
| D-11 | TREE | 2/12/2019 | 18.15 | 135.15 | 185.98 | 50.83 | NONE | REMOVE/TRIM |
| D-12 | TREE | 2/12/2019 | 25.60 | 136.39 | 194.16 | 57.77 | NONE | REMOVE/TRIM |
| D-13 | TREE | 2/12/2019 | 25.60 | 136.39 | 194.16 | 57.77 | NONE | REMOVE/TRIM |
| D-14 | TREE | 2/12/2019 | 20.29 | 137.13 | 188.86 | 51.73 | NONE | REMOVE/TRIM |
| D-15 | TREE | 2/12/2019 | 20.29 | 137.13 | 188.86 | 51.73 | NONE | REMOVE/TRIM |
| D-16 | TREE | 2/12/2019 | 22.77 | 136.67 | 191.51 | 54.84 | NONE | REMOVE/TRIM |
| D-17 | TREE | 2/12/2019 | 22.77 | 136.67 | 191.51 | 54.84 | NONE | REMOVE/TRIM |
| D-18 | TREE | 2/12/2019 | 16.56 | 137.46 | 186.36 | 48.90 | NONE | REMOVE/TRIM |
| D-19 | TREE | 2/12/2019 | 12.63 | 134.97 | 182.79 | 47.82 | NONE | REMOVE/TRIM |
| D-20 | TREE | 2/12/2019 | 11.81 | 134.53 | 182.23 | 47.70 | NONE | REMOVE/TRIM |
| D-21 | TREE | 2/12/2019 | 18.59 | 135.17 | 190.36 | 55.19 | NONE | REMOVE/TRIM |
| D-22 | TREE | 2/12/2019 | 18.65 | 139.6 | 190.65 | 51.05 | NONE | REMOVE/TRIM |
| D-23 | TREE | 2/12/2019 | 18.65 | 139.6 | 190.65 | 51.05 | NONE | REMOVE/TRIM |
| D-24 | TREE | 2/12/2019 | 22.47 | 134.58 | 195.29 | 60.71 | NONE | REMOVE/TRIM |
| D-25 | TREE | 2/12/2019 | 27.09 | 134.74 | 200.59 | 65.85 | NONE | REMOVE/TRIM |
| D-26 | TREE | 2/12/2019 | 17.80 | 134.57 | 194.15 | 59.58 | NONE | REMOVE/TRIM |
| D-27 | TREE | 2/12/2019 | 11.73 | 136.37 | 191.75 | 55.38 | NONE | REMOVE/TRIM |
| D-28 | TREE | 2/12/2019 | 11.76 | 136.55 | 198.19 | 61.64 | NONE | REMOVE/TRIM |
| D-29 | TREE | 2/12/2019 | 10.12 | 141.45 | 198.32 | 56.87 | NONE | REMOVE/TRIM |
| D-30 | TREE | 2/12/2019 | 13.72 | 142.7 | 217.17 | 74.47 | NONE | REMOVE/TRIM |
| D-31 | TREE | 2/12/2019 | 13.72 | 142.7 | 217.17 | 74.47 | NONE | REMOVE/TRIM |
| D-32 | TREE | 2/12/2019 | 31.61 | 138.57 | 236.66 | 98.09 | NONE | REMOVE/TRIM |
| D-33 | TREE | 2/12/2019 | 14.35 | 143.34 | 220.96 | 77.62 | NONE | REMOVE/TRIM |
| D-34 | TREE | 2/12/2019 | 14.35 | 143.34 | 220.96 | 77.62 | NONE | REMOVE/TRIM |
| D-35 | TREE | 2/12/2019 | 18.49 | 144.97 | 225.27 | 80.30 | NONE | REMOVE/TRIM |
| D-36 | TREE | 2/12/2019 | 18.49 | 144.97 | 225.27 | 80.30 | NONE | REMOVE/TRIM |
| D-37 | TREE | 2/12/2019 | 32.13 | 139.37 | 240.13 | 100.76 | NONE | REMOVE/TRIM |
| D-38 | TREE | 2/12/2019 | 32.18 | 139.71 | 240.44 | 100.73 | NONE | REMOVE/TRIM |
| D-39 | TREE | 2/12/2019 | 11.02 | 142.72 | 219.44 | 76.72 | NONE | REMOVE/TRIM |
| D-40 | POLE | 2/12/2019 | 32.63 | 139.85 | 243.45 | 103.60 | NONE | REMOVE/TRIM |
| D-41 | TREE | 2/12/2019 | 32.95 | 140.2 | 245.61 | 105.41 | NONE | REMOVE/TRIM |
| D-42 | TREE | 2/12/2019 | 33.17 | 139.53 | 247.05 | 107.52 | NONE | REMOVE/TRIM |
| D-43 | TREE | 2/12/2019 | 33.36 | 139.29 | 248.35 | 109.06 | NONE | REMOVE/TRIM |
| D-44 | TREE | 2/12/2019 | 33.39 | 139.92 | 248.50 | 108.58 | NONE | REMOVE/TRIM |
| D-45 | TREE | 2/12/2019 | 33.86 | 140.56 | 251.65 | 111.09 | NONE | REMOVE/TRIM |
| D-46 | TREE | 2/12/2019 | 33.90 | 139.9 | 251.96 | 112.06 | NONE | REMOVE/TRIM |
| D-47 | TREE | 2/12/2019 | 33.94 | 138.72 | 252.24 | 113.52 | NONE | REMOVE/TRIM |
| D-48 | BUILDING | 2/12/2019 | 35.59 | 140.77 | 263.18 | 122.41 | NONE | REMOVE/TRIM |
| D-49 | STEEPLE | 2/12/2019 | 45.20 | 131.3 | 327.27 | 195.97 | NONE | REMOVE/TRIM |

## FUTURE RUNWAY 10R SIGNIFICANT OBJECT TABLE

| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING 40:1 DEPARTURE SURFACE PENETRATION | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|
| D-92 | TREE | 2/12/2019 | 32.55 | 127.32 | 161.79 | 34.47 | NEW RUNWAY | REMOVE/TRIM |
| D-93 | TREE | 2/12/2019 | 43.23 | 128.69 | 173.26 | 44.57 | NEW RUNWAY | REMOVE/TRIM |
| D-94 | TREE | 2/12/2019 | 46.42 | 127.15 | 176.99 | 49.84 | NEW RUNWAY | REMOVE/TRIM |
| D-95 | TREE | 2/12/2019 | 17.24 | 128.09 | 148.85 | 20.76 | NEW RUNWAY | REMOVE/TRIM |
| D-96 | TREE | 2/12/2019 | 53.35 | 128.79 | 185.48 | 56.69 | NEW RUNWAY | REMOVE/TRIM |
| D-97 | TREE | 2/12/2019 | 62.77 | 130.04 | 194.96 | 64.92 | NEW RUNWAY | REMOVE/TRIM |
| D-98 | TREE | 2/12/2019 | 35.28 | 127.95 | 167.72 | 39.77 | NEW RUNWAY | REMOVE/TRIM |
| D-99 | TREE | 2/12/2019 | 50.87 | 129.10 | 183.59 | 54.49 | NEW RUNWAY | REMOVE/TRIM |
| D-100 | TREE | 2/12/2019 | 57.39 | 129.83 | 190.79 | 60.96 | NEW RUNWAY | REMOVE/TRIM |
| D-101 | TREE | 2/12/2019 | 44.93 | 129.14 | 179.50 | 50.36 | NEW RUNWAY | REMOVE/TRIM |
| D-102 | TREE | 2/12/2019 | 49.26 | 130.29 | 184.22 | 53.93 | NEW RUNWAY | REMOVE/TRIM |
| D-103 | TREE | 2/12/2019 | 53.65 | 129.85 | 189.27 | 59.42 | NEW RUNWAY | REMOVE/TRIM |
| D-104 | TREE | 2/12/2019 | 17.97 | 128.75 | 153.88 | 25.13 | NEW RUNWAY | REMOVE/TRIM |
| D-105 | TREE | 2/12/2019 | 41.70 | 127.90 | 177.93 | 50.03 | NEW RUNWAY | REMOVE/TRIM |
| D-106 | TREE | 2/12/2019 | 47.98 | 129.88 | 186.24 | 56.36 | NEW RUNWAY | REMOVE/TRIM |
| D-107 | TREE | 2/12/2019 | 43.01 | 130.48 | 181.43 | 50.95 | NEW RUNWAY | REMOVE/TRIM |
| D-108 | TREE | 2/12/2019 | 63.31 | 129.83 | 201.94 | 72.11 | NEW RUNWAY | REMOVE/TRIM |
| D-109 | TREE | 2/12/2019 | 43.27 | 128.18 | 183.22 | 55.04 | NEW RUNWAY | REMOVE/TRIM |
| D-110 | TREE | 2/12/2019 | 12.55 | 128.73 | 153.06 | 24.33 | NEW RUNWAY | REMOVE/TRIM |
| D-111 | TREE | 2/12/2019 | 45.97 | 129.31 | 187.50 | 58.19 | NEW RUNWAY | REMOVE/TRIM |
| D-112 | TREE | 2/12/2019 | 55.71 | 129.30 | 200.00 | 70.70 | NEW RUNWAY | REMOVE/TRIM |
| D-113 | TREE | 2/12/2019 | 53.95 | 129.51 | 199.62 | 70.11 | NEW RUNWAY | REMOVE/TRIM |
| D-114 | TREE | 2/12/2019 | 10.11 | 128.95 | 156.81 | 27.86 | NEW RUNWAY | REMOVE/TRIM |
| D-115 | TREE | 2/12/2019 | 47.81 | 129.09 | 196.59 | 67.50 | NEW RUNWAY | REMOVE/TRIM |
| D-116 | TREE | 2/12/2019 | 45.04 | 129.91 | 194.32 | 64.41 | NEW RUNWAY | REMOVE/TRIM |
| D-117 | TREE | 2/12/2019 | 8.90 | 128.69 | 159.79 | 31.10 | NEW RUNWAY | REMOVE/TRIM |
| D-118 | TREE | 2/12/2019 | 41.04 | 129.11 | 194.95 | 65.84 | NEW RUNWAY | REMOVE/TRIM |
| D-119 | TREE | 2/12/2019 | 28.12 | 128.09 | 182.45 | 54.36 | NEW RUNWAY | REMOVE/TRIM |
| D-120 | TREE | 2/12/2019 | 18.04 | 128.33 | 174.81 | 46.48 | NEW RUNWAY | REMOVE/TRIM |
| D-121 | TREE | 2/12/2019 | 30.20 | 127.80 | 189.57 | 61.77 | NEW RUNWAY | REMOVE/TRIM |
| D-122 | TREE | 2/12/2019 | 27.22 | 126.96 | 188.00 | 61.04 | NEW RUNWAY | REMOVE/TRIM |
| D-123 | TREE | 2/12/2019 | 18.56 | 128.08 | 181.26 | 53.18 | NEW RUNWAY | REMOVE/TRIM |
| D-124 | TREE | 2/12/2019 | 11.13 | 126.05 | 174.94 | 48.89 | NEW RUNWAY | REMOVE/TRIM |
| D-125 | TREE | 2/12/2019 | 30.46 | 128.07 | 195.70 | 67.63 | NEW RUNWAY | REMOVE/TRIM |
| D-126 | TREE | 2/12/2019 | 25.94 | 126.71 | 191.92 | 65.21 | NEW RUNWAY | REMOVE/TRIM |
| D-127 | TREE | 2/12/2019 | 60.98 | 124.90 | 227.36 | 102.46 | NEW RUNWAY | REMOVE/TRIM |
| D-128 | TREE | 2/12/2019 | 3.48 | 125.67 | 170.06 | 44.39 | NEW RUNWAY | REMOVE/TRIM |
| D-129 | TREE | 2/12/2019 | 23.46 | 128.11 | 192.67 | 64.56 | NEW RUNWAY | REMOVE/TRIM |
| D-130 | TREE | 2/12/2019 | 3.26 | 126.32 | 174.23 | 47.91 | NEW RUNWAY | REMOVE/TRIM |
| D-131 | TREE | 2/12/2019 | 76.13 | 123.31 | 248.11 | 124.80 | NEW RUNWAY | REMOVE/TRIM |
| D-132 | TREE | 2/12/2019 | 10.09 | 128.49 | 182.32 | 53.83 | NEW RUNWAY | REMOVE/TRIM |
| D-133 | TREE | 2/12/2019 | 10.47 | 127.80 | 182.70 | 54.90 | NEW RUNWAY | REMOVE/TRIM |
| D-134 | TREE | 2/12/2019 | 34.79 | 124.37 | 207.20 | 82.83 | NEW RUNWAY | REMOVE/TRIM |
| D-135 | TREE | 2/12/2019 | 54.55 | 123.80 | 227.46 | 103.66 | NEW RUNWAY | REMOVE/TRIM |
| D-136 | TREE | 2/12/2019 | 32.92 | 124.95 | 208.01 | 83.06 | NEW RUNWAY | REMOVE/TRIM |
| D-137 | TREE | 2/12/2019 | 3.59 | 127.50 | 179.65 | 52.15 | NEW RUNWAY | REMOVE/TRIM |
| D-138 | TREE | 2/12/2019 | 80.82 | 125.44 | 257.57 | 132.13 | NEW RUNWAY | REMOVE/TRIM |
| D-139 | TREE | 2/12/2019 | 63.61 | 126.12 | 243.07 | 116.95 | NEW RUNWAY | REMOVE/TRIM |
| D-140 | TREE | 2/12/2019 | 35.01 | 126.76 | 214.64 | 87.88 | NEW RUNWAY | REMOVE/TRIM |

## FUTURE RUNWAY 28L SIGNIFICANT OBJECT TABLE

| OBJECT ID | DESCRIPTION | SURVEY DATE | EXISTING 40:1 DEPARTURE SURFACE PENETRATION | GROUND ELEVATION (MSL) | OBJECT ELEVATION (MSL) | OBJECT ELEVATION (AGL) | TRIGGERING EVENT | PROPOSED DISPOSITION |
|---|---|---|---|---|---|---|---|---|
| D-141 | TREE | 2/12/2019 | 11.63 | 135.50 | 181.06 | 45.56 | NEW RUNWAY | REMOVE/TRIM |
| D-142 | TREE | 2/12/2019 | 21.15 | 131.24 | 190.81 | 59.57 | NEW RUNWAY | REMOVE/TRIM |
| D-143 | TREE | 2/12/2019 | 17.03 | 133.25 | 186.74 | 53.49 | NEW RUNWAY | REMOVE/TRIM |
| D-144 | TREE | 2/12/2019 | 9.30 | 133.63 | 179.24 | 45.61 | NEW RUNWAY | REMOVE/TRIM |
| D-145 | TREE | 2/12/2019 | 13.98 | 135.99 | 183.96 | 47.97 | NEW RUNWAY | REMOVE/TRIM |
| D-146 | TREE | 2/12/2019 | 38.03 | 135.62 | 208.09 | 72.47 | NEW RUNWAY | REMOVE/TRIM |
| D-147 | TREE | 2/12/2019 | -0.01 | 137.29 | 171.09 | 33.80 | NEW RUNWAY | REMOVE/TRIM |
| D-148 | TREE | 2/12/2019 | 61.83 | 134.57 | 233.79 | 99.22 | NEW RUNWAY | REMOVE/TRIM |
| D-149 | TREE | 2/12/2019 | 5.14 | 136.84 | 177.65 | 40.81 | NEW RUNWAY | REMOVE/TRIM |
| D-150 | TREE | 2/12/2019 | 4.28 | 136.46 | 176.89 | 40.43 | NEW RUNWAY | REMOVE/TRIM |
| D-151 | TREE | 2/12/2019 | 17.56 | 137.30 | 190.53 | 53.23 | NEW RUNWAY | REMOVE/TRIM |
| D-152 | TREE | 2/12/2019 | 37.44 | 136.19 | 210.99 | 74.80 | NEW RUNWAY | REMOVE/TRIM |
| D-153 | TREE | 2/12/2019 | 20.10 | 132.86 | 194.66 | 61.80 | NEW RUNWAY | REMOVE/TRIM |
| D-154 | TREE | 2/12/2019 | 5.03 | 138.01 | 180.05 | 42.04 | NEW RUNWAY | REMOVE/TRIM |
| D-155 | TREE | 2/12/2019 | 6.76 | 135.56 | 183.46 | 47.90 | NEW RUNWAY | REMOVE/TRIM |
| D-156 | TREE | 2/12/2019 | 30.70 | 136.62 | 208.04 | 71.42 | NEW RUNWAY | REMOVE/TRIM |
| D-157 | TREE | 2/12/2019 | 58.24 | 134.50 | 235.66 | 101.16 | NEW RUNWAY | REMOVE/TRIM |
| D-158 | TREE | 2/12/2019 | 89.62 | 133.77 | 268.66 | 134.89 | NEW RUNWAY | REMOVE/TRIM |
| D-159 | TREE | 2/12/2019 | -3.72 | 136.06 | 175.88 | 39.82 | NEW RUNWAY | REMOVE/TRIM |
| D-160 | TREE | 2/12/2019 | 5.14 | 135.63 | 185.73 | 50.10 | NEW RUNWAY | REMOVE/TRIM |
| D-161 | TREE | 2/12/2019 | 63.42 | 134.48 | 244.80 | 110.32 | NEW RUNWAY | REMOVE/TRIM |
| D-162 | TREE | 2/12/2019 | 16.90 | 131.33 | 198.82 | 67.49 | NEW RUNWAY | REMOVE/TRIM |
| D-163 | TREE | 2/12/2019 | 96.50 | 133.57 | 279.14 | 145.57 | NEW RUNWAY | REMOVE/TRIM |
| D-164 | TREE | 2/12/2019 | 34.91 | 135.38 | 217.96 | 82.58 | NEW RUNWAY | REMOVE/TRIM |
| D-165 | TREE | 2/12/2019 | 6.47 | 135.22 | 189.96 | 54.74 | NEW RUNWAY | REMOVE/TRIM |
| D-166 | TREE | 2/12/2019 | 82.67 | 132.78 | 266.72 | 133.94 | NEW RUNWAY | REMOVE/TRIM |
| D-167 | TREE | 2/12/2019 | 19.35 | 131.27 | 205.38 | 74.11 | NEW RUNWAY | REMOVE/TRIM |
| D-168 | TREE | 2/12/2019 | 48.88 | 130.92 | 235.18 | 104.26 | NEW RUNWAY | REMOVE/TRIM |
| D-169 | TREE | 2/12/2019 | 6.72 | 130.51 | 193.31 | 62.80 | NEW RUNWAY | REMOVE/TRIM |
| D-170 | TREE | 2/12/2019 | 7.59 | 130.31 | 194.19 | 63.88 | NEW RUNWAY | REMOVE/TRIM |
| D-171 | TREE | 2/12/2019 | 4.62 | 134.70 | 191.29 | 56.59 | NEW RUNWAY | REMOVE/TRIM |
| D-172 | TREE | 2/12/2019 | -1.22 | 137.46 | 186.36 | 48.90 | NEW RUNWAY | REMOVE/TRIM |
| D-173 | TREE | 2/12/2019 | 72.65 | 131.78 | 260.45 | 128.67 | NEW RUNWAY | REMOVE/TRIM |
| D-174 | TREE | 2/12/2019 | 4.62 | 136.14 | 194.57 | 58.43 | NEW RUNWAY | REMOVE/TRIM |
| D-175 | TREE | 2/12/2019 | 52.73 | 135.09 | 242.97 | 107.88 | NEW RUNWAY | REMOVE/TRIM |
| D-176 | TREE | 2/12/2019 | 28.51 | 135.39 | 219.02 | 83.63 | NEW RUNWAY | REMOVE/TRIM |
| D-177 | TREE | 2/12/2019 | -0.28 | 136.63 | 190.45 | 53.82 | NEW RUNWAY | REMOVE/TRIM |
| D-178 | TREE | 2/12/2019 | 15.10 | 135.89 | 207.19 | 71.30 | NEW RUNWAY | REMOVE/TRIM |
| D-179 | TREE | 2/12/2019 | 50.90 | 134.75 | 244.62 | 109.87 | NEW RUNWAY | REMOVE/TRIM |
| D-180 | TREE | 2/12/2019 | 27.79 | 134.77 | 221.99 | 87.22 | NEW RUNWAY | REMOVE/TRIM |
| D-181 | TREE | 2/12/2019 | 0.40 | 136.48 | 195.45 | 58.97 | NEW RUNWAY | REMOVE/TRIM |
| D-182 | TREE | 2/12/2019 | -3.45 | 135.60 | 192.67 | 57.07 | NEW RUNWAY | REMOVE/TRIM |
| D-183 | TREE | 2/12/2019 | 82.36 | 132.02 | 278.61 | 146.59 | NEW RUNWAY | REMOVE/TRIM |
| D-184 | TREE | 2/12/2019 | 9.51 | 136.81 | 209.09 | 72.28 | NEW RUNWAY | REMOVE/TRIM |
| D-185 | TREE | 2/12/2019 | 83.66 | 131.50 | 284.55 | 153.05 | NEW RUNWAY | REMOVE/TRIM |
| D-186 | TREE | 2/12/2019 | 30.05 | 134.72 | 231.11 | 96.39 | NEW RUNWAY | REMOVE/TRIM |
| D-187 | TREE | 2/12/2019 | 58.09 | 132.70 | 259.60 | 126.90 | NEW RUNWAY | REMOVE/TRIM |
| D-188 | TREE | 2/12/2019 | 13.94 | 135.55 | 215.73 | 80.18 | NEW RUNWAY | REMOVE/TRIM |
| D-189 | TREE | 2/12/2019 | 54.83 | 132.64 | 260.81 | 128.17 | NEW RUNWAY | REMOVE/TRIM |
| D-190 | TREE | 2/12/2019 | 74.70 | 131.39 | 281.19 | 149.80 | NEW RUNWAY | REMOVE/TRIM |
| D-191 | TREE | 2/12/2019 | -6.91 | 136.34 | 200.38 | 64.04 | NEW RUNWAY | REMOVE/TRIM |
| D-192 | TREE | 2/12/2019 | 36.29 | 133.40 | 248.79 | 115.39 | NEW RUNWAY | REMOVE/TRIM |
| D-193 | TREE | 2/12/2019 | 46.69 | 133.91 | 261.41 | 127.50 | NEW RUNWAY | REMOVE/TRIM |
| D-194 | TREE | 2/12/2019 | 61.35 | 133.70 | 279.90 | 146.20 | NEW RUNWAY | REMOVE/TRIM |
| D-195 | TREE | 2/12/2019 | 42.79 | 135.09 | 262.83 | 127.74 | NEW RUNWAY | REMOVE/TRIM |



| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

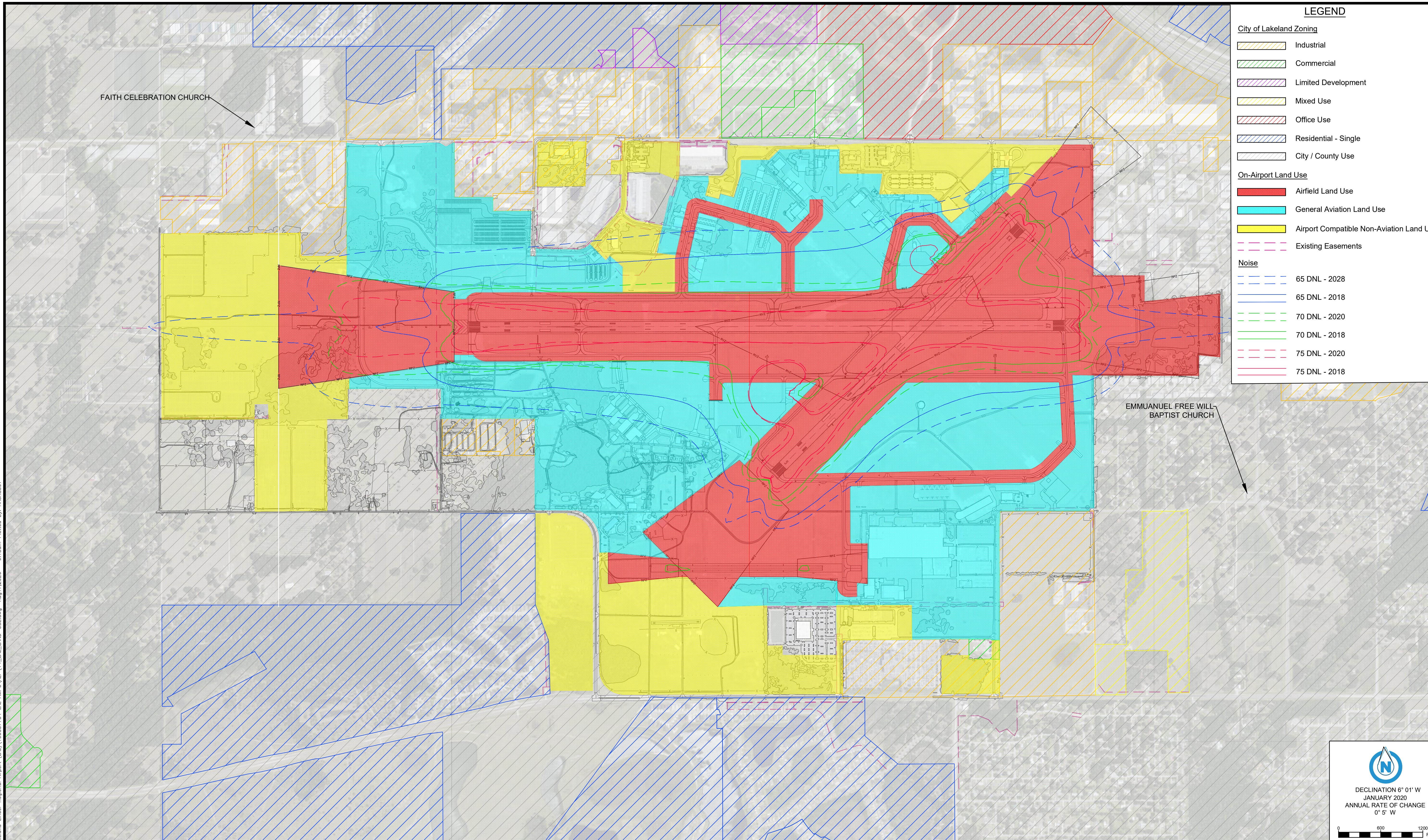
LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

DEPARTURE SURFACE DRAWING DATA

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020




| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |
| | |
| | |
| | |
| | |
| | |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

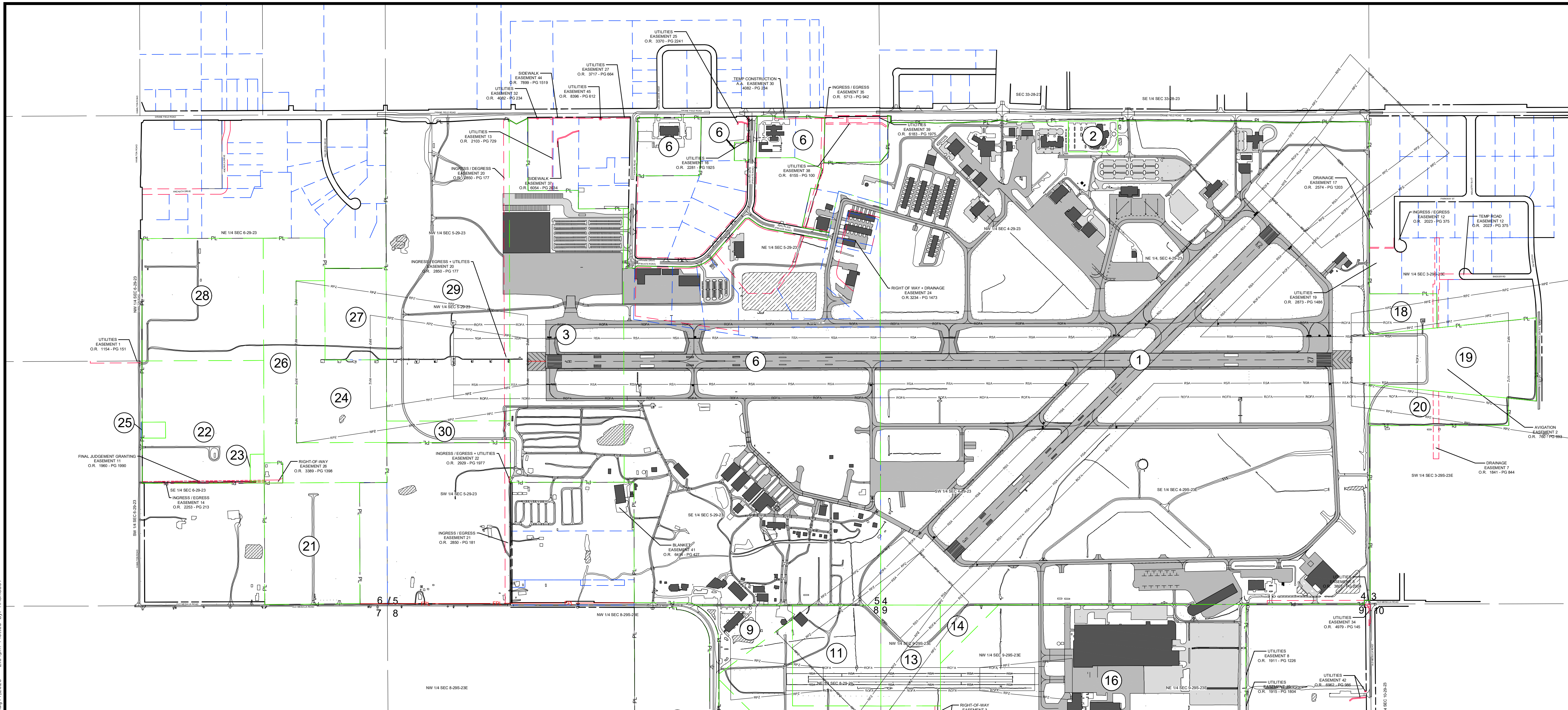
AIRPORT
LAND USE PLAN


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

SHEET 21 OF 23

\\fusmba1000\Aviation\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMPU\ALP\14_LAL_LAND-USE.dwg Aug17,2020 – 9:15am Plotted By: HASK8597



## LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY | PL | FPL |
| PARCEL LINE | | N/A |
| SUB-DIVISION LINE | | N/A |
| SECTION LINE | | N/A |
| RUNWAY SAFETY AREA | RSA | SAME |
| OBJECT FREE AREA | ROFA | SAME |
| RUNWAY PROTECTION ZONE | RPZ | SAME |
| ACTIVE AIRFIELD PAVEMENT | | N/A |
| ON-AIRPORT BUILDING | | N/A |
| EASEMENTS | | N/A |
| BODY OF WATER | | SAME |

DECLINATION 6° 01' W
JANUARY 2020
ANNUAL RATE OF CHANGE
0° 5' W

0 500 1000 Feet

NOTE: BASEMAP WAS SURVEYED AND PROVIDED BY QUANTUM SPATIAL IN FEBRUARY 2019

**AIRPORT SPONSOR APPROVAL**

THIS AIRPORT DRAWING IS APPROVED BY:

(SIGNATURE) ______________________ DATE: __________

NAME: ______________________

TITLE: ______________________

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |
| | |

CLIENT

FlyLakeland Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

EXHIBIT "A"
AIRPORT PROPERTY
INVENTORY MAP


ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica


| | |
|---|---|
| JOB NO.: | 100057734 |
| DRAWN: | KK, CH |
| DESIGN: | KK, CH |
| CHECKED: | GF |
| DATE: | AUGUST 2020 |

| AIRPORT PARCEL DESCRIPTION | | | | | |
|---|---|---|---|---|---|
| PARCEL ID | SECTION | TOWNSHIP | RANGE | COUNTY | STATE |
| 1 | 4 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 2 | 4 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 3 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 4 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 5 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 6 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 7 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 8 | 8 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 9 | 8 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 10 | 8 & 9 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 11 | 8 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 12 | 8 & 9 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 13 | 9 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 14 | 9 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 15 | 9 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 16 | 9 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 17 | 3 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 18 | 3 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 19 | 3 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 20 | 3 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 21 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 22 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 23 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 24 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 25 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 26 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 27 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 28 | 6 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 29 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |
| 30 | 5 | 29 SOUTH | 23 EAST | POLK | FLORIDA |

| AIRPORT PARCEL DATA | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PARCEL ID | TAX FOLIO ENTRY NUMBER | BOOK AND PAGE | DATE ACQUIRED | SOURCE OF FUNDS | GRANTOR | FAA/FDOT GRANT NUMBER | FAA RELEASE DATE | TYPE OF INTEREST ACQUIRED | TYPE OF CONVEYANCE INSTRUMENT | ACREAGE |
| 1 | 23-29-04-000000-011010 | 629 - 261 | 1941 | N/A | United States of America | N/A | N/A | Fee Simple | Warranty Deed | 626 |
| 2 | 23-29-04-000000-031010 | 7244 - 115 | N/A | N/A | Beechwood Lakeland Hotels Inc. | N/A | N/A | Fee Simple | Warranty Deed | 3.85 |
| 3 | 23-29-05-000000-031010 | DB 816 - 571 | 1947 | N/A | United States of America | N/A | N/A | Fee Simple | Warranty Deed | 101 |
| 6 | MULTIPLE | 816 - 517 | 1949 | N/A | United States of America | N/A | N/A | Fee Simple | Warranty Deed | 325.51 |
| 8 | 23-29-08-000000-042020 | 4945 - 2043 | 1994 | FDOT | Sun 'N Fun Fly-In, Inc. | 1828112 | N/A | Fee Simple | Warranty Deed | 41.81 |
| 9 | 23-29-08-000000-011030 | 3450 - 289 | 1994 | FDOT | Sun 'N Fun Fly-In, Inc. | 1827868 | N/A | Fee Simple | Warranty Deed | 8.89 |
| 10 | 23-29-09-000000-033040 | 4310 - 939 | 1999 | FDOT | William W. Lord | 1828086 | N/A | Fee Simple | Warranty Deed | 66.67 |
| 11 | 23-29-08-000000-011010 | 1180 - 457 | 1971 | FAA | Charles C. Adler, Sr. | 908016605 | N/A | Fee Simple | Warranty Deed | 23.88 |
| 12 | 23-29-08-000000-011020 | N/A | 1980 | FAA | Piper Aircraft Corporation, et. al. | 5-120-0041-04 (ADAP) | N/A | Order | Order of Taking | 27.39 |
| 13 | 23-29-09-000000-033010 | N/A | 1980 | FAA | Piper Aircraft Corporation, et. al. | 5-120-0041-04 (ADAP) | N/A | Order | Order of Taking | 16.11 |
| 14 | 23-29-09-000000-033030 | N/A | 1980 | FAA | Piper Aircraft Corporation, et. al. | 5-120-0041-04 (ADAP) | N/A | Order | Order of Taking | 4.58 |
| 15 | 23-29-09-000000-014010 | 3634 - 991 | 1996 | N/A | The New Piper Aircraft, Inc. | N/A | N/A | Fee Simple | Special Warranty Deed | 0.41 |
| 16 | 23-29-09-000000-013020 | 3570 - 2083 | 1995 | N/A | Firewolf, Inc. | N/A | N/A | Fee Simple | Warranty Deed | 139 |
| 18 | 23-29-03-139560-000309 | 2670 - 954 | 1996 | FAA | Gordon G. Douglas | 3-12-0041-15 (AIP) | N/A | Fee Simple | Warranty Deed | 6.77 |
| 19 | 23-29-03-000000-032080 | 909 - 608 | 1960 | FDOT | M.G. Waring et. al. | 908017610 | N/A | Order | Final Judgement | 29.76 |
| 20 | 23-29-03-000000-041010 | 2705 - 500 | 1996 | FAA | Gordon G. Douglas | 3-12-0041-15 (AIP) | N/A | Fee Simple | Warranty Deed | 12.66 |
| 21 | 23-29-06-000000-022010 | 9452 - 1082 | 2015 | N/A | Medulla 30, LLC | N/A | N/A | Fee Simple | Warranty Deed | 30.3 |
| 22 | 23-29-06-000000-023010 | 5553 - 1189 | 2004 | FDOT | Sara E. Gilchrist Revocable Living Trust | 1828086 | N/A | Fee Simple | Warranty Deed | 38.31 |
| 23 | 23-29-06-000000-023040 | 7533 - 906 | 2008 | N/A | Ferris S. Waller | N/A | N/A | Fee Simple | Warranty Deed | 1 |
| 24 | 23-29-06-000000-012020 | 2950 - 898 | 1990 | FDOT | Betty L. Howard | 1827924 | N/A | Order | Revised Final Judgement | 26.11 |
| 25 | 23-29-06-000000-023020 | 7536 - 1511 | 2008 | N/A | Moises H. Tourgeman | N/A | N/A | Fee Simple | Warranty Deed | 1.018 |
| 26 | 23-29-06-000000-012030 | 6256 - 524 | 2005 | N/A | Irma C. Moody | N/A | N/A | Fee Simple | Warranty Deed | 33.2 |
| 27 | 23-29-06-000000-012030 | 2800 - 2248 | 1989 | FDOT | Lakeland Leasing Corporation, Inc. | 1827924 | N/A | Fee Simple | Warranty Deed | 15.11 |
| 28 | 23-29-06-000000-014010 | 5188 - 1780 | 2002 | N/A | Sara E. Gilchrist | N/A | N/A | Fee Simple | Warranty Deed | 40.57 |
| 29 | 23-29-05-000000-033000 | 1755 - 894 | 1991 | FDOT | Darwin K. Morgan | 1827924 & 1827868 | N/A | Order | Final Judgement | 101.66 |
| 30 | 23-29-05-000000-043030 | 4082 - 240 | 1998 | FDOT | Armory Board of the State of Florida | 1827924 & 1827868 | N/A | Fee Simple | Quit-Claim Deed | 7.11 |

| AIRPORT EASEMENT DATA | | | | | |
|---|---|---|---|---|---|
| EASEMENT NUMBER | PARTY INVOLVED | TYPE OF EASEMENT | TYPE OF CONVEYANCE INSTRUMENT | BOOK-PAGE | DATE RECORDED |
| A1 | Landstar Lakeland, Inc. | Avigation | Agreement | 6139 - 2150 | 3/29/2005 |
| A2 | Karice, Inc. | Avigation | Agreement | 6857 - 462 | 7/6/2006 |
| E1 | Tampa Electric Company | Utilities | Easement | 1154 - 151 | 5/2/1968 |
| E2 | M. G. Waring et al | Right of Way | Order of Taking | 760 - 693 | 11/13/1963 |
| E3 | Wellman-Lord Inc. | Easement | Assignment | 1771 - 1219 | 10/7/1977 |
| E4 | N/A | Servicing | Easement | 1263 - 619 | 1/5/1970 |
| E5 | James M. Wellman | Utilities | Easement | 1387 - 521 | 9/22/1971 |
| E6 | Pan American Services Inc. | Utilities | Easement | 1753 - 165 | 6/20/1977 |
| E7 | Waring Estate Inc. | Drainage | Easement | 1841 - 844 | 11/3/1978 |
| E8 | Piper Aircraft Corporation | Utilities | Easement | 1911 - 1226 | 11/9/1979 |
| E9 | Piper Aircraft Corporation | Utilities | Easement | 1911 - 1227 | 11/9/1979 |
| E10 | J. Gary Wellman et al | Utilities | Easement | 1915 - 1804 | 12/5/1979 |
| E11 | Carol Still Moody et al | Prescriptive Easement | Final Judgement | 1960 - 1990 | 8/15/1980 |
| E12 | Waring Estate Inc. | Temporary Road | Quit-Claim Deed | 2023 - 375 | 6/16/1981 |
| E13 | Specialty Maintenance & Construction, Inc. | Utilities | Easement | 2103 - 729 | 9/2/1982 |
| E14 | Sara E. Gilchrist | Right of Way | Warranty Deed | 2253 - 213 | 7/11/1984 |
| E15 | Harry L. Creamer, Jr. | Privately Maintained Access | Notice | 2278 - 2174 | 10/29/1984 |
| E16 | DJG Corporation, Inc. | Utilities | Easement | 2281 - 1925 | 11/9/1984 |
| E17 | Waring Estate Inc. | Drainage | Easement | 2574 - 1203 | 10/22/1987 |
| E18 | Waring Estate Inc. | Ingress and Egress | Easement | 2574 - 1206 | 10/22/1987 |
| E19 | Bio-Medical Service Corporation | Utilities | Easement | 2873 - 1486 | 7/10/1990 |
| E20 | Darwin K. Morgan et al | Utilities, Right of Way, Drainge | Easement | 2850 - 177 | 5/2/1990 |
| E21 | Darwin K. Morgan et al | Utilities, Right of Way, Drainge | Easement | 2850 - 181 | 5/2/1990 |
| E22 | Betty L. Howard et al | Utilities | Order of Taking | 2929 - 1977 | 1/8/1991 |
| E24 | Anheuser Busch Corporation, Inc. | Right of Way, Drainage | Easement | 3234 - 1473 | 5/12/1993 |
| E25 | J.R.W. | Utilities | Easement | 3370 - 2241 | 4/5/1994 |
| E26 | Allen Craig Chandler et al | Right of Way | Warranty Deed | 3389 - 1398 | 5/17/1994 |
| E27 | Kidron, Inc. | Utilities | Easement | 3717 - 664 | 8/13/1996 |
| E28 | Florida Flavors, Inc. | Utilities | Easement | 3766 - 2040 | 12/9/1996 |
| E29 | Mark Wellman | Right of Way | Easement | 3807 - 2004 | 3/11/1997 |
| E30 | Florida Game and Fresh Water Fish Commission | Temporary Construction | Easement | 4082 - 234 | 8/18/1998 |
| E31 | Florida Flavors, Inc. | Utilities | Easement | 4092 - 1011 | 9/3/1998 |
| E32 | GEICO Property | Ingress and Egress | Easement | 4143 - 20 | 12/4/1998 |
| E33 | Verizon Florida, Inc. | Utilities | Easement | 4936 - 228 | 2/26/2002 |
| E34 | Drane Field Trust et al | Utilities | Easement | 4979 - 145 | 4/15/2002 |
| E35 | Ruthven Airpark, LLC | Ingress and Egress | Easement | 5713 - 942 | 3/23/2004 |
| E36 | English Creek, LLC | Utilities | Easement | 5959 - 377 | 10/21/2004 |
| E37 | Danisco USA, Inc. | Utilities | Easement | 6054 - 2034 | 1/18/2005 |
| E38 | Ruthven Airpark, LLC | Utilities | Easement | 6155 - 100 | 4/11/2005 |
| E39 | Ruthven Airpark, LLC | Utilities | Easement | 6183 - 1975 | 4/29/2005 |
| E40 | Landstar Lakeland, Inc. | Utilities | Easement | 6227 - 2196 | 6/2/2005 |
| E41 | Sun 'N Fun Fly-In, Inc. | Blanket | Easement | 6414 - 427 | 9/27/2005 |
| E42 | Layne Christensen Company | Utilities | Easement | 6962 - 986 | 9/12/2006 |
| E43 | Karice, Inc. | Utilities | Easement | 7216 - 1173 | 3/20/2007 |
| E44 | Patricia Sinnott | Sidewalk | Amended Easement | 7899 - 43 | 6/4/2009 |
| E45 | Intercit, Inc. | Utilities | Easement | 8396 - 612 | 5/26/2011 |
| E46 | 3575 Aviation Drive, LLC | Utilities, Ingress and Egress | Easement | 10303 - 749 | 11/2/2017 |

M:\05_Projects\Lakeland Linder Regional Airport (LAL)\100057734 LAL AMP\ALP\15-16_LAL_EXHIBIT-A.dwg Aug 11, 2020 - 2:04pm Plotted By: HASK8597

| REVISIONS | |
|---|---|
| DATE | DESCRIPTION |

CLIENT

FlyLakeland
Lakeland Linder International Airport

PROJECT

AIRPORT MASTER PLAN UPDATE

LAKELAND LINDER INTERNATIONAL AIRPORT
LAKELAND, FLORIDA

SHEET TITLE

EXHIBIT "A" AIRPORT PROPERTY INVENTORY MAP - DATA SHEET

ATKINS
Member of the SNC-Lavalin Group
4030 West Boy Scout Blvd.
Suite 700
Tampa, Florida 33607
Tel. (321) 775-6231
www.atkinsglobal.com/northamerica

JOB NO.: 100057734
DRAWN: KK, CH
DESIGN: KK, CH
CHECKED: GF
DATE: AUGUST 2020

This Page Intentionally Left Blank

# Capital Improvement Plan (CIP)

# 8. Capital Improvement Plan (CIP)

## 8.1. Introduction

The analyses conducted in the previous chapters evaluated airport development needs based on safety, forecasted aviation activity, and operational efficiency. However, an important element of the master planning process is the application of basic economic, financial, and management rationale to each development item so that the feasibility of implementation can be assured. The purpose of this chapter is to provide cost estimates for phased development throughout the planning period and summarize capital needs at Lakeland Linder International Airport (LAL).

## 8.2. Sources of Funding

Financing for capital improvements comes from several sources. Funding sources for the Airport's capital improvements include, but are not limited to, airport generated funds, City and County funds, grants from the Florida Department of Transportation (FDOT), and Federal grants from FAA through the Airport Improvement Program (AIP). Airport generated funds typically come from taxes, lease payments, investment income, fees, and forms of debt financing. The following paragraphs summarizes the key sources of funding. It is important to note that these funding sources are not meant to be all inclusive. Additional funding sources may be available and should be reviewed on a case-by-case basis.

### 8.2.1. Federal Funding

#### 8.2.1.1. Airport Improvement Program

The AIP provides grants to public agencies for airport development and planning projects at public-use airports that are a part of the National Plan of Integrated Airport Systems (NPIAS). The AIP is an evolution of the airport development and planning grant program which originated in 1946 with the Federal-Aid Airport Program (FAAP). In 1970, the Planning Grant Program (PGP) and Airport Development Aid Program (ADAP) replaced the FAAP with the introduction of the Airport and Airway Development Act of 1970. This same act was also responsible for introducing the Airport and Airway Trust Fund. In 1982, the Airport Improvement Program (AIP) came into existence with the passage of the Airport and Airway Improvement Act of 1982 (P.L. 97-248), which was later repealed by Congress and re-codified as Title 49 USC § 47101 (the 'Act'), et seq. (P.L. 103-272).

AIP funding is appropriated by Congress on an annual basis and can be used for airport development and planning projects such as the construction/rehabilitation/reconstruction of runways, taxiways, aprons, lighting, signage, buildings, airport master plans, environmental analysis, etc. that support the development of a safe and efficient nationwide system of public-use airports. The funds obligated for the AIP are drawn from the Airport and Airway Trust Fund (the 'trust fund'), which is supported by a variety of user fees and fuel taxes. The AIP is one of five major sources of airport capital development funding. Small airports are more dependent on AIP grants than large or medium-sized airports. Since passage of the Act, AIP has been reauthorized several times, most recently with the passage of the FAA Reauthorization Act of 2018, which extends the FAA's funding and authorities through Fiscal Year 2023.

AIP grants provide a large portion of funding needed for airport development and planning projects. At large and medium hub airports, AIP grants cover 75 percent of eligible costs (or 80 percent for noise program implementation). For small hub and non-hub primary airport, reliever, and general aviation airports, AIP grants cover 90 to 95 percent of eligible costs. In rare occasions, additional AIP related grant programs have been known to cover up to 100 percent of eligible costs based on specific legislative requirements.

The AIP statute is a permissive statute rather than a mandatory or prohibitory one. This means that the statute states all actions or items that are eligible for funding. Any action or item not explicitly stated, is not eligible for funding. Being a permissive statute means that an airport is not required to do all or some of the items or actions listed, rather, provided the FAA determines that an item or action is justified, the airport is eligible to do such item or action. **Table 8-1** provides examples of eligible versus ineligible AIP projects.

AIP funding is primarily broken down into two categories: Entitlements; and, Discretionary. Each category of funding is further broken down into sub-categories and/or set-asides. Each funding type carries specific rules on the types of projects it can be used for and the types of airports for which it is eligible. Not all funding types are available at all airports. Table 4-3 of the AIP Handbook (FAA Order 5100.38) outlines the types of funding available based on the type of airport, while Table 4-5 defines the types of projects that each fund type is eligible for. Title 49 USC § 47120 requires that an airports entitlement funding be used on the highest priority project before discretionary funding can be used. The following sections provides further details about each category of funding available.

**Table 8-1 Eligible and Ineligible AIP Projects**

| Eligible Projects | Ineligible Projects |
|---|---|
| Runway construction/rehabilitation/reconstruction | Maintenance[1] |
| Taxiway construction/rehabilitation/reconstruction | Industrial Park Development |
| Apron construction/rehabilitation/reconstruction | Fuel farms[1] |
| Airfield lighting, Signage, and Marking | Landscaping |
| Airfield drainage | Artworks |
| Land acquisition | Aircraft hangars[1] |
| Airport Weather Observation Stations (AWOS) | Office/Equipment |
| NAVAIDs such as REILs and PAPIs | Marketing plans |
| Planning studies such as Airport Master Plans | Training |
| Environmental studies | Improvements for commercial enterprises |
| Safety area improvements | |
| Access roads only located on airport property | |
| Removing, lowering, moving, marking, and lighting hazards | |
| Glycol recovery trucks/glycol vacuum trucks[2] (11/29/2007) | |

*Notes:*

*[1]Revenue producing aeronautical facilities such as fuel farms and hangars owned by the sponsor, can be funded with AIP provided they are at a nonprimary airport, only nonprimary entitlement funding is used, and the airport has satisfied the airfield needs requirements for revenue producing aeronautical support facilities.*

*[2]To be eligible, the vehicles must be owned and operated by the sponsor and meet the Buy American Preference specified in the ALP grant.*

*Source: Airport Improvement Program Handbook, FAA Order 5100.38.*

*Prepared by: Atkins, 2020.*

### 8.2.1.2. Discretionary Funding

Discretionary funding is made up of multiple set-asides and remaining amounts based on specific legislative calculations as outlined in Title 49 USC § 47117. Discretionary set-asides and remaining discretionary funding includes:

- Noise & Environmental Set-Aside
- Military Airport Program (MAP) Set-Aside
- Reliever Set-Aside
- Capacity/Safety/Security/Noise (C/S/S/N)
- Pure Discretionary
- Discretionary from Converted Entitlements/Apportionments
- Small Airport Fund

Each type of discretionary funding is determined based on a specific calculation, except for the discretionary from converted entitlements/apportionments. Further, each type of discretionary funding, except for pure discretionary and that converted from entitlements/apportionments, has specific funding purposes and is only available for funding of specific projects and/or at specific types of airports.

Discretionary funding is available to all public-use airports in the NPIAS and all projects seeking discretionary funding compete based on the national priority ranking (NPR) of the project, along with additional justification provided by the sponsor and FAA Airports District Office (ADO). Projects with a higher NPR, such as rehabilitation, reconstruction, and safety projects, are more likely to receive discretionary funding in any given year. However, that is not to say that other projects will not receive discretionary funding. It is highly encouraged for sponsors to submit all needs as the FAA will fund as many projects as possible from the list of candidate projects, and total discretionary funding available for any given year is not known until the end of the year.

#### 8.2.1.3. Entitlement Funding

Entitlement funding is broken down into multiple types and is primarily based on an airport's categorization. Entitlement funding types include:

- Passenger Entitlements
- Cargo Entitlements
- Nonprimary Entitlements
- State Apportionment
- Alaska Supplemental

Lakeland Linder International Airport (LAL) currently receives $150,000 of nonprimary entitlements every fiscal year (FY). In addition, LAL is eligible to receive state apportionment funding which is administered by the FAA Orlando ADO in cooperation with the Florida Department of Transportation (FDOT).

At this time, LAL does not receive any cargo entitlement funding, however, with the introduction of Amazon Prime Air at the airport in 2020, it is feasible that the airport may begin receiving cargo entitlement funding soon. In order to receive cargo entitlement funding, the airport must have a total annual landed weight of more than 100 million pounds of all cargo only aircraft. As an example, in FY 2020, Fairbanks International Airport (FAJ) received $69,466 in cargo entitlements based on a 2018 total landed weight of 108.9 million pounds of cargo only aircraft, while Orlando International Airport (MCO) received $675,178 in cargo entitlements based on a 2018 total landed weight of 1,058.7 million pounds of cargo only aircraft. Depending on when the airport crosses the threshold, it would likely be two years following that point when LAL begins to receive cargo entitlements.

### 8.2.2. State Funding

The FDOT annually funds a state–sponsored airport development program supported by statewide aviation fuel taxes. The program generates over $100 million per year to assist publicly-owned and operated Florida airports. The FDOT will participate in projects not funded with FAA monies on a 50-50 basis for commercial service airports, depending upon the nature and eligibility requirements of the projects. The state will also participate with federal and local agencies on a project on a 90 percent Federal, five percent State, and five percent local share basis. Typically, projects funded through this aviation development program have been developed on a pay-as-you-go basis.

FDOT also provides interest free loans for 75 percent of the cost of the airport land purchases for both commercial service and GA airports. These loans are to be repaid when federal funds become available or in 10 years, whichever comes first.

FDOT has developed a computer program in conjunction with the FAA, the Joint Automated Capital Improvement Program (JACIP), as a tool to assist airports in coordinating their capital improvement program with the FAA and FDOT. FDOT uses the projects included in the JACIP to prioritize projects into the FDOT Work Program. The Work Program includes five years of projects that have been approved for funding if funds are approved by the legislature for the current year.

### 8.2.3. Local Funding

Local share funding can come through many sources. The following three are examples of local funding options.

- **Debt Financing**: This option involves borrowing money against the available credit for the City/County. The debt may become a bond issue, where municipal bonds are sold to cover the cost of capital construction. These bonds generally fall into two categories – general obligation bonds and revenue bonds. General obligation bonds do not rely upon any revenue generated by the project, whereas revenue bonds depend upon the ability of the project to generate money to repay the debt.
- **Private Enterprise**: Private investors are a potential source of funds for revenue-producing developments at the Airport. Tenants and/or investors may finance the purchase of existing facilities or the construction of new facilities from which they derive income. While direct revenues to the Airport are usually limited to the purchase or lease charges for the land underlying the facilities, the local sponsor does not need to obtain its own funding for these improvements. Additionally, the increased activity resulting from airport improvements often increases the number of based aircraft or operations, which in turn generates additional revenue associated with fuel sales and other aviation services. Examples of private investment at airports include buildings for fixed based operators, fuel facilities, hangars (bulk and T-hangars), aviation-related commercial development, and non-aviation commercial development.
- **City/County Appropriations from the General Fund**: Similar to Federal appropriations, City/County appropriations are from the local government that may or may not be the owner of the airport. As the City/County where the airport is located will likely be the greatest beneficiary of the development project, it is essential to gain support from the local government. This support can in some instances include the local share of AIP grants.
- **Airport Revenues**: Airport revenues are required to stay on airport and cannot be diverted off-airport. All revenues collected from leases, fuel sales, landing fees, etc., can be used by the airport as the local share of AIP grants.

## 8.3. Project Phasing

This section addresses a phased schedule for implementing proposed development throughout the short-, medium-, and long-term planning periods. The schedule represents a prioritized capital improvement plan (CIP) to meet forecast milestones in aviation demand and/or economic development initiatives. Projects that appear in the short-term are of greatest importance and have the least tolerance for delay. Additionally, some projects included in the short-term may be a prerequisite for other planned improvements. The development phasing for the Airport has been divided into three planning periods as follows:

- Short-Term: 2020-2025
- Medium-Term: 2026-2030
- Long-Term: 2031-2040

The phasing of individual projects should undergo an annual review to determine the need for changes based upon variation in forecast demand, available funding, economic conditions, and/or other factors that influence airport development. It should be noted that other projects not foreseen in this report may be identified in the future and would necessitate changes in the phasing of projects and the overall CIP. Although the projects in the CIP have an implementation year assigned, this is only a recommendation tied to current assumptions and priorities. The Airport should review the goals, objectives, and priorities shown in the plan and the CIP annually and re-evaluate the CIP based on any changes in current conditions and the goals, objectives, and priorities stated in the plan. An annual review is necessary to maintain the viability of the Airport Master Plan and the CIP.

### 8.3.1. Cost Estimates

Project cost estimates were developed for each project identified in the development plan. The cost estimates provided are order-of-magnitude and all costs have been escalated to their programmed year.

Estimated quantities of major items, such as pavement or fill material, were used in conjunction with unit cost values to determine a construction cost. A final project cost was then determined by adding set percentages of the construction cost for mobilization (eight percent), safety, security, and traffic control (two percent), drainage (where applicable), and engineering services for construction and design phases (eight percent). Additionally, a contingency amount of 20 percent of the estimated construction cost was added to account for items that are currently unknown. While an escalation factor was included, actual construction costs may vary based upon inflation, variations in labor, and changes in the type or cost of materials used, as well as other unforeseeable economic factors. Federal grant assistance eligibility requirements may vary annually. It is highly recommended that an annual review of the estimated project costs be conducted as part of the annual CIP review.

## 8.4. Capital Improvement Plan

The Airport's proposed CIP is shown with projects grouped in the short- (**Table 8-2**), medium- (**Table 8-3**), and long-term (**Table 8-4**) planning periods. A summary of the full CIP is provided in **Table 8-5**. Individual CIP project sheets are provided in **Appendix C:** and contain project descriptions, detailed cost estimates, and other information. Revenue producing projects were assumed to be funded with both State and local funding, while terminal improvement projects assumed a 60 percent Federal eligibility. Eligibility for terminal funding will need to be analyzed at the time the project is programmed to determine the actual eligibility for AIP funding. All other projects were assumed to be eligible for AIP funding.

Table 8-2 Short-Term Capital Improvement Plan (Federal FY 2020-2025)

| Project | Federal Fiscal Year | Project Description | Project Cost ($) | Funding ($) | | |
|---|---|---|---|---|---|---|
| | | | | Federal | State | Local |
| **Short-Term (Federal FY 2020-2025)** | | | | | | |
| A1 | 2021 | Runway 9 Improvements | 19,843,900 | 17,859,510 | 992,195 | 992,195 |
| L1 | 2021 | Relocate Airport Maintenance Building | 5,378,800 | - | 2,689,400 | 2,689,400 |
| A2 | 2021 | Rehabilitate Taxiways A, B, C | 6,563,400 | 5,907,060 | 328,170 | 328,170 |
| A3 | 2021 | Construct Taxiway Connector A4 | 1,924,400 | 1,731,960 | 96,220 | 96,220 |
| L2 | 2022 | Construct Conventional Hangars on Taxilane H | 18,485,900 | - | 9,242,950 | 9,242,950 |
| A4 | 2022 | Taxiway E Enhancements | 10,561,100 | 9,504,990 | 528,055 | 528,055 |
| A5 | 2023 | Shift Taxiway D | 13,562,000 | 12,205,800 | 678,100 | 678,100 |
| L3 | 2024 | Construct Executive Aviation Center Access Road | 4,300,400 | 3,870,360 | 215,020 | 215,020 |
| A6 | 2024 | Construct Taxiway A Shoulders | 9,318,500 | 8,386,650 | 465,925 | 465,925 |
| L4 | 2025 | Construct Executive Aviation Center | 40,380,200 | 4,939,110 | 17,720,545 | 17,720,545 |
| A7 | 2025 | Construct Run-Up Apron (Taxiway A) | 3,324,700 | 2,992,230 | 166,235 | 166,235 |
| L5 | 2025 | Construct GA Hangar Access Road | 2,156,600 | 1,940,940 | 107,830 | 107,830 |
| | | **Total** | **135,799,900** | **69,338,610** | **33,230,645** | **33,230,645** |

Source: Montgomery Consulting Group Inc., Atkins 2020

ATKINS

**Table 8-3 Medium-Term Capital Improvement Plan (Federal FY 2026-2030)**

| Project | Federal Fiscal Year | Project Description | Project Cost ($) | Funding ($) | | |
|---|---|---|---|---|---|---|
| | | | | Federal | State | Local |
| **Medium-Term (Federal FY 2026-2030)** | | | | | | |
| L6 | 2026 | Construct 5,625 SF Hangar (West of Taxilane G) | 9,424,200 | - | 4,712,100 | 4,712,100 |
| L7 | 2027 | Expand Taxilane H (Future Taxilane F) Nested T-Hangars | 1,415,600 | - | 707,800 | 707,800 |
| L8 | 2027 | Construct T-Hangars | 7,031,200 | - | 3,515,600 | 3,515,600 |
| L9 | 2028 | Fuel Farm Expansion | 7,063,000 | - | 3,531,500 | 3,531,500 |
| A8 | 2028 | Airport Master Plan Update | 1,462,100 | 1,315,890 | 73,105 | 73,105 |
| A9 | 2022 | Construct South Parallel Runway 10R/28L | 45,679,100 | 41,111,190 | 2,283,955 | 2,283,955 |
| L10 | 2029 | East Terminal Expansion | 48,409,900 | 26,141,346 | 11,134,277 | 11,134,277 |
| A10 | 2028 | Construct South Parallel Taxiway to Runway 10R/28L (Future Taxiway B) | 28,282,500 | 25,454,250 | 1,414,125 | 1,414,125 |
| L11 | 2029 | Construct 5,625 SF Hangars (Southwest of existing FBO Apron) | 15,065,200 | - | 7,532,600 | 7,532,600 |
| L12 | 2030 | Construct 8,100 SF Hangar | 23,696,300 | - | 11,848,150 | 11,848,150 |
| A11 | 2030 | Remove Runway 5/23 | 10,156,100 | 9,140,490 | 507,805 | 507,805 |
| | | **Total** | **197,685,200** | **103,163,166** | **47,261,017** | **47,261,017** |

Source: Montgomery Consulting Group Inc., Atkins 2020

### Table 8-4 Long-Term Capital Improvement Plan (Federal FY 2031-2040)

| Project | Federal Fiscal Year | Project Description | Project Cost ($) | Funding ($) | | |
|---|---|---|---|---|---|---|
| | | | | Federal | State | Local |
| **Long-Term (Federal FY 2031-2040)** | | | | | | |
| A12 | 2030 | Runway 09/27 Extension | 28,078,300 | 25,270,470 | 1,403,915 | 1,403,915 |
| L13 | 2031 | West Terminal Expansion | 60,101,200 | 32,454,648 | 6,458,009 | 6,458,009 |
| A13 | 2035 | Construction of Ground Run-Up Enclosure (GRE) | 4,222,900 | - | 2,111,450 | 2,111,450 |
| A14 | 2037 | Airport Master Plan Update | 1,738,000 | 1,564,200 | 86,900 | 86,900 |
| | | **Total** | **94,140,400** | **59,289,318** | **10,060,274** | **10,060,274** |

Source: Montgomery Consulting Group Inc., Atkins 2020

### Table 8-5 Capital Improvement Plan Summary

| Full Program Overview | Project Cost ($) | Funding ($) | | |
|---|---|---|---|---|
| | | Federal | State | Local |
| **Short-Term Total** | **135,799,900** | **69,338,610** | **33,230,645** | **33,230,645** |
| **Medium-Term Total** | **197,685,200** | **103,163,166** | **47,261,017** | **47,261,017** |
| **Long-Term Total** | **94,140,400** | **59,289,318** | **10,060,274** | **10,060,274** |
| **Full Program Total** | **427,625,500** | **231,791,094** | **90,551,936** | **90,551,936** |

Source: Montgomery Consulting Group Inc., Atkins 2020

This Page Intentionally Left Blank

# Public Involvement Program

Lakeland Linder International Airport

# 9. Public Involvement Program (PIP)

The Public Involvement Program (PIP) aims to generate public awareness of the Airport Maser Plan Update ('the project') and to prompt public input. Generating public input will ensure the planning effort meets the stakeholder's needs. The level of public involvement in airport planning is proportional to the complexity of the planning study and to the degree of public interest. The PIP process for the Airport involved public awareness through press releases, information via website and public presentations, and a feedback process to encourage information sharing between stakeholders and the planning team throughout relevant milestones of the project.

Copies of advertisements, handouts, and other elements of the public awareness campaign are available in **9.2.2.Appendix D:** as the official record of the PIP. The project team utilized a dynamic/interactive public forum. The selection of the specific PIP platform depended heavily on the complexities associated with the Airport, the expected public interest in the master plan, and budget considerations.

## 9.1. Government and Technical Groups

### 9.1.1. Technical Advisory Committee

The Technical Advisory Committee (TAC) is responsible for providing input and insight on technical issues. Committee members typically have a high level of technical competency associated with some aspect of aviation or airport operations and are major stakeholders in the airport's operation. The TAC was comprised of members of city government, the local Economic Development Council, the local Tourism Board, the Chamber of Commerce, the Regional Development Council, the Regional Planning Council, as well as select airport tenants.

There were four TAC meetings facilitated throughout the project:

- TAC 1 – June 13, 2018
- TAC 2 – September 13, 2018
- TAC 3 – April 9, 2019
- TAC 3b – November 13, 2019

### 9.1.2. Airport Advisory Board

The Airport Advisory Board is comprised of seven (7) members who are appointed by the City Commission. Members include: one City of Lakeland Commissioner, one General Aviation Representative (initial term one year), one Corporate Aviation Representative (initial term two years), one Airport Tenant Representative (initial term three years), one Citizen At-Large Representative (initial term one year), one Citizen At-Large Representative (initial term two years), and one Citizen At-Large Representative (initial term three years).

The project team made a presentation to the Airport Advisory Board on June 20, 2018.

### 9.1.3. Lakeland City Commission

The public can view all Lakeland City Commission meetings live online through the Lakeland City website at lakelandgov.net/departments/communications/lakelandgov-tv/ and/or on local cable (Spectrum) channel 643/FiOS Channel 43 throughout Polk County. All Lakeland Gov TV programming can be viewed on the LakelandGov Vimeo page at vimeo.com/lakelandgov/collections.

The project team made a presentation to the Lakeland City Commission on August 20, 2018.

## 9.2. **Public Information**

### 9.2.1. On-Line Project Updates

Project materials, and announcements were hosted on the Lakeland Linder International Airport web page. This site hosted notifications related to the Airport Master Plan Update process, informational materials, and opportunities to provide project feedback. Airport Master Plan feedback information is at flylakeland.com/airport-master-plan.

#### Media Announcements

Media announcements are important components of the PIP to inform the public of various project milestones, meetings, and circulate project information. Media announcements were made by Airport staff using various mediums including press releases, website announcements, and social media event pages. Copies of media announcements are provided in **9.2.2.Appendix D:**. Various media announcement milestones are listed below:

- 12/12/2019 Public Meeting Announcement Press Release from Lanklandgov.net/events
- 1/2/12/2019 Public Meeting Announcement Press Release from Lanklandgov.net/news
- 12/12/2019 Public Meeting Announcement, www.havenmagazine.com/calendar
- 12/12/2019 Public Meeting Event, LAL Facebook Page
- 01/13/2020 Public Meeting Announcement, thelakelander.com
- 01/13/2020 Public Meeting Announcement, www.theledger.com/news

### 9.2.2. Public Meeting

The project team facilitated a public outreach event open to all interested community members. The meeting was a public open house held from 4:00 p.m. to 7:00 p.m. on January 15, 2020 at the LAL Terminal Building, 3900 Don Emerson Drive, Lakeland, Florida. The purpose of the meeting was to inform the public of project progress, present the project alternatives, to solicit input, and gather information for alternatives refinement. Members of the project team were on hand throughout the open house to answer questions and provide information. Comment cards were available for public input.

Twenty-two public comment cards were collected after the event. Many of the cards offered comments on multiple topics.

- Fourteen comments expressed gratitude and support for the presented plan.
- Seven comments expressed specific support of the Preferred Alternative
- Four comments were received expressing noise concerns
- Three comments were received expressing support of commercial service
- Two comments were received expressing concerns about traffic and local roads
- One comment was received expressing a desire for a restaurant
- One comment was received expressing an interest in a Terminal B
- One comment was received expressing concern in loss of Sun n Fun grounds
- One comment was received expressing concern for flight paths
- One comment was received regarding establishing and emergency alert system
- One comment was received regarding parking

The above items summarize a majority of the input that was received from the public during the public outreach events; however, all public comments related to the project can be found in **Appendix D:**.

This Page Intentionally Left Blank

**Appendix A**

Potential for Commercial Passenger Service

FlyLakeland
Lakeland Linder International Airport

# Appendix A: Potential for Commercial Passenger Service

## A.1. Introduction

Currently there is no regularly scheduled commercial passenger service at the Lakeland Linder International Airport (LAL). Regardless, the airport still maintains its Title 14, Code of Federal Regulations (CFR), Part 139 Airport Operating Certificate required to accommodate scheduled and unscheduled air carrier operations with the goal of serving commercial passenger service at some point in the future. Because of this, the history of passenger service at the airport, and the existing terminal building facilities, airport management has had independent analyses conducted on the potential market for and economic impact of commercial passenger service at LAL. These included the following two studies:

***True Market / Leakage Study – August 2014***

- Economic Impact of Proposed New Air Service – November 2015

These studies were reviewed and utilized to create a summary of the commercial passenger catchment area for LAL, the challenges of securing scheduled commercial service, and the types of commercial passenger activity that should be considered over the course of the 20-year master planning horizon to ensure that the airport has flexibility to serve future commercial passenger service opportunities. General information on the evolution of the passenger airline industry is also included followed by a summary of the key data associated with the potential commercial passenger service scenarios evaluated. The summary is aimed to serve as a reference to help the airport ensure it maintains the flexibility necessary to accommodate future passenger airline opportunities.

## A.2. True Market / Leakage Study

The True Market / Leakage Study for LAL was developed by the Sixel Consulting Group, Inc. This study was conducted to identify the passenger market potential (catchment area) that could be served by LAL, which airport those passengers were currently utilizing, which airlines those passengers were flying, and where those passengers were traveling to/from. The following sections are direct excerpts from the August 2014 study. Because the airport currently serves no commercial passengers, a number of references cite zero percent relative to capture rates.

***Background***

*This Ticket Lift/True Market study had three components. The first used only tickets collected from the Airline Reporting Corporation. The second part of the study made an adjustment to ticketing data to take into account error rates from under-reported destinations (sample sizes too small to be accurate) and the effect of low-cost carriers with relatively low ratios of agency-booked tickets. The third part of the study takes into account the population, earnings and GDP from the catchment area to determine the macro level size of enplanements generated in the market. The final adjusted results therefore produce more relevant data.*

***Methodology***

*Sixel Consulting Group has a three-pronged approach to determining the size and characteristics of an airport's catchment area true market. The volume of traffic at carrier destination detail that is currently captured at any airport is recorded in the Department of Transportation's Origin & Destination Survey. This data is analyzed and corrected to account for sampling errors and carriers that do not participate in the survey. The characteristics of leaked traffic are then lifted from an analysis of tickets sold by airlines serving the region that make settlement transactions through the Airline Reporting Corporation (ARC). This data is then evaluated to determine its fitness for inclusion in a representative sample to eradicate any outliers. The* *volume of leaked traffic is determined by analyzing demographic and socio-economic data in the catchment area relative to regional and national tendencies. This is done using a proprietary basis for disseminating and evaluating population, personal income, and gross domestic product for a defined catchment area.*

*Specific travel information is recorded on airline ticket stock retained by many airlines and sent to ARC for processing. Sixel Consulting Group, Inc. (SCG) staff collected airline ticket data from ARC-reporting airlines serving the area and collected data of customers located in zip codes within the area. The information collected included: originating airports, destinations, connecting airports, purchase dates, departure and return dates, and airlines utilized. This data is analyzed to accomplish the objectives of the Ticket Lift Survey.*

*Proprietary analysis was accomplished to determine travel on low-cost carriers such as Southwest and Frontier. While ARC-reporting airlines continue to book a significant portion of travel, low-cost carriers (such as Southwest, jetBlue, Frontier and Sun Country) and scheduled charter airlines (such as Allegiant) get the vast majority of their bookings through company web portals and do not settle transactions through ARC. Therefore, tickets purchased through these non-traditional channels are not collected in the traditional Ticket Lift Survey – or others based on travel agency sales.*

*For this survey, Sixel Consulting Group has estimated leakage to low-cost carriers at airports throughout the region. By combining the Ticket Lift Survey information with information provided by the airlines to the U.S. Department of Transportation, SCG estimated the "true market" for the local airport. The true market is the total number of air travelers, including those that are using a competing airport, in the geographic area served by Lakeland Linder International Airport. The "true market" estimate includes the size of the total market, and can also be used to provide estimates for specific destinations.*

***Distance / Population***

*Approximately 405,132 residents live within a 30 minute drive of Lakeland Linder International Airport.*

*Approximately 1,917,588 residents live within a 60 minute drive of Lakeland Linder International Airport.*

*Approximately 5,751,342 residents live within a 90 minute drive of Lakeland Linder International Airport.*

***Passenger Summary***

*Destinations by market: Based on the analysis, the top five passenger markets for the Lakeland area are New York / Newark, Washington / Baltimore, Chicago, the Los Angeles Basin and Philadelphia. These five market areas comprise 25.8% of Lakeland area demand, with the 20 largest markets generating at least 43 passengers per day each way.*

*Largest Destination: Based on the analysis, the largest true passenger market for the Lakeland area is New York / Newark. The Lakeland area generated a total of 281,248 passengers in Twelve Months Ended March 2014 - 385 PDEW to New York / Newark. 0.0% of Lakeland area - New York / Newark passengers use Lakeland Linder International Airport while 61.4% use Orlando International Airport.*

*Passenger Retention: Among the 50 largest true passenger markets, Lakeland Linder International Airport retains the largest percentage of Lakeland area passengers to Richmond (0.0%), Norfolk / Newport News, (0.0%) and Allentown (0.0%). Lakeland Linder International Airport retains the lowest number of area passengers to Chicago (0.0%), Washington / Baltimore, (0.0%) and New York / Newark (0.0%).*

*Passenger Retention: Among the 50 largest true passenger markets, Orlando International Airport captures the largest percentage of Lakeland area passengers to Richmond (79.8%), San Diego, (77.4%) and Providence (74.9%). Orlando International Airport captures the lowest number of area passengers to Grand Rapids (46.1%), Allentown, (34.0%) and Knoxville (30.6%).*

***True Market Analysis***

*A total of 22,854 airline tickets were sampled from travelers in the Lakeland study area.*

*Airlines reporting tickets to ARC include: Alaska, Delta, United, US Airways, American and Frontier.*

*Sixel Consulting Group makes adjustments to ARC data to account for LCC underreporting.*

*LCC carriers include: Allegiant, Southwest, Spirit and Sun Country.*

*After making the adjustment for LCC carriers, an estimated 3,556 total passengers per day are generated to/from the study area with Lakeland capturing 0 passengers per day - 0.0% of the total.*

*Those Lakeland study area passengers using Orlando generated 2,178 passengers per day - 61.2% of the Lakeland study area total, while Tampa captured 1,207 passengers per day - 34.0%.*

*3,349 Lakeland study area passengers per day - 94.2% - travel to/from domestic U.S. airports.*

*207 Lakeland study area passengers per day are international passengers.*

*Southwest captured the largest share of passengers in the Lakeland study area, generating 958 pdew - 26.9% of the total - followed by American (723 pdew, 20.3% share) and Delta (690 pdew, 19.4% share).*

*New York / Newark is the largest passenger market in the Lakeland study area, generating 385 pdew.*

*Washington / Baltimore is the 2nd largest passenger market in the study area, generating 199 pdew.*

*The Lakeland study area generated a total of $458.9 million in annual revenue.*

*The average one-way airfare for Lakeland study area passengers is $177.*

***Conclusions***

*The results of this True Market Study show that the catchment area currently produces roughly 2,596,185 total airline passengers per year, or 3,556 passengers per day each way. This study also shows that the Lakeland area currently produces about $458.9 million in current annual airline revenue, or $628,574 in airline revenue per day each way. A minority of these passengers use the Lakeland Linder International Airport for their travel - 0.0% - taking flights that depart or arrive locally. About 61.2% of Lakeland area passengers use Orlando International Airport.*

*It is important to note that even if airline service is offered at Lakeland, airlines serving Lakeland Linder International Airport may not realize the full number of passengers and the full amount of revenue represented in this True Market Study. While these numbers represent what the market currently produces for airlines at Lakeland Linder International Airport and other airports combined, it does not represent the eventual retention number of service in Lakeland. It is not unusual in regional markets like Lakeland that the local airport retains only a percentage of the total market, as many travelers still choose to drive to other airports to access the national air transportation system.*

*Still, the results of this study show the potential for hundreds more daily passengers to fly in and out of the Lakeland Linder International Airport. Moreover, it is important to note, this study does not take into account any stimulation of the market through additional service – especially service that is priced below similar service found at other airports in the region. Low cost, less-than-daily service would also have the potential to pull passengers from other nearby catchment areas to the Lakeland Linder International Airport. Passengers from other catchment areas other than Lakeland, who might use the Lakeland Linder International Airport, are not accounted for in this study.*

*The results of the study indicate the Lakeland Linder International Airport has a passenger market large enough to support additional service. However, this study alone will not be enough to convince new airlines* *to begin service. It is likely the Lakeland Linder International Airport will have to offer some kind of risk mitigation program, including fee waivers, marketing, and even ground handling, to convince another airline to launch service at Lakeland Linder International Airport.*

## A.3. Economic Impact of Proposed New Air Service

The Economic Impact of Proposed New Air Service study for LAL was also conducted by the Sixel Consulting Group, Inc. This study built upon the information from the August 2014 True Market / Leakage Study and identified three potential scenarios of new airline service to/from LAL to include:

- Charlotte Douglas International Airport (CLT) in North Carolina via American Airlines
- Fort Lauderdale-Hollywood International Airport (FLL) in Florida via jetBlue Airways
- John F. Kennedy International Airport (JFK) in New York via jetBlue Airways

These scenarios were utilized for the study's primary purpose of estimating the annual local economic impact that could be realized based on such air service being established at LAL. The following sections are direct excerpts from the November 2015 study

**Background**

The Lakeland/Winter Haven, Florida, MSA (Polk County) is one of the fastest growing in the United States. The MSA and county sit between the Orlando and Tampa metropolitan areas and are bisected by Interstate Highway I-4 which connects those two large cities. Areas of the MSA near I-4 have seen significant population growth. Key economic sectors of the MSA are tourism (with a host of venues and attractions), agriculture, mining and light industry. Publix, an employee owned $31 billion dollar supermarket chain, is based in Lakeland.

The Lakeland Linder International Airport sits near the population center of the MSA and just off of I-4. One goal of the airport and its community partners is to recruit regularly scheduled network carrier air service to Lakeland. This service would increase inbound tourism to the region as well as provide local residents and companies with a convenient gateway for domestic and international travel.

The domestic airline industry currently faces significant shortages of pilots. Furthermore, carriers are keenly focused on placing aircraft assets where they will make the highest financial and strategic return. Carriers have far more new service options than they have aircraft and crews, so smaller cities and those without service, like Lakeland, must be prepared to provide incentives and financial risk backstops to entice a network carrier to commit aircraft and crews to new local service.

**New Air Service Background, Impact, and Forecast**

The Lakeland Linder International Airport currently has no scheduled air service. However, from mid-2011 until early 2012 Direct Air (a public charter carrier) operated 701 flights on five domestic routes. Direct Air generated about 70,000 O&D passengers on these flights, averaging 100 passengers per flight. Direct Air shut down all operations in early 2012, due to its own mismanagement issues. The carrier's brief service history at Lakeland clearly demonstrates that air service at the Airport can generate significant passenger traffic, even when that service was provided by a public charter carrier that struggled to market and sell its air service product.

To confirm the underlining strength of air service demand in the immediate region around the Airport, a comprehensive traffic demand and leakage study was performed in 2014, using traffic data from the 12-month period ended 3/31/2014.

This study showed that the Lakeland Linder International Airport catchment area (67 zip codes covering Polk County and areas immediately to the south) generated 2.6 million airline O&D trips, with the immediate Lakeland and Winter Haven areas generating 54% of that total. Some 61% of this catchment traffic demand used Orlando International (MCO) and 34% used Tampa International (TPA) for travel. Among airlines, Southwest captured 27% of this traffic, American 20%, Delta 19%, United 12%, jetBlue 12% and other carriers 10%. Air travel demand in the region paid air fares similar to those paid by residents of the Orlando and Tampa Bay metro areas. Traffic distribution among carriers was similar to the overall distribution among carriers at MCO and TPA.

The traffic generation success of Direct Air, despite all the limitations of that service option, combined with the detailed true traffic and traffic leakage study of 2014, clearly show that the Lakeland Linder International Airport is well positioned to support airline service.

For the purpose of determining new air service economic impact, two specific new air service scenarios were outlined, and a forecast of operational and traffic results was generated for each. These forecasts use accepted service and traffic forecast methodology. In addition, a net-new visitor impact only, excluding airport impacts, was done for a single daily flight to New York City (JFK). Other new air service scenarios for Lakeland Linder are possible, these scenario studies represent a baseline indication of new air service-related economic impact, specific to each scenario and, in general, to other, similar new air service scenarios.

American Airlines service to CLT

The American Airlines service to Charlotte is assumed to be three flights daily operated with CRJ-700 aircraft seating 67 passengers. Via Charlotte, the service would generate online connections onward to over 105 domestic and international destinations. The CRJ-700 service three times daily would generate 118,384 annual passengers and 59,192 local enplanements on 2,168 annual flight operations with 145,256 available seats. Annual load factor would be 81.5%. An estimated 75% of onboard passengers would be inbound origin.

*jetBlue Airways* service to FLL

The *jetBlue Airways* service to Fort Lauderdale is assumed to be two flights daily operated with ERJ-190 aircraft seating 100 passengers. Via Fort Lauderdale, the service would generate online connections onward to nearly 40 domestic and international destinations. The ERJ-190 service two times daily would generate 122,910 annual passengers and 61,455 local enplanements on 1,446 annual flight operations with 144,600 available seats. Annual load factor would be 85%. As with the American service, an estimated 75% of onboard passengers would be inbound origin.

*jetBlue Airways* service to JFK

An additional scenario of new jetBlue air service was analyzed. Instead of twice daily service from Fort Lauderdale, the net new visitor impact of a single daily round trip from New York City (JFK) was estimated.

## A.4. Evolution of Passenger Airline Industry

In broad terms, the U.S. passenger airline industry is characterized by mainline and regional carriers that provide scheduled domestic and international service. The FAA defines mainline carriers as those primarily providing service with aircraft of 90 or more seats, while the regionals largely utilize aircraft with 89 or less seats, on routes that feed the mainline carriers.

Over the last two decades there have been a number of events that have influenced commercial passenger levels at U.S. airports and how the airlines have reacted to serve the market. At the beginning of this period, many airports across the nation experienced decreases in passenger activity due to the effect of the September 11th, 2001 terrorist attacks. Airline activity then generally rebounded through 2007 until the economic downturn from the Great Recession of 2008. This general period was also marked by dramatic increases in fuel prices between 2003 and 2008. Since that time, fuel prices have dropped significantly, the economy has rebounded, and airlines are more profitable than during virtually any period in modern history.

## A.4.1. Airline Restructuring and Consolidation

In addition to the economic impacts and higher fuel prices during the late 2000's, increased competition from low-cost carriers resulted in a series of mergers among the mainline carriers. This consolidation drove changes in airline business models as carriers modified their networks and shifted their focus from growth to efficiency and profitability. The result was reduced service at many commercial service airports, with medium, small, and non-hub airports experiencing the majority of the impacts. Table X-1 highlights the major airline consolidations that have occurred over the last 10 years. The five resulting carriers, Delta Air Lines, United Airlines, Southwest Airlines, American Airlines, and Alaska/Virgin Airlines, along with jetBlue Airways accounted for 85 percent of the U.S. domestic market (as measured by revenue passenger miles) in 2016.

**Table 9-1 Major Airline Consolidation since 2008**

| Airlines | Integration Period |
|---|---|
| Delta / Northwest | 2008 - 2010 |
| United / Continental | 2010 - 2012 |
| Southwest / AirTran | 2011 - 2014 |
| American / US Airways | 2013 - 2014 |
| Alaska / Virgin America | 2016 - 2019 |
| Delta / Northwest | 2008 - 2010 |
| United / Continental | 2010 - 2012 |

Source: ESA analysis, 2018.

While the economic downturn resulted in consolidation among the major airline ranks, regional carriers were hit hard as the higher fuel costs diminished the viability for the older and smaller regional aircraft to efficiently operate. Since that time, the response by regionals has been to replace their 37 and 50 seat aircraft with newer and larger variants in the 70 to 90 seat range.

## A.4.2. Changing Airline Practices

The increases in fuel costs and mergers that began in 2008 also ushered in two major practices that have shaped today's airline industry: a focus on ancillary revenues and capacity discipline. It was at this time that airline executives started to introduce bag fees as a means to offset industry losses. This alternative revenue focus has continued across the board with even the largest major carriers selling an ever-evolving list of products and services traditionally included in the ticket price. This unbundling of services, which was traditionally the hallmark of low-cost carriers, now spans the industry as most airlines charge some sort of fee for checked bags, seat assignments, or meals, while also adding fees for other services such as priority boarding, in-flight entertainment, and/or internet access. Airlines continue to use this strategy in combination with capacity discipline to cut loses and maximize profitability. In practice, airline capacity discipline saw many carriers exiting unprofitable routes, reducing frequency on others, and modernizing their fleets with more efficient aircraft. For most carriers this shifted the priority from gaining (or protecting) market share to simply becoming profitable.

It is worth noting that while the ancillary revenues and capacity discipline has enabled the airline industry to consistently make record profits over the past four years (including 2017), this success has not been shared equally among the industry. Specifically, the regional carriers have seen their market share shrink considerably as they compete for fewer contracts made available by the consolidated mainline carriers. In addition to the capital costs associated with improving the size and age of their fleets, they are also facing increases in labor costs. Much of this has stemmed from pilot shortages which have been exacerbated by increases in pilot training requirements.

### A.4.3. Low-Cost and Ultra Low-Cost Carriers

There has also been a shift in the impact of low-cost carriers (LCC) on the U.S. domestic passenger market. Originally these carriers differentiated themselves through the unbundling of a few services traditionally included in the ticket price. Many were also able to lower their cost structure by utilizing secondary airports in a popular market as well as limiting the types of equipment in their fleets and preferring aircraft configured with a single passenger class. Currently, the most prominent LCCs serving U.S. domestic routes include Southwest and jetBlue. More recently, the term ultra low-cost carrier (ULCC) has come to represent those carriers that offer even lower costs and less items included in the base fare. Also referred to as “a la carte” carriers, in the U.S. these include Allegiant Air, Spirit Airlines, Frontier Airlines.

A key characteristic of both LCC and ULCC carriers is that their route structures are typically based on point to point service; however most offer seamless reservations with flights to connect at certain airports. Most notable in the industry is how Southwest shifted its focus from smaller secondary airports to large-hub airports and with a myriad of connecting flight options. Since this shift has increased their costs, it has also tempered what the industry dubbed as the “Southwest Effect.” Southwest Airlines no longer provides the pricing pressure that induces significant growth at smaller commercial airports. This effect has now largely shifted to the ULCC airlines like Allegiant, Spirit, and Frontier.

## A.5. Summary

Given the lack of current air service and the changes that have taken place in the commercial passenger service market nationally over the last decade, the future of air service at LAL remains difficult to predict. The following table provides a summary of the three potential scenarios for new airline service at LAL that were identified in the Economic Impact of Proposed New Air Service completed by the Sixel Consulting Group. The figures shown provide a reference to assist in evaluating the existing passenger terminal facilities against any airline opportunities that might occur in the future.

**Table 9-2 Traffic and Operational Statistics for Potential Airline Service Scenarios**

| | Charlotte (CLT) | Fort Lauderdale (FLL) | New York (JFK) |
|---|---|---|---|
| Air Carrier | American | jetBlue | jetBlue |
| Aircraft | CRJ-700 | E-190 | E-190 |
| Seats | 67 | 100 | 100 |
| **Annual** | | | |
| Flights | 2,168 | 1,446 | 723 |
| Operations | 4,336 | 2,892 | 1,446 |
| Seats | 145,256 | 144,600 | 72,300 |
| Average Load Factor | 81.5% | 85.0% | 85.0% |
| Passengers | 118,384 | 122,910 | 61,455 |
| Enplanements | 59,192 | 61,455 | 30,726 |

Source: Economic Impact of Proposed New Air Service - Sixel Consulting Group, Inc., November 2015.

# Appendix B

Recycling, Reuse, and Waster Reduction Plan (RRWRP)

FlyLakeland
Lakeland Linder International Airport

# Appendix B: Recycling, Reuse, and Waster Reduction Plan (RRWRP)

## B.1. Recycling, Reuse, and Waster Reduction Plan

In 2012, the Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 was issued and included a new requirement for Airport Master Plans to address recycling by:

- Assessing the feasibility of solid waste recycling at the airport;
- Minimizing the generation of waste at the airport;
- Identifying operations and maintenance requirements;
- Reviewing waste management contracts; and
- Identifying the potential for cost savings or generation of revenue.

Subsequent to the passing of the FAA Reauthorization bill, the FAA issued guidance[10] on preparing recycling, reuse, and waste reduction plans as part of Airport Master Plans. This appendix provides detailed information regarding the management of Lakeland Linder International Airport's (LAL) waste and recycling programs. This Recycling, Reuse, and Waste Reduction Plan (RRWRP) includes a review of LAL's waste management and recycling operations throughout the terminal and airfield, as well as a review of tenant practices.

## B.2. Airport Description and Background

LAL began by recycling only cardboard in 2012. In 2016, the airport advanced their recycling program to include mixed recycling, including cans, paper, plastic, etc. The airport has direct control over waste disposed of in the parking lots, public and LAL terminal spaces (e.g., terminal areas and offices), and the airfield. Polk County does not mandate recycling at the airport. Solid waste and recycling collection are provided by the City of Lakeland; however, some tenants use Republic Services as their solid waste hauler.

LAL owns a significant amount of property that is leased, which also includes property outside the aircraft operating area (AOA) fence line. LAL has more than 80 commercial business tenants located either within the AOA fence line or on-airport property. The airport has several on-airport tenants that have informal recycling programs. For example, there are tenants that currently recycle cardboard and scrap metals. Several more proactive tenants have formal recycling programs that could potentially be used or adapted by airport staff. Working with these tenants could improve the airport's overall recycling practices, including tenant recycling activities. The airport has no direct control or influence over off-airport tenants, such as Polk State College, etc. The only mechanism for control or influence would be in lease language, which is administered by the City of Lakeland.

The majority of waste at an airport is generated by general aviation (GA) pilots/passengers, tenants, and airport users. Common waste disposed of at LAL, including tenants, includes:

- Common office/terminal waste: paper, plastic (hard plastic containers and film plastics), cans and bottles, food and food-packaging waste, and cardboard boxes
- Deplaned waste (e.g., beverage cups and newspapers)
- Construction and demolition waste from construction projects
- Hazardous waste such as batteries, fluorescent light tubes, solvents, and paint

---

[10] FAA. *Guidance on Airport Recycling, Reuse, and Waste Reduction Plans.* September 30, 2014. http://www.faa.gov/airports/environmental/media/airport-recycling-reuse-waste-reduction-plans-guidance.pdf

## B.3. Existing Waste and Recycling Handling at LAL

The airport is responsible for collecting waste generated by airport terminal users and employees. The tenants are responsible for their own trash and recycling disposal. In addition to municipal solid waste, the airport and some of the tenants have hazardous waste, spill waste, and project-related construction and demolition waste, which are typically managed by a contractor.

Containers used to contain the airport's waste (provided by the City of Lakeland) for collection are located at various areas around the airport property **Figure B-1**.

**Figure B-1: Examples of LAL Recycling and Waste Containers**


The local landfill and recycling facility (on De Castro Road in Winter Haven) is located approximately 12 miles east of LAL. The primary commodity markets in this area are for scrap metals (e.g., steel, aluminum); presently, several tenants retain these materials for sale in the marketplace.

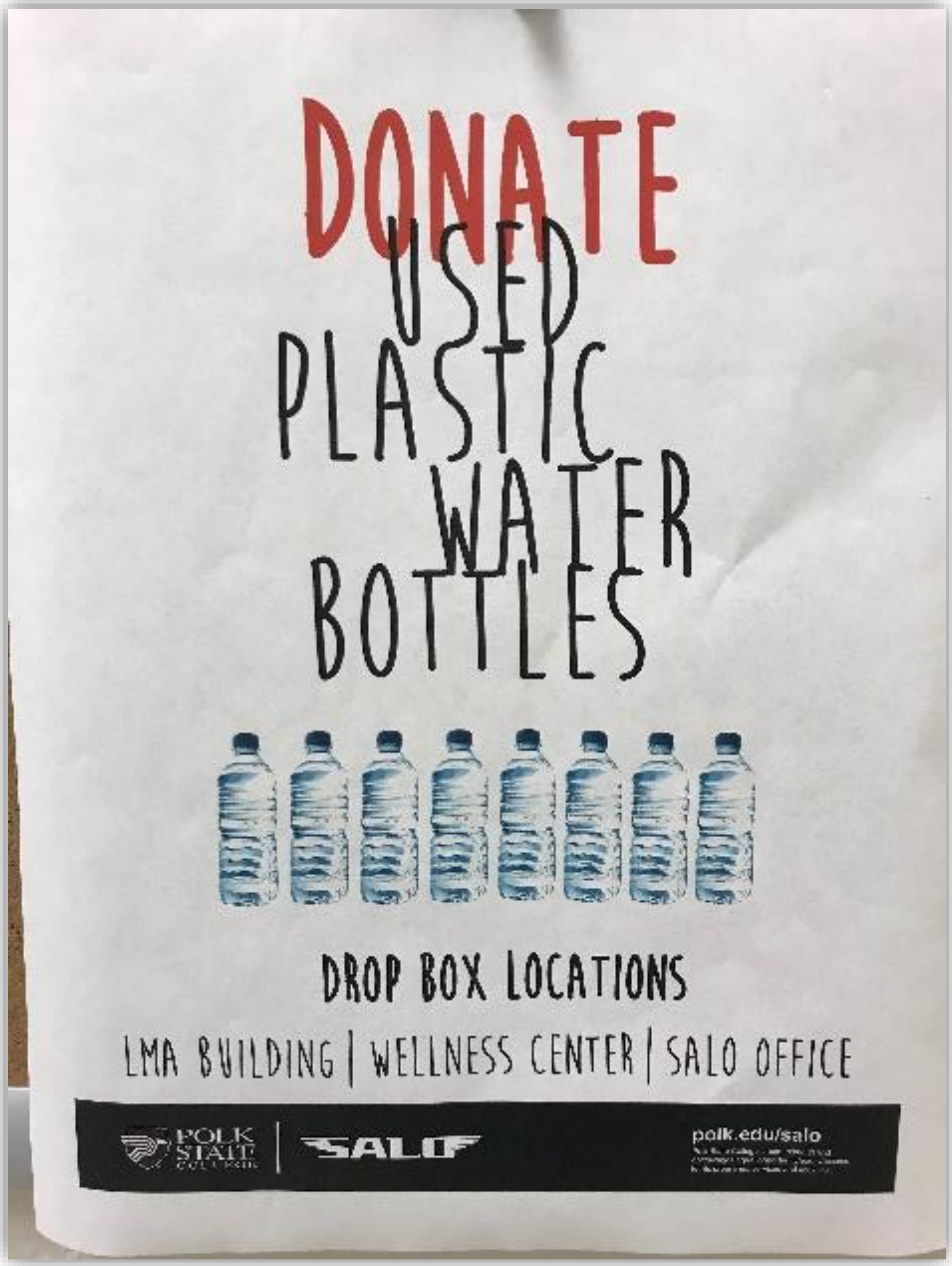
Most of the waste generated by the airport staff is from the office areas; however, this is a small volume relative to the overall waste airport-wide, which is generated by tenants and other airport users. The airport administrative office has several recycling bins located throughout the office areas. Employees are encouraged to use less paper through the use of electronic files as well as double-sided printing. Presently, the airport does not have scheduled commercial service; therefore, there are no recycling bins located in the public areas of the terminal.

LAL does not have a formalized recycling/waste reduction program; however, the airport and tenants have taken steps to reduce waste and increase recycling. Some of the waste minimization efforts undertaken by one or more tenants include:

- Double-sided printing and electronic document usage/storage
- Recycling of printer toner cartridges through a third party
- Reuse of cardboard boxes for shipping
- Recycling of scrap metal and electronics

Other unique examples of recycling by LAL tenants include an initiative by a student organization at Polk State College to utilize empty water bottles for creating a wall **Figure B-2** and a program for reusing cleaning/oil rags undertaken at the NOAA facility **Figure B-3.**

**Figure B-2: Polk State College Signage**




There are no formalized goals or targets for recycling and no tracking or reporting on the performance of the solid waste recycling programs at LAL. Due to the way solid waste and recycling services are billed (i.e., flat rate billing rather than by volume), it is difficult to track and monitor the airport's performance. A formalized recycling program could be established, but staff time requirements are commonly a challenge to formalizing programs and limited resources are available to implement waste-reduction initiatives.

**Figure B-3: Drums Used for Rags at NOAA Facility**


## B.4. Waste Walk-Through

Based on the size of LAL, a waste walk-through was conducted in May 2018 rather than a full waste audit. The walk-through included a review of the terminal space and offices, as well as a sampling of airport tenants.

The City of Lakeland is responsible for the removal of solid waste and recyclables from the airport and bills LAL based on container size and does not track the actual volume or weight of waste and recycling. The airport terminal has a two-cubic-yard dumpster for mixed recyclables and a four-cubic-yard dumpster for trash, both are picked up once per week. The bins in the terminal and office areas were visually inspected during the walk through; however, most bins were empty or nearly empty.

## B.5. Review of Recycling Feasibility

LAL currently experiences factors that impact the airport's ability to recycle. There is limited financial incentive to recycle because the volume of waste and recycled materials at LAL is low. LAL is also an airport with limited staff resources, which would make recycling programs challenging to implement. LAL has a large footprint with many tenants, and it is logistically challenging to coordinate with each and every tenant. Continual coordination with all of the tenants would be burdensome for the limited administrative staff.

Annually, LAL is home to an event called the Sun n' Fun Fly-In and Expo, a six-day long aviation themed convention that attracts approximately 150,000 people from all 50 states and over 70 countries. Recycling services specific to the event was instituted one year, but the cost was prohibitive to resume in subsequent years. While there is no event-wide recycling program, paper, plastic, and cardboard are all recycled by vendors to the greatest extent practical. A formalized program could potentially increase participation and the amount of recycled materials generated by the event, if an affordable approach could be developed.

## B.6. Operation and Maintenance (O&M) Requirements

LAL janitorial staff are responsible for collecting in-house waste from the terminal space and offices on a daily basis, as well as transporting the waste to the disposal containers. Additional responsibilities of LAL administrative staff include:

- Tracking and paying bills from the City of Lakeland Department of Electric Utilities, which provides the airport's solid waste and recycling removal
- Waste containers procured by the City of Lakeland Solid Waste Department

## B.7. Review of Waste Management Contracts

The City of Lakeland is responsible for providing recycling and waste removal services at LAL through internal means rather than a third party. A review of recent billing statements from the City revealed that LAL is charged a flat rate for solid waste services, and volume information was not available. There is no requirement for, or impediment to, the use of environmentally-preferred products.

LAL has more than 80 commercial business tenants located either within the airport fence line or outside of this boundary. Each company has its own lease, with its own time frame. Individual tenant leases were requested from the county; however, this information was unavailable.

## B.8. Potential for Cost Savings or Revenue Generation

The airport may be able to sell scrap metal, particularly from construction and demolition projects. Some of the current tenants sell scrap metals, proving the commodity market is present in the area. However, the low volume of waste limits the potential for savings or revenue generation potential.

## B.9. Plan to Minimize Solid Waste Generation

LAL does not have a formalized recycling and waste reduction program but does encourage and support recycling in the administrative offices and the airport terminal. Signage placed in the terminal office spaces directs employees to recycle acceptable materials instead of placing them in the trash (see **Figure B-4**). The airport and many tenants have been actively recycling municipal solid waste for several years.

Many initiatives were identified for this RRWRP that would advance LAL's waste reduction and recycling efforts. These initiatives include the following.

- **Develop a Waste Reduction Program:** Develop and implement a waste reduction program and encourage employee participation. The program should incentivize waste reduction, diversion, and recycling. Identify relevant waste reduction goals as well as office wide recycling methods (e.g., reusable toner cartridges, rechargeable batteries, reusable packaging, etc.) and individual participation (e.g., reusable water bottles, etc.) to further this program.
- **Develop Environmentally Preferable Purchasing Procedures:** Work with the City to establish procedures for purchasing materials with recycled/bio-based content, low toxicity, or other environmentally-friendly products. Consider Green Label equipment in purchasing guidelines or other equipment that has low emissions and/or low sound levels.
- **Provide Additional Recycling Bins:** Co-locate recycling receptacles with waste receptacles throughout the offices and terminal and use same-sized receptacles where practical.

- **Develop an Awareness Campaign:** Educate employees, tenants, and passengers about proper recycling practices; this could include posters and additional signage. The campaign could also be expanded to encourage the use of reusable water bottles, coffee mugs, and lunch containers.
- **Periodic Monitoring:** Conduct a monthly walk-through of LAL's offices and terminal to monitor the progress of the waste reduction and recycling program.
- **Provide Hand Dryers:** Install high-efficiency hand dryers in all restrooms and reposition towel dispensers to reduce paper towel use.
- **Enhance Tenant Engagement:** Coordinate with tenants to consolidate materials and improve economies of scale.
- **Update Contract Language:** Revise existing contract language to establish waste diversion or recycling goals for all tenants, with annual audits and training provided by the City of Lakeland or a qualified third party.
- **Host a Periodic Universal Waste Collection Day:** Coordinate with the City of Lakeland Solid Waste Department to host a periodic (recommend quarterly or semi-annually) collection day for universal waste. Provide an opportunity to airport employees, tenants, and the local community to drop off materials such as batteries, lightbulbs, electronics, pesticides, and more.

This plan would not require any significant capital improvements. The most significant investments would be providing additional in-house recycling receptacles and high-efficiency hand dryers; both of which could be added when there is available operating budget or hand dryers could be included as part of restroom renovations. The airport should consider future development projects, and whether any of the initiatives would become obsolete or if there would be synergy in implementing the initiative as part of a future project (e.g., develop recycling signage when replacing other airport signs).

The recommended plan is flexible and would allow LAL to implement initiatives when it is financially and logistically feasible. Many of the initiatives could be implemented in phases or in conjunction with other projects, such as installing high efficiency hand dryers when renovating restroom facilities.

It is recommended that LAL review their waste reduction initiatives annually. Upon initiation of regularly scheduled commercial service (if/when applicable), LAL should identify whether the initiatives need to be revised/updated to meet current goals or if new goals should be established in the future. The airport's plan should document the process and requirements for including waste reduction in new development projects as well as establishing goals for utilizing recycled/repurposed materials for new development projects (as applicable).

Figure B-4: Terminal Building Recycling Signage


## B.10. Additional Resources

Leadership in Energy and Environmental Design (LEED) is a rating system which evaluates the sustainability / environmental performance of building development projects. The LEED rating criteria provide valuable ideas for waste reduction techniques during construction and operation of new facilities, and *LEED for Existing Building O&M* (LEED EBOM)[11] provides ideas for waste reduction at existing facilities. The Sustainable Aviation Guidance Alliance[12] also provides ideas for advancing airport sustainability efforts, including waste reduction and recycling.

11 https://www.usgbc.org/articles/getting-know-leed-building-operations-and-maintenance-om
12 http://airportsustainability.org/

# Appendix C

## Capital Improvement Program Project Sheets

# Appendix C: Capital Improvement Plan Project Sheets

The following sections present the short-, medium-, and long-term Capital Improvement Plan (CIP) detailed cost estimates. A summary of each planning term is presented first, followed by the detailed estimate for each project thereafter.

## C.1. Short-Term CIP

*LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)*

LAKELAND, FLORIDA

## CONCEPTUAL ESTIMATE SUMMARY

## *AIRFIELD PROJECTS - SHORT RANGE (0-5 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| *Project* | *Program Year* | *Project Description* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program 2020 Budget - Project Total* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program Year Budget - Project Total* |
| **A1** | **Short Range** | **Runway 9 Improvements** | **$ 18,165,642** | **$ 1,194,253** | **$ 19,359,895** | **$ 18,619,800** | **$ 1,224,100** | **$ 19,843,900** |
| A1.1 | 2021 | Install CAT III ILS Upgrades, ALSF-2, and New Electrical Vault | $ 9,678,942 | $ 691,353 | $ 10,370,295 | $ 9,920,900 | $ 708,600 | $ 10,629,500 |
| A1.2 | 2021 | Realign Taxiway P | $ 8,486,700 | $ 502,900 | $ 8,989,600 | $ 8,698,900 | $ 515,500 | $ 9,214,400 |
| **A2** | **Short Range** | **Rehabilitate Taxiways A, B, C** | **$ 6,203,200** | **$ 200,100** | **$ 6,403,300** | **$ 6,358,300** | **$ 205,100** | **$ 6,563,400** |
| A2.1 | 2021 | Rehabilitate Taxiways A, B, C, Add Shoulders for Taxiway A, and Remove Excess Runway 27 Taxiway Entrance Pavement | $ 6,203,200 | $ 200,100 | $ 6,403,300 | $ 6,358,300 | $ 205,100 | $ 6,563,400 |
| **A3** | **Short Range** | **Construct Taxiway Connector A4** | **$ 1,713,100** | **$ 118,600** | **$ 1,831,700** | **$ 1,799,800** | **$ 124,600** | **$ 1,924,400** |
| A3.1 | 2021 | Construct New Taxiway A4 | $ 1,713,100 | $ 118,600 | $ 1,831,700 | $ 1,799,800 | $ 124,600 | $ 1,924,400 |
| **A4** | **Short Range** | **Taxiway E Enhancements** | **$ 9,344,000** | **$ 708,300** | **$ 10,052,300** | **$ 9,817,000** | **$ 744,100** | **$ 10,561,100** |
| A4.1 | 2022 | Rehabilitate and Widen Taxiways E and E1 | $ 4,355,900 | $ 322,700 | $ 4,678,600 | $ 4,576,400 | $ 339,000 | $ 4,915,400 |
| A4.2 | 2022 | Construct Taxiway S from Taxiway E North to Taxiway D | $ 4,553,300 | $ 337,300 | $ 4,890,600 | $ 4,783,800 | $ 354,400 | $ 5,138,200 |
| A4.3 | 2022 | Remove Portion of Taxiway E from Existing Taxiway D South 1,500 FT | $ 434,800 | $ 48,300 | $ 483,100 | $ 456,800 | $ 50,700 | $ 507,500 |

*LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)*
LAKELAND, FLORIDA

## CONCEPTUAL ESTIMATE SUMMARY

## *AIRFIELD PROJECTS - SHORT RANGE (0-5 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| *Project* | *Program Year* | *Project Description* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program 2020 Budget - Project Total* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program Year Budget - Project Total* |
| **A5** | **Short Range** | **Shift Taxiway D** | **$ 11,852,100** | **$ 741,600** | **$ 12,593,700** | **$ 12,763,400** | **$ 798,600** | **$ 13,562,000** |
| A5.1 | 2023 | Shift Taxiway D from Taxiway F to Taxiway E, Remaining Taxiway P | $ 10,083,000 | $ 597,500 | $ 10,680,500 | $ 10,858,300 | $ 643,400 | $ 11,501,700 |
| A5.2 | 2023 | Construct Connector between Shifted Taxiway D and Runway 9-27 | $ 1,769,100 | $ 144,100 | $ 1,913,200 | $ 1,905,100 | $ 155,200 | $ 2,060,300 |
| **A6** | **Short Range** | **Taxiway A Shoulders** | **$ 7,914,500** | **$ 527,600** | **$ 8,442,100** | **$ 8,736,100** | **$ 582,400** | **$ 9,318,500** |
| A6.1 | 2024 | Construct Taxiway A Shoulders | $ 7,914,500 | $ 527,600 | $ 8,442,100 | $ 8,736,100 | $ 582,400 | $ 9,318,500 |
| **A7** | **Short Range** | **Construct Run-Up Apron** | **$ 2,735,900** | **$ 202,700** | **$ 2,938,600** | **$ 3,095,400** | **$ 229,300** | **$ 3,324,700** |
| A7.1 | 2025 | Construct Run-Up Apron on Taxiway A | $ 2,735,900 | $ 202,700 | $ 2,938,600 | $ 3,095,400 | $ 229,300 | $ 3,324,700 |
| ***SUMMARY*** | | ***TOTAL - AIRFIELD - SHORT RANGE (0-5 YEAR) CIP PROJECTS:*** | ***$ 57,928,442*** | ***$ 3,693,153*** | ***$ 61,621,595*** | ***$ 61,189,800*** | ***$ 3,908,200*** | ***$ 65,098,000*** |

* All totals are rounded.  Escalation has been compounded to program year at a rate of 2.5% per year from FY2020.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A1.1 - RUNWAY 10 - INSTALL CAT III ILS UPGRADES, INSTALL ALSF-2 & CONSTRUCT NEW ELECTRICAL VAULT

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes upgrades to a CAT III Instrument Landing System (ILS) and installation of an Approach Lighting System 2 (ALSF-2). Assumes Runway Centerline Lighting is existing. The project also includes construction of a new electrical vault.**

**Program Year:** **2020**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program (CQCP) | 1 | LS | $ 330,200.00 | $ 330,200 |
| 2 | C-102 | Temporary Pollution, Erosion, and Siltation Control* | 1 | LS | $ 50,000.00 | $ 50,000 |
| 3 | C-105 | Mobilization* | 1 | LS | $ 698,330.00 | $ 698,330 |
| 4 | P-151 | Stripping* | 4.50 | AC | $ 3,000.00 | $ 13,500 |
| 5 | P-151 | Clearing and Grubbing* | 1.00 | AC | $ 25,000.00 | $ 25,000 |
| 6 | P-151 | Fence Removal* | 1,000 | LF | $ 10.00 | $ 10,000 |
| 7 | P-152 | Muck Excavation (Wetland Excavation)* | 2,200 | CY | $ 5.00 | $ 11,000 |
| 8 | P-152 | Embankment* | 15,000 | CY | $ 15.00 | $ 225,000 |
| 9 | D-701 | 14"x23" Elliptical Reinforced Concrete Pipe, Class III* | 200 | LF | $ 90.00 | $ 18,000 |
| 10 | D-752 | FDOT Mitered End Section, 14"x23"* | 8 | EA | $ 1,800.00 | $ 14,400 |
| 11 | F-162 | 7' Chain-Link Fence* | 700 | LF | $ 15.00 | $ 10,500 |
| 12 | F-162 | AOA Swing Gate* | 1 | EA | $ 5,000.00 | $ 5,000 |
| 13 | T-904 | Sodding* | 16,000 | SY | $ 2.00 | $ 32,000 |
| 14 | FDOT | 6" Stabilization, Min. LBR 25* | 3,400 | SY | $ 5.00 | $ 17,000 |
| 15 | FDOT | 12" Stabilization, Min. LBR 40* | 3,000 | SY | $ 7.00 | $ 21,000 |
| 16 | FDOT | 4" Graded Aggregate Base Course* | 3,400 | SY | $ 11.00 | $ 37,400 |
| 17 | FDOT | 6" Graded Aggregate Base Course* | 3,000 | SY | $ 13.00 | $ 39,000 |
| 18 | FDOT | Superpave Asphalt Concrete (Traffic A) (FC-12.5)* | 252 | TN | $ 135.00 | $ 34,054 |
| 19 | FDOT | Geotextile Fabric, Type D-2* | 3,400 | SY | $ 8.00 | $ 27,200 |
| 20 | FDOT | Single Post Sign and Panels* | 2 | EA | $ 500.00 | $ 1,000 |
| 21 | FDOT | Painted Pavement Markings* | 1,107 | SF | $ 5.00 | $ 5,535 |
| 22 | L-100 | Verification of Existing Conditions* | 1 | LS | $ 20,000.00 | $ 20,000 |
| 23 | L-101 | Electrical Demolition* | 1 | LS | $ 50,000.00 | $ 50,000 |
| 24 | L-102 | Temporary Airfield Lighting During Construction* | 1 | LS | $ 20,000.00 | $ 20,000 |
| 25 | L-108 | No. 8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 120,000 | LF | $ 2.50 | $ 300,000 |
| 26 | L-108 | No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed Above the Duct Bank or Conduit, Including Connections/Terminations * | 5,800 | LF | $ 2.00 | $ 11,600 |
| 27 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors* | 70 | EA | $ 170.00 | $ 11,900 |
| 28 | L-108 | 10' Additional Ground Rod Sections* | 35 | EA | $ 130.00 | $ 4,550 |
| 29 | L-109 | New Airfield Lighting Vault (Approx. 20'x30' Pre-Fabricated)* | 1 | LS | $ 500,000.00 | $ 500,000 |
| 30 | L-109 | Constant Current Regulator (Vault)* | 10 | EA | $ 20,000.00 | $ 200,000 |
| 31 | L-109 | Airfield Lighting Control & Monitoring System* | 1 | LS | $ 150,000.00 | $ 150,000 |
| 32 | L-110 | Non-Encased Electrical Conduit, 1 Way, 2-Inch, Schedule 40 PVC* | 3,000 | LF | $ 20.00 | $ 60,000 |
| 33 | L-110 | Non-Encased Electrical Duct Bank, 2 Way, 2-Inch, Schedule 40 PVC* | 2,100 | LF | $ 28.00 | $ 58,800 |
| 34 | L-110 | Concrete Encased Electrical Duct Bank, 2 Way, 2-Inch, Schedule 40 PVC* | 150 | LF | $ 40.00 | $ 6,000 |
| 35 | L-110 | Concrete Encased Electrical Duct Bank, 4 Way, 2-Inch, Schedule 40 PVC* | 200 | LF | $ 80.00 | $ 16,000 |
| 36 | L-110 | Non-Encased Electrical Conduit, 12 Way, 2-Inch, Schedule 40 PVC* | 1,000 | LF | $ 180.00 | $ 180,000 |
| 37 | L-112 | Directional Drill Conduit, 12 Way, 2-inch, HDPE* | 2,200 | LF | $ 210.00 | $ 462,000 |
| 38 | L-115 | 4'x4'x4' Handhole * | 11 | EA | $ 12,000.00 | $ 132,000 |
| 39 | L-125 | L-850A(L) RW CL Fixture, Installed on Existing Base Can* | 168 | EA | $ 1,200.00 | $ 201,600 |
| 40 | L-125 | L-850B(L) RW TDZ Fixture, Installed on Existing Base Can* | 180 | EA | $ 1,050.00 | $ 189,000 |
| 41 | L-125 | L-852C/K(L) TW CL Fixture, Installed on Existing Base Can* | 30 | EA | $ 950.00 | $ 28,500 |
| 42 | L-125 | L-804(L) ERGL, Installed on Existing Base Can* | 18 | EA | $ 1,200.00 | $ 21,600 |
| 43 | L-126 | Relocation of Glide Slope Antenna and Shelter* | 1 | LS | $ 500,000.00 | $ 500,000 |
| 44 | L-126 | LOC Far Field Monitor* | 1 | LS | $ 20,000.00 | $ 20,000 |
| 45 | L-126 | Relocation of PAPI (Both Ends)* | 2 | EA | $ 50,000.00 | $ 100,000 |
| 46 | L-126 | ALSF-2 Shelter & Site Work* | 800 | SF | $ 750.00 | $ 600,000 |
| 47 | L-126 | ALSF-2 Miscellaneous Equipment / Installation* | 1 | LS | $ 250,000.00 | $ 250,000 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A1.1 - RUNWAY 10 - INSTALL CAT III ILS UPGRADES, INSTALL ALSF-2 & CONSTRUCT NEW ELECTRICAL VAULT

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes upgrades to a CAT III Instrument Landing System (ILS) and installation of an Approach Lighting System 2 (ALSF-2). Assumes Runway Centerline Lighting is existing. The project also includes construction of a new electrical vault.**

**Program Year:** **2020**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 48 | L-126 | ALSF-2 Shelter Generator and Automated Transfer Switch (ATS)* | 1 | EA | $ 75,000.00 | $ 75,000 |
| 49 | L-126 | ALSF-2 Coordination Study and Arc Flash Analysis (Shelter)* | 1 | EA | $ 25,000.00 | $ 25,000 |
| 50 | L-126 | ALSF-2 Threshold Bar* | 1 | EA | $ 80,000.00 | $ 80,000 |
| 51 | L-126 | ALSF-2 EMT Mount* | 6 | EA | $ 5,000.00 | $ 30,000 |
| 52 | L-126 | ALSF-2 MG-20 Tower* | 30 | EA | $ 15,000.00 | $ 450,000 |
| 53 | L-126 | ALSF-2 MG-30 Tower* | 12 | EA | $ 20,000.00 | $ 240,000 |
| 54 | L-126 | ALSF-2 Handhole, Aircraft* | 12 | EA | $ 12,000.00 | $ 144,000 |
| 55 | L-126 | ALSF-2 Handhole, Traffic* | 30 | EA | $ 10,000.00 | $ 300,000 |
| 56 | L-126 | ALSF-2 Duct Bank, 6-Way, 2-Inch, Schedule 40 PVC, Direct Buried* | 3,600 | LF | $ 60.00 | $ 216,000 |
| 57 | L-126 | ALSF-2 Duct Bank, 6-Way, 2-Inch, HDPE, Directional Drill* | 400 | LF | $ 80.00 | $ 32,000 |
| 58 | L-126 | ALSF-2 Steady Burn 5 KV Power Cable * | 30,000 | LF | $ 2.50 | $ 75,000 |
| 59 | L-126 | ALSF-2 Flashers Power/Comm Cable* | 10,000 | LF | $ 16.00 | $ 160,000 |
| 60 | L-126 | ALSF-2 Monitoring Cable* | 8,000 | LF | $ 8.00 | $ 64,000 |
| 61 | L-126 | ALSF-2 Ground Wire* | 24,000 | LF | $ 2.00 | $ 48,000 |
| 62 | L-126 | ALSF-2 Guard Wire* | 4,000 | LF | $ 6.00 | $ 24,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 7,681,700*** |
| 63 | | Design / Permitting Service Fees | 9% | | | $ 691,353 |
| 64 | | Resident Inspection | 6% | | | $ 460,902 |
| 65 | | Contingency | 20% | | | $ 1,536,340 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 10,370,295*** |

*Estimate Provided by Atkins

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A1.2 - REALIGN TAXIWAY P

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes shifting of approximately 5,000 feet of Taxiway P, including the rehabilitation and widening of three taxiway connectors to Runway 9/27. The shift in the taxiway is necessary to allow the taxiway to be outside of the glideslope critical area and continue to allow for access to the south side of the airport. The taxiway will be 75 feet wide with 30-foot shoulders. The project includes lighting, signage, and pavement markings. A stormwater pond located south of the shifted taxiway may need to be relocated as a result of the project and is identified in a bid alternate.**

**Program Year:** **2021**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 283,200.00 | $ 283,200 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 56,600.00 | $ 56,600 |
| 3 | C-105 | Mobilization | 1 | LS | $ 283,200.00 | $ 283,200 |
| 4 | P-101 | Existing Pavement Removal | 1,000 | SY | $ 25.00 | $ 25,000 |
| 5 | P-151 | Clearing and Grubbing / Stripping | 25.0 | AC | $ 14,500.00 | $ 362,500 |
| 6 | P-152 | Embankment | 38,150 | CY | $ 20.00 | $ 763,000 |
| 7 | P-101 | Saw-Cut and Connect to Existing Pavement | 650 | LF | $ 25.00 | $ 16,250 |
| 8 | P-152 | Unclassified Excavation - 12" | 17,250 | CY | $ 20.00 | $ 345,000 |
| 9 | P-152 | Compacted Subgrade - 6" | 900 | CY | $ 4.00 | $ 3,600 |
| 10 | P-154 | Stabilized Subgrade Course - 8" | 52,000 | SY | $ 9.00 | $ 468,000 |
| 11 | P-211 | Limerock Base Course - 15" | 21,500 | CY | $ 55.00 | $ 1,182,500 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 13,000 | GAL | $ 4.00 | $ 52,000 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 6,500 | GAL | $ 4.00 | $ 26,000 |
| 14 | P-403 | Hot Mix Asphalt Surface Course - 4" | 12,000 | TN | $ 120.00 | $ 1,440,000 |
| 15 | P-620 | Surface Painted Holding Position Signs | 1,920 | SF | $ 2.00 | $ 3,840 |
| 16 | P-620 | Taxiway Hold Line Markings | 2,400 | SF | $ 2.00 | $ 4,800 |
| 17 | P-620 | Taxiway Center Line Markings | 6,300 | SF | $ 2.00 | $ 12,600 |
| 18 | P-620 | Taxiway Edge Line Markings | 10,500 | SF | $ 2.00 | $ 21,000 |
| 19 | D-701 | Reinforced Concrete Pipe | 1,500 | LF | $ 118.00 | $ 177,000 |
| 20 | D-752 | Mitered End Sections | 10 | EA | $ 1,000.00 | $ 10,000 |
| 21 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 31,000 | LF | $ 2.00 | $ 62,000 |
| 22 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 15,500 | LF | $ 2.00 | $ 31,000 |
| 23 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 10,600 | LF | $ 16.00 | $ 169,600 |
| 24 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC, Saw Trench in Existing Asphalt | 200 | LF | $ 86.00 | $ 17,200 |
| 25 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 600 | LF | $ 82.00 | $ 49,200 |
| 26 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 31 | EA | $ 160.00 | $ 4,960 |
| 27 | L-115 | Electrical Handhole | 24 | EA | $ 950.00 | $ 22,800 |
| 28 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 80,000.00 | $ 80,000 |
| 29 | L-125 | Airfield Guidance Sign and Foundation | 6 | EA | $ 1,400.00 | $ 8,400 |
| 30 | L-125 | Taxiway Edge Fixture with Transformer | 120 | EA | $ 700.00 | $ 84,000 |
| 31 | T-905 | Topsoil | 13,350 | CY | $ 2.00 | $ 26,700 |
| 32 | T-904 | Seeding | 74,400 | SY | $ 1.00 | $ 74,400 |
| 33 | T-904 | Sodding | 40,000 | SY | $ 3.00 | $ 120,000 |
| | | | | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | ***$ 6,286,400*** |
| 34 | | Design / Permitting Service Fees | 8% | | | $ 502,900 |
| 35 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 943,000 |
| 36 | | Contingency | 20% | | | $ 1,257,300 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A1.2 - REALIGN TAXIWAY P

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes shifting of approximately 5,000 feet of Taxiway P, including the rehabilitation and widening of three taxiway connectors to Runway 9/27. The shift in the taxiway is necessary to allow the taxiway to be outside of the glideslope critical area and continue to allow for access to the south side of the airport. The taxiway will be 75 feet wide with 30-foot shoulders. The project includes lighting, signage, and pavement markings. A stormwater pond located south of the shifted taxiway may need to be relocated as a result of the project and is identified in a bid alternate.**

**Program Year:** **2021**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 8,989,600*** |
| | | **BID ALTERNATE 1 - SHOULDERS** | | | | |
| 1 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 6.3 | AC | $ 14,500.00 | $ 91,785 |
| 2 | P-152 | Unclassified Excavation - 12" (Shoulder) | 10,215 | CY | $ 20.00 | $ 204,300 |
| 3 | P-152 | Compacted Subgrade - 6" (Shoulder) | 5,108 | CY | $ 4.00 | $ 20,432 |
| 4 | P-154 | Stabilized Subgrade Couse - 8" (Shoulder) | 6,810 | SY | $ 9.00 | $ 61,290 |
| 5 | P-211 | Limerock Base Course - 15" (Shoulder) | 12,770 | CY | $ 55.00 | $ 702,350 |
| 6 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 6,130 | TN | $ 120.00 | $ 735,600 |
| 7 | P-602 | Emulsified Asphalt Prime Coat (Shoulder) | 6,945 | GAL | $ 5.00 | $ 34,725 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 1,865 | GAL | $ 5.00 | $ 9,325 |
| 9 | | Contingency | 15% | | | $ 278,971 |
| | | ***TOTAL ESTIMATED COST OF BID ALTERNATE WORK (2020 DOLLARS)*** | | | | ***$ 2,138,800*** |
| | | **BID ALTERNATE 2 - POND RELOCATION** | | | | |
| 1 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 2.8 | AC | $ 14,500.00 | $ 40,600 |
| 2 | P-152 | Unclassified Excavation - 12" (Shoulder) | 5,480 | CY | $ 20.00 | $ 109,600 |
| 3 | P-152 | Compacted Subgrade - 6" (Shoulder) | 2,740 | CY | $ 4.00 | $ 10,960 |
| 4 | P-154 | Stabilized Subgrade Couse - 8" (Shoulder) | 3,655 | SY | $ 9.00 | $ 32,895 |
| 5 | P-211 | Limerock Base Course - 15" (Shoulder) | 6,850 | CY | $ 55.00 | $ 376,750 |
| 6 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 3,290 | TN | $ 120.00 | $ 394,800 |
| 7 | P-602 | 0 | 3,730 | GAL | $ 5.00 | $ 18,650 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 1,865 | GAL | $ 5.00 | $ 9,325 |
| 8 | | Permitting Service Fees | 8% | | | $ 700 |
| 8 | | Contingency | 15% | | | $ 149,037 |
| | | ***TOTAL ESTIMATED COST OF BID ALTERNATE WORK (2020 DOLLARS)*** | | | | ***$ 1,143,300*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A2.1 - REHABILITATE TAXIWAYS A, B, C, ADD SHOULDERS FOR TAXIWAY A, & REMOVE EXCESS RUNWAY 27 TAXIWAY ENTRANCE PAVEMENT

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes rehabilitation of the eastern portion of Taxiways A (east of Taxiway J), the rehabilitation of Taxiway B (northeast of Taxiway A), and rehabilitation of Taxiway C including connector to Runway 27 (total rehabilitation area approx. 553,100 SF). Assumed rehabilitation includes milling and asphalt overlay as well as the construction of new 30 FT taxiway shoulders for approx. 2,400 LF of Taxiway A. Project includes marking and improvements to existing lighting and signage due to shoulder additions. The project also includes removal of excess exsiting pavement at east Taxiway Connector to Runway 28 (approx. 58,500 SF) and removal of electrical equipment in the area.**

**Program Year:** **2021**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 225,300.00 | $ 225,300 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 45,100.00 | $ 45,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 225,300.00 | $ 225,300 |
| 4 | P-101 | Existing Pavement Removal | 6,500 | SY | $ 18.00 | $ 117,000 |
| 5 | P-101 | Cold Milling, Variable Depth (Pavement Rehab.) | 62,000 | SY | $ 8.00 | $ 496,000 |
| 6 | P-152 | Geotextile (Pavement Rehab.) | 62,000 | SY | $ 4.00 | $ 248,000 |
| 7 | P-401 | Hot Mix Asphalt Surface Course - 3" (Pavement Rehab.) | 10,800 | TN | $ 120.00 | $ 1,296,000 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Pavement Rehab.) | 7,800 | GAL | $ 5.00 | $ 39,000 |
| 9 | P-151 | Clearing and Grubbing / Stripping | 20.0 | AC | $ 11,000.00 | $ 220,000 |
| 10 | P-152 | Embankment | 40,750 | CY | $ 18.00 | $ 733,500 |
| 11 | P-152 | Unclassified Excavation - 12" (Shoulder - T/W A) | 4,300 | CY | $ 20.00 | $ 86,000 |
| 12 | P-152 | Compacted Subgrade - 6" (Shoulder - T/W A) | 900 | CY | $ 4.00 | $ 3,600 |
| 13 | P-154 | Stabilized Subgrade Course - 8" (Shoulder - T/W A) | 5,400 | SY | $ 9.00 | $ 48,600 |
| 14 | P-211 | Limerock Base Course - 15" (Shoulder - T/W A) | 2,300 | CY | $ 18.00 | $ 41,400 |
| 15 | P-602 | Emulsified Asphalt Prime Coat (Shoulder - T/W A) | 1,400 | GAL | $ 5.00 | $ 7,000 |
| 16 | P-603 | Emulsified Asphalt Tack Coat (Shoulder - T/W A) | 700 | GAL | $ 5.00 | $ 3,500 |
| 17 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder - T/W A) | 3,100 | TN | $ 120.00 | $ 372,000 |
| 18 | P-620 | Surface Painted Holding Position Signs | 2,200 | SF | $ 2.00 | $ 4,400 |
| 19 | P-620 | Taxiway Hold Line Markings | 4,800 | SF | $ 2.00 | $ 9,600 |
| 20 | P-620 | Taxiway Center Line Markings | 6,400 | SF | $ 2.00 | $ 12,800 |
| 21 | P-620 | Taxiway Edge Line Markings | 10,500 | SF | $ 2.00 | $ 21,000 |
| 22 | L-100 | Electrical Demolition | 1 | LS | $ 15,000.00 | $ 15,000 |
| 23 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 20,000 | LF | $ 2.00 | $ 40,000 |
| 24 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 10,000 | LF | $ 2.00 | $ 20,000 |
| 25 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 9,500 | LF | $ 16.00 | $ 152,000 |
| 26 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 500 | LF | $ 86.00 | $ 43,000 |
| 27 | L-110 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,300 | LF | $ 100.00 | $ 130,000 |
| 28 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 40 | EA | $ 157.00 | $ 6,280 |
| 29 | L-115 | Electrical Handhole | 20 | EA | $ 950.00 | $ 19,000 |
| 30 | L-109 | Airfield Electrical Vault Modification (T/W A Shoulders) | 1 | LS | $ 40,000.00 | $ 40,000 |
| 31 | L-125 | Airfield Guidance Sign Adjustments | 8 | EA | $ 2,500.00 | $ 20,000 |
| 32 | L-125 | Taxiway Edge Fixture with Transformer (T/W A Shoulders) | 60 | EA | $ 700.00 | $ 42,000 |
| 33 | T-905 | Topsoil | 12,250 | CY | $ 2.00 | $ 24,500 |
| 34 | T-904 | Seeding | 85,600 | SY | $ 1.00 | $ 85,600 |
| 35 | T-904 | Sodding | 36,700 | SY | $ 3.00 | $ 110,100 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 5,002,600*** |
| 36 | | Design / Permitting Service Fees | 4% | | | $ 200,100 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A2.1 - REHABILITATE TAXIWAYS A, B, C, ADD SHOULDERS FOR TAXIWAY A, & REMOVE EXCESS RUNWAY 27 TAXIWAY ENTRANCE PAVEMENT

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes rehabilitation of the eastern portion of Taxiways A (east of Taxiway J), the rehabilitation of Taxiway B (northeast of Taxiway A), and rehabilitation of Taxiway C including connector to Runway 27 (total rehabilitation area approx. 553,100 SF). Assumed rehabilitation includes milling and asphalt overlay as well as the construction of new 30 FT taxiway shoulders for approx. 2,400 LF of Taxiway A. Project includes marking and improvements to existing lighting and signage due to shoulder additions. The project also includes removal of excess exsiting pavement at east Taxiway Connector to Runway 28 (approx. 58,500 SF) and removal of electrical equipment in the area.**

**Program Year:** **2021**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 37 | | Resident Inspection / Quality Assurance Testing | 12% | | | $ 600,300 |
| 38 | | Contingency | 12% | | | $ 600,300 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 6,403,300*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A3.1 - CONSTRUCT NEW TAXIWAY A4

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the design and construction of Taxiway A4; a new connector of approx. 52,000 SF with 30 FT shoulders connecting to Runway 9-27. The taxiway connector will be designed to meet ADG IV and TDG 5 standards and will be located 7,550 FT from the RWY 9 threshold and 750 FT from the RWY 28 threshold. Project also includes airfield lighting, signage and pavement markings.**

**Program Year:** **2021**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 59,400.00 | $ 59,400 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 11,900.00 | $ 11,900 |
| 3 | M-110 | Mobilization | 1 | LS | $ 59,400.00 | $ 59,400 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.8 | AC | $ 14,500.00 | $ 40,600 |
| 5 | P-152 | Embankment | 2,600 | CY | $ 20.00 | $ 52,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 7 | P-152 | Unclassified Excavation - 12" (Full Strength) | 2,000 | CY | $ 20.00 | $ 40,000 |
| 8 | P-152 | Compacted Subgrade - 12" (Full Strength) | 2,000 | CY | $ 4.00 | $ 8,000 |
| 9 | P-154 | Stabilized Subgrade Course - 12" (Full Strength) | 5,800 | SY | $ 9.00 | $ 52,200 |
| 10 | P-211 | Limerock Base Course - 17" (Full Strength) | 2,400 | CY | $ 55.00 | $ 132,000 |
| 11 | P-602 | Emulsified Asphalt Prime Coat (Full Strength) | 1,450 | GAL | $ 5.00 | $ 7,250 |
| 12 | P-603 | Emulsified Asphalt Tack Coat (Full Strength) | 730 | GAL | $ 5.00 | $ 3,650 |
| 13 | P-403 | Hot Mix Asphalt Surface Course - 5" (Full Strength) | 1,700 | TN | $ 120.00 | $ 204,000 |
| 14 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 0.6 | AC | $ 14,500.00 | $ 8,700 |
| 15 | P-152 | Unclassified Excavation - 12" (Shoulder) | 1,000 | CY | $ 20.00 | $ 20,000 |
| 16 | P-152 | Compacted Subgrade - 6" (Shoulder) | 500 | CY | $ 4.00 | $ 2,000 |
| 17 | P-154 | Stabilized Subgrade Couse - 8" (Shoulder) | 2,700 | SY | $ 9.00 | $ 24,300 |
| 18 | P-211 | Limerock Base Course - 15" (Shoulder) | 1,100 | CY | $ 55.00 | $ 60,477 |
| 19 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 600 | TN | $ 120.00 | $ 72,000 |
| 20 | P-602 | Emulsified Asphalt Prime Coat (Shoulder) | 680 | GAL | $ 5.00 | $ 3,400 |
| 21 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 340 | GAL | $ 5.00 | $ 1,700 |
| 22 | P-620 | Surface Painted Holding Position Signs | 240 | SF | $ 2.00 | $ 480 |
| 23 | P-620 | Taxiway Hold Line Markings | 800 | SF | $ 2.00 | $ 1,600 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A3.1 - CONSTRUCT NEW TAXIWAY A4

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the design and construction of Taxiway A4; a new connector of approx. 52,000 SF with 30 FT shoulders connecting to Runway 9-27. The taxiway connector will be designed to meet ADG IV and TDG 5 standards and will be located 7,550 FT from the RWY 9 threshold and 750 FT from the RWY 28 threshold. Project also includes airfield lighting, signage and pavement markings.**

**Program Year:** **2021**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 24 | P-620 | Taxiway Center Line Markings | 850 | SF | $ 2.00 | $ 1,700 |
| 25 | P-620 | Taxiway Edge Line Markings | 1,500 | SF | $ 2.00 | $ 3,000 |
| 26 | D-701 | Reinforced Concrete Pipe | 500 | LF | $ 118.00 | $ 59,000 |
| 27 | D-752 | Concrete End Sections | 4 | EA | $ 1,000.00 | $ 4,000 |
| 28 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 21,100 | LF | $ 2.00 | $ 42,200 |
| 29 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 10,600 | LF | $ 2.00 | $ 21,200 |
| 30 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 3,200 | LF | $ 16.00 | $ 51,200 |
| 31 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 200 | LF | $ 86.00 | $ 17,200 |
| 32 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,200 | LF | $ 100.00 | $ 120,000 |
| 33 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 25 | EA | $ 157.00 | $ 3,925 |
| 34 | L-115 | Electrical Handhole | 12 | EA | $ 950.00 | $ 11,400 |
| 35 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 50,000.00 | $ 50,000 |
| 36 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 37 | L-125 | Remove and Re-install Existing Taxiway Edge Fixture with New Transformer | 10 | EA | $ 550.00 | $ 5,500 |
| 38 | L-125 | Taxiway Edge Fixture with Transformer | 20 | EA | $ 700.00 | $ 14,000 |
| 39 | T-905 | Topsoil | 800 | CY | $ 2.00 | $ 1,600 |
| 40 | T-904 | Seeding | 5,450 | SY | $ 1.00 | $ 5,450 |
| 41 | T-904 | Sodding | 2,350 | SY | $ 3.00 | $ 7,050 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 1,317,700*** |
| 42 | | Design / Permitting Service Fees | 9% | | | $ 118,600 |
| 43 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 197,700 |
| 44 | | Contingency | 15% | | | $ 197,700 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 1,831,700*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A4.1 - REHABILITATE AND WIDEN TAXIWAYS E AND E1

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes rehabilitation of approx. 3,460 LF of existing Taxiways E (approx. 173,000 SF) and approx. 1,100 LF of existing Taxiway E1 (approx. 55,000 SF). Assumed rehabilitation includes milling and asphalt overlay of 860 LF of TWY E west of TWY E1, milling and asphalt overlay of 1,100 LF of TWY E1, and full depth reconstruction of 2,600 LF of TWY E (approx. 130,000 SF) in order to upgrade pavement strength to accommodate for NOAA's P-3 aircrafts. Additionally, both taxiways will be widened from the current width of 50 FT to 75 FT (total widened area for both taxiways approx. 103,000 SF). Project includes new pavement markings and improvements to existing lighting and signage due to taxiway widening.**

**Program Year:** **2022**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 145,300.00 | $ 145,300 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 29,100.00 | $ 29,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 145,300.00 | $ 145,300 |
| 4 | P-152 | Embankment | 21,500 | CY | $ 20.00 | $ 430,000 |
| 5 | P-101 | Cold Milling, Variable Depth (Pavement Rehab.) | 21,000 | SY | $ 9.00 | $ 189,000 |
| 6 | P-152 | Geotextile (Pavement Rehab.) | 21,000 | SY | $ 4.00 | $ 84,000 |
| 7 | P-401 | Hot Mix Asphalt Surface Course - 3" (Pavement Rehab.) | 3,600 | TN | $ 120.00 | $ 432,000 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Pavement Rehab.) | 2,900 | GAL | $ 5.00 | $ 14,500 |
| 9 | P-151 | Clearing and Grubbing / Stripping | 15.8 | AC | $ 14,500.00 | $ 229,100 |
| 10 | P-152 | Unclassified Excavation - 12" (Widening) | 3,850 | CY | $ 20.00 | $ 77,000 |
| 11 | P-152 | Compacted Subgrade - 6" (Widening) | 1,950 | CY | $ 4.00 | $ 7,800 |
| 12 | P-152 | Stabilized Subgrade Course - 8" (Widening) | 2,550 | CY | $ 9.00 | $ 22,950 |
| 13 | P-154 | Limerock Base Course - 15" (Widening) | 4,800 | CY | $ 55.00 | $ 264,000 |
| 14 | P-211 | Emulsified Asphalt Prime Coat (Widening) | 2,900 | GAL | $ 5.00 | $ 14,500 |
| 15 | P-602 | Emulsified Asphalt Tack Coat (Widening) | 1,450 | GAL | $ 5.00 | $ 7,250 |
| 16 | P-403 | Hot Mix Asphalt Surface Course - 4" (Widening) | 2,700 | TN | $ 120.00 | $ 324,000 |
| 17 | P-620 | Taxiway Hold Line Markings | 800 | SF | $ 2.00 | $ 1,600 |
| 18 | P-620 | Taxiway Center Line Markings | 3,500 | SF | $ 2.00 | $ 7,000 |
| 19 | L-108 | Taxiway Edge Line Markings | 6,000 | SF | $ 2.00 | $ 12,000 |
| 20 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 29,000 | LF | $ 2.00 | $ 58,000 |
| 21 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 14,500 | LF | $ 2.00 | $ 29,000 |
| 22 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 10,000 | LF | $ 16.00 | $ 160,000 |
| 23 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,000 | LF | $ 86.00 | $ 86,000 |
| 24 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,500 | LF | $ 100.00 | $ 150,000 |
| 25 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 29 | EA | $ 157.00 | $ 4,553 |
| 26 | L-115 | Electrical Handhole | 20 | EA | $ 950.00 | $ 19,000 |
| 27 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 60,000.00 | $ 60,000 |
| 28 | L-125 | Airfield Guidance Sign Adjustments | 8 | EA | $ 2,500.00 | $ 20,000 |
| 29 | L-125 | Taxiway Edge Fixture with Transformer | 125 | EA | $ 700.00 | $ 87,500 |
| 30 | T-905 | Topsoil | 6,450 | CY | $ 2.00 | $ 12,900 |
| 31 | T-904 | Seeding | 45,150 | SY | $ 1.00 | $ 45,150 |
| 32 | T-904 | Sodding | 19,350 | SY | $ 3.00 | $ 58,050 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 3,226,600*** |
| 33 | | Design / Permitting Service Fees | 10% | | | $ 322,700 |
| 34 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 484,000 |
| 35 | | Contingency | 20% | | | $ 645,300 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 4,678,600*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A4.2 - CONSTRUCT TAXIWAY S FROM TAXIWAY E NORTH TO TAXIWAY D

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes relocation of the north-south section of Taxiway E to the west to align with the future south parallel runway threshold. The relocated taxiway (Future Taxiway S) will be constructed to meet ADG III and TDG 5 design standards as the critical aircraft for design on the south side of the airport was determined to be the P-3 Orion, as outlined in the 2020 Airport Master Plan. Proposed Taxiway S will be 75 FT wide with 30 FT shoulders. Project also includes airfield lighting, signage and pavement markings.**

**Program Year:** **2022**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 151,927.00 | $ 151,927 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 30,385.00 | $ 30,385 |
| 3 | C-105 | Mobilization | 1 | LS | $ 151,927.00 | $ 151,927 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 16.5 | AC | $ 14,500.00 | $ 239,250 |
| 5 | P-152 | Embankment | 25,760 | CY | $ 20.00 | $ 515,200 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 784 | LF | $ 25.00 | $ 19,600 |
| 7 | P-152 | Unclassified Excavation - 12" | 6,415 | CY | $ 20.00 | $ 128,300 |
| 8 | P-152 | Compacted Subgrade - 6" | 3,265 | CY | $ 4.00 | $ 13,060 |
| 9 | P-154 | Stabilized Subgrade Course - 8" | 19,350 | SY | $ 9.00 | $ 174,150 |
| 10 | P-211 | Limerock Base Course - 15" | 8,100 | CY | $ 55.00 | $ 445,500 |
| 11 | P-602 | Emulsified Asphalt Prime Coast | 4,838 | GAL | $ 5.00 | $ 24,188 |
| 12 | P-603 | Emulsified Asphalt Tack Coat | 2,475 | GAL | $ 5.00 | $ 12,375 |
| 13 | P-401 | Hot Mix Asphalt Surface Course - 4" | 4,500 | TN | $ 120.00 | $ 540,000 |
| 14 | P-620 | Surface Painted Holding Position Signs | 1,200 | SF | $ 2.00 | $ 2,400 |
| 15 | P-620 | Taxiway Hold Line Markings | 800 | SF | $ 2.00 | $ 1,600 |
| 16 | P-620 | Taxiway Center Line Markings | 1,800 | SF | $ 2.00 | $ 3,600 |
| 17 | D-701 | Taxiway Edge Line Markings | 7,538 | SF | $ 2.00 | $ 15,076 |
| 18 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 19 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 20 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 35,100 | LF | $ 2.00 | $ 70,200 |
| 21 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 18,650 | LF | $ 2.00 | $ 37,300 |
| 22 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 7,885 | LF | $ 16.00 | $ 126,160 |
| 23 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,920 | LF | $ 86.00 | $ 165,120 |
| 24 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,065 | LF | $ 100.00 | $ 106,500 |
| 25 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 40 | EA | $ 157.00 | $ 6,280 |
| 26 | L-115 | Electrical Handhole | 16 | EA | $ 950.00 | $ 15,200 |
| 27 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 25,000.00 | $ 25,000 |
| 28 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 29 | L-125 | Taxiway Edge Fixture with Transformer | 85 | EA | $ 700.00 | $ 59,500 |
| 30 | T-905 | Topsoil | 6,900 | CY | $ 2.00 | $ 13,800 |
| 31 | T-904 | Seeding | 57,335 | SY | $ 1.00 | $ 57,335 |
| 32 | T-904 | Sodding | 23,280 | SY | $ 3.00 | $ 69,840 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 3,372,800*** |
| 33 | | Design / Permitting Service Fees | 10% | | | $ 337,300 |
| 34 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 505,900 |
| 35 | | Contingency | 20% | | | $ 674,600 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 4,890,600*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A4.2 - CONSTRUCT TAXIWAY S FROM TAXIWAY E NORTH TO TAXIWAY D

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes relocation of the north-south section of Taxiway E to the west to align with the future south parallel runway threshold. The relocated taxiway (Future Taxiway S) will be constructed to meet ADG III and TDG 5 design standards as the critical aircraft for design on the south side of the airport was determined to be the P-3 Orion, as outlined in the 2020 Airport Master Plan. Proposed Taxiway S will be 75 FT wide with 30 FT shoulders. Project also includes airfield lighting, signage and pavement markings.**

**Program Year:** **2022**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| | | **BID ALTERNATE** | | | | |
| 1 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 3.3 | AC | $ 14,500.00 | $ 47,850 |
| 2 | P-152 | Unclassified Excavation - 12" (Shoulder) | 5,480 | CY | $ 20.00 | $ 109,600 |
| 3 | P-152 | Compacted Subgrade - 6" (Shoulder) | 2,740 | CY | $ 4.00 | $ 10,960 |
| 4 | P-154 | Stabilized Subgrade Couse - 8" (Shoulder) | 3,655 | SY | $ 9.00 | $ 32,895 |
| 5 | P-211 | Limerock Base Course - 15" (Shoulder) | 6,850 | CY | $ 55.00 | $ 376,750 |
| 6 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 3,290 | TN | $ 120.00 | $ 394,800 |
| 7 | P-602 | Emulsified Asphalt Prime Coat (Shoulder) | 3,730 | GAL | $ 5.00 | $ 18,650 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 1,865 | GAL | $ 5.00 | $ 9,325 |
| 9 | | Contingency | 15% | | | $ 150,125 |
| | | ***TOTAL ESTIMATED COST OF BID ALTERNATE WORK (2020 DOLLARS)*** | | | | ***$ 1,151,000*** |

.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A4.3 - REMOVE PORTION OF TAXIWAY E FROM EXISTING TAXIWAY D SOUTH 1,500 FT.

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of approximately 1,500 FT (65,800 SF) of existing Taxiway E from Existing Taxiway D towards the south, including electrical demolition in the area.**

**Program Year:** **2022**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 5,800.00 | $ 5,800 |
| 2 | C-105 | Mobilization | 1 | LS | $ 28,800.00 | $ 28,800 |
| 3 | P-101 | Existing Pavement Removal, Including Base Material | 7,500 | SY | $ 25.00 | $ 187,500 |
| 4 | P-152 | Unclassified Excavation - 12" | 2,500 | CY | $ 20.00 | $ 50,000 |
| 5 | T-905 | Topsoil | 2,500 | CY | $ 2.00 | $ 5,000 |
| 6 | T-904 | Sodding | 7,500 | SY | $ 4.00 | $ 30,000 |
| 7 | L-100 | Electrical Demolition | 1 | LS | $ 15,000.00 | $ 15,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 322,100*** |
| 8 | | Design / Permitting Service Fees | 15% | | | $ 48,300 |
| 9 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 48,300 |
| 10 | | Contingency | 20% | | | $ 64,400 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 483,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A5.1- SHIFT TAXIWAY D FROM TAXIWAY F, REMAINING TAXIWAY P

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes shifting Taxiway D to the north in order to align with the recently relocated Taxiway P to the est. this will create a full-length parallel taxiway on the south side of Runway 9/27 and the north side of future Runway 10R/28L. The new taxiway will be 75 FT wide (approx. 394,000 SF) with 30 FT shoulders. Project also includes airfield lighting, signage and pavement markings.**

**Program Year:** **2023**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 336,400.00 | $ 336,400 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 67,300.00 | $ 67,300 |
| 3 | C-105 | Mobilization | 1 | LS | $ 336,400.00 | $ 336,400 |
| 4 | P-101 | Existing Pavement Removal | 2,600 | SY | $ 25.00 | $ 65,000 |
| 5 | P-151 | Clearing and Grubbing / Stripping | 32.0 | AC | $ 14,500.00 | $ 464,000 |
| 6 | P-152 | Embankment | 37,000 | CY | $ 20.00 | $ 740,000 |
| 7 | P-101 | Saw-Cut and Connect to Existing Pavement | 700 | LF | $ 25.00 | $ 17,500 |
| 8 | P-152 | Unclassified Excavation - 12" | 14,600 | CY | $ 20.00 | $ 292,000 |
| 9 | P-152 | Compacted Subgrade - 6" | 7,300 | CY | $ 4.00 | $ 29,200 |
| 10 | P-154 | Stabilized Subgrade Course - 8" | 43,800 | SY | $ 9.00 | $ 394,200 |
| 11 | P-211 | Limerock Base Course - 15" | 18,300 | CY | $ 55.00 | $ 1,006,500 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 11,000 | GAL | $ 5.00 | $ 55,000 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 5,500 | GAL | $ 5.00 | $ 27,500 |
| 14 | P-403 | Hot Mix Asphalt Surface Course - 4" | 10,200 | TN | $ 120.00 | $ 1,224,000 |
| 15 | P-620 | Surface Painted Holding Position Signs | 480 | SF | $ 2.00 | $ 960 |
| 16 | P-620 | Taxiway Hold Line Markings | 800 | SF | $ 2.00 | $ 1,600 |
| 17 | P-620 | Taxiway Center Line Markings | 5,500 | SF | $ 2.00 | $ 11,000 |
| 18 | P-620 | Taxiway Edge Line Markings | 10,200 | SF | $ 2.00 | $ 20,400 |
| 19 | D-701 | Reinforced Concrete Pipe | 1,500 | LF | $ 118.00 | $ 177,000 |
| 20 | D-752 | Concrete End Sections | 10 | EA | $ 1,000.00 | $ 10,000 |
| 21 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 28,700 | LF | $ 2.00 | $ 57,400 |
| 22 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 14,350 | LF | $ 2.00 | $ 28,700 |
| 23 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 7,800 | LF | $ 16.00 | $ 124,800 |
| 24 | L-110 | Concrete Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,200 | LF | $ 86.00 | $ 103,200 |
| 25 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,500 | LF | $ 1,000.00 | $ 1,500,000 |
| 26 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 30 | EA | $ 157.00 | $ 4,710 |
| 27 | L-115 | Electrical Handhole | 22 | EA | $ 950.00 | $ 20,900 |
| 28 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 25,000.00 | $ 25,000 |
| 29 | L-125 | Airfield Guidance Sign and Foundation | 4 | EA | $ 14,000.00 | $ 56,000 |
| 30 | L-125 | Taxiway Edge Fixture with Transformer | 103 | EA | $ 700.00 | $ 72,100 |
| 31 | T-905 | Topsoil | 11,150 | CY | $ 2.00 | $ 22,300 |
| 32 | T-904 | Seeding | 77,750 | SY | $ 1.00 | $ 77,750 |
| 33 | T-904 | Sodding | 33,350 | SY | $ 3.00 | $ 100,050 |
| | | | | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | ***$ 7,468,900*** |
| 34 | | Design / Permitting Service Fees | 8% | | | $ 597,500 |
| 35 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 1,120,300 |
| 36 | | Contingency | 20% | | | $ 1,493,800 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$ 10,680,500*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A5.1- SHIFT TAXIWAY D FROM TAXIWAY F, REMAINING TAXIWAY P

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes shifting Taxiway D to the north in order to align with the recently relocated Taxiway P to the est. this will create a full-length parallel taxiway on the south side of Runway 9/27 and the north side of future Runway 10R/28L. The new taxiway will be 75 FT wide (approx. 394,000 SF) with 30 FT shoulders. Project also includes airfield lighting, signage and pavement markings.**

**Program Year:** **2023**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| **BID ALTERNATE** | | | | | | |
| 1 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 6.8 | AC | $ 14,500.00 | $ 98,600 |
| 2 | P-152 | Unclassified Excavation - 12" (Shoulder) | 11,100 | CY | $ 20.00 | $ 222,000 |
| 3 | P-152 | Compacted Subgrade - 6" (Shoulder) | 5,500 | CY | $ 4.00 | $ 22,000 |
| 4 | P-154 | Stabilized Subgrade Couse - 8" (Shoulder) | 7,400 | SY | $ 9.00 | $ 66,600 |
| 5 | P-211 | Limerock Base Course - 15" (Shoulder) | 13,875 | CY | $ 55.00 | $ 763,125 |
| 6 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 6,600 | TN | $ 120.00 | $ 792,000 |
| 7 | P-602 | Emulsified Asphalt Prime Coat (Shoulder) | 7,480 | GAL | $ 5.00 | $ 37,400 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 3,730 | GAL | $ 5.00 | $ 18,650 |
| 9 | | Contingency | 15% | | | $ 303,056 |
| | | ***TOTAL ESTIMATED COST OF BID ALTERNATE WORK (2020 DOLLARS)*** | | | | ***$ 2,323,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A5.2 CONSTRUCT CONNECTORS BETWEEN SHIFTED TAXIWAY D AND RUNWAY 10-28

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new taxiway connector (approx. 64,600 SF) connecting Taxiway P (following shift of Taxiway D) to Runway 9-27. The new connector taxiway will be located will be located 7,360 FT from the RWY 9 threshold and 1,130 FT from the RWY 27 threshold. Project also includes pavement shoulders, airfield lighting, signage and pavement markings.**

**Program Year:** **2023**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 59,000.00 | $ 59,000 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 11,800.00 | $ 11,800 |
| 3 | C-105 | Mobilization | 1 | LS | $ 59,000.00 | $ 59,000 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 5.2 | AC | $ 14,500.00 | $ 75,400 |
| 5 | P-152 | Embankment | 6,000 | CY | $ 20.00 | $ 120,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 7 | P-152 | Unclassified Excavation - 12" | 2,400 | CY | $ 20.00 | $ 48,000 |
| 8 | P-152 | Compacted Subgrade - 6" | 1,200 | CY | $ 4.00 | $ 4,800 |
| 9 | P-154 | Stabilized Subgrade Course - 8" | 7,200 | SY | $ 9.00 | $ 64,800 |
| 10 | P-211 | Limerock Base Course - 15" | 3,000 | CY | $ 55.00 | $ 165,000 |
| 11 | P-602 | Emulsified Asphalt Prime Coat | 1,800 | GAL | $ 5.00 | $ 9,000 |
| 12 | P-603 | Emulsified Asphalt Tack Coat | 900 | GAL | $ 5.00 | $ 4,500 |
| 13 | P-403 | Hot Mix Asphalt Surface Course - 4" | 1,700 | TN | $ 120.00 | $ 204,000 |
| 14 | P-620 | Surface Painted Holding Position Signs | 240 | SF | $ 2.00 | $ 480 |
| 15 | P-620 | Taxiway Hold Line Markings | 800 | SF | $ 2.00 | $ 1,600 |
| 16 | P-620 | Taxiway Center Line Markings | 1,000 | SF | $ 2.00 | $ 2,000 |
| 17 | P-620 | Taxiway Edge Line Markings | 1,800 | SF | $ 2.00 | $ 3,600 |
| 18 | D-701 | Reinforced Concrete Pipe | 500 | LF | $ 118.00 | $ 59,000 |
| 19 | D-752 | Concrete End Sections | 4 | EA | $ 1,000.00 | $ 4,000 |
| 20 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 23,200 | LF | $ 2.00 | $ 46,400 |
| 21 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 11,600 | LF | $ 2.00 | $ 23,200 |
| 22 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 4,400 | LF | $ 16.00 | $ 70,400 |
| 23 | L-110 | Concrete Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 700 | LF | $ 86.00 | $ 60,200 |
| 24 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,000 | LF | $ 100.00 | $ 100,000 |
| 25 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 23 | EA | $ 157.00 | $ 3,642 |
| 26 | L-115 | Electrical Handhole | 16 | EA | $ 950.00 | $ 15,200 |
| 27 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 15,000.00 | $ 15,000 |
| 28 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 29 | L-125 | Taxiway Edge Fixture with Transformer | 20 | EA | $ 700.00 | $ 14,000 |
| 30 | T-905 | Topsoil | 1,800 | CY | $ 2.00 | $ 3,600 |
| 31 | T-904 | Seeding | 12,450 | SY | $ 1.00 | $ 12,450 |
| 32 | T-904 | Sodding | 5,350 | SY | $ 3.00 | $ 16,050 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 1,310,400*** |
| 33 | | Design / Permitting Service Fees | 11% | | | $ 144,100 |
| 34 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 196,600 |
| 35 | | Contingency | 20% | | | $ 262,100 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 1,913,200*** |
| | | **BID ALTERNATE** | | | | |
| 1 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 0.7 | AC | $ 14,500.00 | $ 10,150 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

## A5.2 CONSTRUCT CONNECTORS BETWEEN SHIFTED TAXIWAY D AND RUNWAY 10-28

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new taxiway connector (approx. 64,600 SF) connecting Taxiway P (following shift of Taxiway D) to Runway 9-27. The new connector taxiway will be located will be located 7,360 FT from the RWY 9 threshold and 1,130 FT from the RWY 27 threshold. Project also includes pavement shoulders, airfield lighting, signage and pavement markings.**

**Program Year:** **2023**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 2 | P-152 | Unclassified Excavation - 12" (Shoulder) | 1,120 | CY | $ 20.00 | $ 22,400 |
| 3 | P-152 | Compacted Subgrade - 6" (Shoulder) | 560 | CY | $ 4.00 | $ 2,240 |
| 4 | P-154 | Stabilized Subgrade Couse - 8" (Shoulder) | 750 | SY | $ 9.00 | $ 6,750 |
| 5 | P-211 | Limerock Base Course - 15" (Shoulder) | 1,400 | CY | $ 55.00 | $ 77,000 |
| 6 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 675 | TN | $ 120.00 | $ 81,000 |
| 7 | P-602 | Emulsified Asphalt Prime Coat (Shoulder) | 765 | GAL | $ 5.00 | $ 3,825 |
| 8 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 382 | GAL | $ 5.00 | $ 1,910 |
| 9 | | Contingency | 15% | | | $ 30,791 |
| | | ***TOTAL ESTIMATED COST OF BID ALTERNATE WORK (2020 DOLLARS)*** | | | | ***$ 236,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A6.1 CONSTRUCT TAXIWAY A SHOULDERS

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of new paved shoulder (approx. 356,100 SF) for Taxiway A and Taxiway Connectors to Runway 9-27. Project also includes removal of existing taxiway lights, installation of new taxiway lighting, airfield sign adjustments and new pavement markings.**

**Program Year:** **2024**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 261,700.00 | $ 261,700 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 104,700.00 | $ 104,700 |
| 3 | C-105 | Mobilization | 1 | LS | $ 261,700.00 | $ 261,700 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 36.5 | AC | $ 14,500.00 | $ 529,250 |
| 5 | P-152 | Embankment | 45,200 | CY | $ 20.00 | $ 904,000 |
| 6 | P-152 | Unclassified Excavation - 12" (Shoulder) | 13,200 | CY | $ 20.00 | $ 264,000 |
| 7 | P-152 | Compacted Subgrade - 6" (Shoulder) | 6,600 | CY | $ 4.00 | $ 26,400 |
| 8 | P-154 | Stabilized Subgrade Course - 8" (Shoulder) | 40,000 | SY | $ 9.00 | $ 360,000 |
| 9 | P-211 | Limerock Base Course - 15" (Shoulder) | 16,700 | CY | $ 55.00 | $ 918,500 |
| 10 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 9,200 | TN | $ 120.00 | $ 1,104,000 |
| 11 | P-602 | Emulsified Asphalt Prime Coat | 10,000 | GAL | $ 5.00 | $ 50,000 |
| 12 | P-603 | Emulsified Asphalt Tack Coat | 5,000 | GAL | $ 5.00 | $ 25,000 |
| 13 | L-125 | Taxiway Edge Light Removal | 140 | EA | $ 350.00 | $ 49,000 |
| 14 | L-125 | Airfield Guidance Sign Removal/Adjustment | 6 | EA | $ 750.00 | $ 4,500 |
| 15 | P-620 | Taxiway Edge Line Markings | 12,200 | SF | $ 2.00 | $ 24,400 |
| 16 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 34,400 | LF | $ 2.00 | $ 68,800 |
| 17 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 17,200 | LF | $ 2.00 | $ 34,400 |
| 18 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 12,200 | LF | $ 16.00 | $ 195,200 |
| 19 | L-110 | Concrete Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 600 | LF | $ 86.00 | $ 51,600 |
| 20 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,400 | LF | $ 100.00 | $ 140,000 |
| 21 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 34 | EA | $ 157.00 | $ 5,338 |
| 22 | L-115 | Electrical Handhole | 22 | EA | $ 950.00 | $ 20,900 |
| 23 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 75,000.00 | $ 75,000 |
| 24 | L-125 | Airfield Guidance Sign and Foundation | 3 | EA | $ 14,000.00 | $ 42,000 |
| 25 | L-125 | Taxiway Edge Fixture with Transformer | 140 | EA | $ 700.00 | $ 98,000 |
| 26 | T-905 | Topsoil | 13,600 | CY | $ 2.00 | $ 27,200 |
| 27 | T-904 | Seeding | 94,900 | SY | $ 1.00 | $ 94,900 |
| 28 | T-904 | Sodding | 40,700 | SY | $ 3.00 | $ 122,100 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 5,862,600*** |
| 29 | | Design / Permitting Service Fees | 9% | | | $ 527,600 |
| 30 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 879,400 |
| 31 | | Contingency | 20% | | | $ 1,172,500 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 8,442,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A7.1 - CONSTRUCT RUN-UP APRON ON TAXIWAY A

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new aircraft run-up apron (approx. 168,000 SF) on Taxiway A. The run-up apron will be constructed to allow for two simultaneous run-up operations by the critical aircraft. The project includes new pavement, airfield lighting, signage and pavement markings.**

**Program Year:** **2025**

| LINE NO. | ITEM | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 91,300.00 | $ 91,300 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 18,300.00 | $ 18,300 |
| 3 | C-105 | Mobilization | 1 | LS | $ 91,300.00 | $ 91,300 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 6.00 | AC | $ 14,500.00 | $ 87,000 |
| 5 | P-152 | Embankment | 3,350 | CY | $ 20.00 | $ 67,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 800 | LF | $ 25.00 | $ 20,000 |
| 7 | P-152 | Unclassified Excavation - 12" | 6,300 | CY | $ 20.00 | $ 126,000 |
| 8 | P-152 | Compacted Subgrade - 12" | 6,300 | CY | $ 4.00 | $ 25,200 |
| 9 | P-154 | Stabilized Subgrade Course - 12" | 18,700 | SY | $ 9.00 | $ 168,300 |
| 10 | P-211 | Limerock Base Course - 17" | 8,900 | CY | $ 55.00 | $ 489,500 |
| 11 | P-602 | Emulsified Asphalt Prime Coat | 4,700 | GAL | $ 5.00 | $ 23,500 |
| 12 | P-603 | Emulsified Asphalt Tack Coat | 2,350 | GAL | $ 5.00 | $ 11,750 |
| 13 | P-403 | Hot Mix Asphalt Surface Course - 5" | 5,500 | TN | $ 120.00 | $ 660,000 |
| 14 | P-620 | Taxiway Hold Line Markings | 4,400 | SF | $ 2.00 | $ 8,800 |
| 15 | P-620 | Taxiway Center Line Markings | 2,100 | SF | $ 2.00 | $ 4,200 |
| 16 | P-620 | Taxiway Edge Line Markings | 1,700 | SF | $ 2.00 | $ 3,400 |
| 17 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 10,000 | LF | $ 2.00 | $ 20,000 |
| 18 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 5,000 | LF | $ 2.00 | $ 10,000 |
| 19 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,000 | LF | $ 16.00 | $ 16,000 |
| 20 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 10 | EA | $ 160.00 | $ 1,600 |
| 21 | L-115 | Electrical Handhole | 2 | EA | $ 950.00 | $ 1,900 |
| 22 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 25,000.00 | $ 25,000 |
| 23 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 24 | L-125 | Taxiway Edge Fixture with Transformer | 15 | EA | $ 700.00 | $ 10,500 |
| 25 | T-905 | Topsoil | 1,000 | CY | $ 2.00 | $ 2,000 |
| 26 | T-904 | Seeding | 7,000 | SY | $ 1.00 | $ 7,000 |
| 27 | T-904 | Sodding | 3,000 | SY | $ 3.00 | $ 9,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 2,026,600*** |
| 28 | | Design / Permitting Service Fees | 10% | | | $ 202,700 |
| 29 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 304,000 |
| 30 | | Contingency | 20% | | | $ 405,300 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET*** | | | | ***$ 2,938,600*** |

***LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)***
**LAKELAND, FLORIDA**

# CONCEPTUAL ESTIMATE SUMMARY

## *LANDSIDE PROJECTS - SHORT RANGE (0-5 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| ***Project*** | ***Program Year*** | ***Project Description*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program 2020 Budget - Project Total*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program Year Budget - Project Total*** |
| **L1** | **Short Range** | **Relocate Airport Maintenance Building** | **$ 4,885,800** | **$ 361,900** | **$ 5,247,700** | **$ 5,007,900** | **$ 370,900** | **$ 5,378,800** |
| L1.1 | 2021 | Relocate Airport Maintenance Building West of Taxilane H and North of Existing Drainage Pond | $ 4,885,800 | $ 361,900 | $ 5,247,700 | $ 5,007,900 | $ 370,900 | $ 5,378,800 |
| **L2** | **Short Range** | **Construct Conventional Hangars on Taxilane H** | **$ 16,037,700** | **$ 1,150,700** | **$ 17,188,400** | **$ 17,248,600** | **$ 1,237,300** | **$ 18,485,900** |
| L2.1 | 2022 | Construct Access Road and Apron | $ 844,300 | $ 68,800 | $ 913,100 | $ 887,000 | $ 72,300 | $ 959,300 |
| L2.3 | 2023 | Construct Two (2) 5,625 SF Hangars North of Existing T-hangar Facilities | $ 3,317,600 | $ 245,800 | $ 3,563,400 | $ 3,572,700 | $ 264,700 | $ 3,837,400 |
| L2.4 | 2023 | Construct One (1) 10,000 SF Hangar Off of Taxilane H | $ 2,991,600 | $ 243,800 | $ 3,235,400 | $ 3,221,600 | $ 262,500 | $ 3,484,100 |
| L2.5 | 2023 | Construct One (1) 10,000 SF Hangar and One (1) 20,000 SF Hangar off of Taxilane H | $ 8,884,200 | $ 592,300 | $ 9,476,500 | $ 9,567,300 | $ 637,800 | $ 10,205,100 |
| **L3** | **Short Range** | **Construct Executive Aviation Center Access Road** | **$ 3,627,200** | **$ 268,700** | **$ 3,895,900** | **$ 4,003,800** | **$ 296,600** | **$ 4,300,400** |
| L3.1 | 2024 | Construct Executive Aviation Center Access Road | $ 3,627,200 | $ 268,700 | $ 3,895,900 | $ 4,003,800 | $ 296,600 | $ 4,300,400 |
| ***SUMMARY*** | | ***TOTAL - LANDSIDE - SHORT RANGE (0-5 YEAR) CIP PROJECTS:*** | ***$ 24,550,700*** | ***$ 1,781,300*** | ***$ 26,332,000*** | ***$ 26,260,300*** | ***$ 1,904,800*** | ***$ 28,165,100*** |

* All totals are rounded.  Escalation has been compounded to program year at a rate of 2.5% per year from FY 2020.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L1.1 - RELOCATE AIRPORT MAINTENANCE BUILDING - WEST OF TAXILANE H AND NORTH OF EXISTING DRAINAGE POND

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new 30,000 SF maintenance building including a 24 FT.-wide paved road access and paved parking behind building (approx. 22,160 SF). The building is assumed to include office space and restroom facilities, and an FF&E allowance has been included. Assumed pavement section: 12" stabilized subgrade, 8"optional base group 6 material, and 1½" hot mix asphalt surface course.**

**Program Year:** **2021**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 163,000.00 | $ 163,000 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 32,600.00 | $ 32,600 |
| 3 | C-105 | Mobilization | 1 | LS | $ 163,000.00 | $ 163,000 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 3.9 | AC | $ 14,500.00 | $ 56,550 |
| 5 | P-151 | Fence Removal | 670 | LF | $ 7.00 | $ 4,690 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 120 | LF | $ 25.00 | $ 3,000 |
| 7 | P-152 | Unclassified Excavation | 1,500 | CY | $ 20.00 | $ 30,000 |
| 8 | P-152 | Embankment | 4,200 | CY | $ 20.00 | $ 84,000 |
| 9 | FDOT | Hot Mix Asphalt Surface Course - 1.5" | 210 | TN | $ 120.00 | $ 25,200 |
| 10 | FDOT | FDOT Index No. 285, Optional Base Group 6 - 8" | 2,500 | SY | $ 16.00 | $ 40,000 |
| 11 | P-154 | Stabilized Subgrade Course - 12" | 2,500 | SY | $ 9.00 | $ 22,500 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 630 | GAL | $ 5.00 | $ 3,150 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 320 | GAL | $ 5.00 | $ 1,600 |
| 14 | FDOT | Pavement Markings | 500 | SF | $ 2.00 | $ 1,000 |
| 15 | F-162 | 8' Chain-Link Fence with Barbed Wire | 775 | LF | $ 29.00 | $ 22,475 |
| 16 | F-162 | 15' Manual Cantilever Slide Gate | 2 | EA | $ 15,000.00 | $ 30,000 |
| 17 | FDOT | Access Control (at Fence Gate) | 2 | SET | $ 6,500.00 | $ 13,000 |
| 18 | AMB | Airport Maintenance Building | 30,000 | SF | $ 80.00 | $ 2,400,000 |
| 19 | AMB | Airport Maintenance Building Furniture, Fixture, Equipment | 1 | ALLOW | $ 150,000.00 | $ 150,000 |
| 20 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 21 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 22 | FDOT | Roadway Signage | 3 | EA | $ 500.00 | $ 1,500 |
| 23 | T-905 | Topsoil | 1,300 | CY | $ 2.00 | $ 2,600 |
| 24 | T-904 | Seeding | 8,800 | SY | $ 1.00 | $ 8,800 |
| 25 | T-904 | Sodding | 3,800 | SY | $ 3.00 | $ 11,400 |
| 26 | UTY | Utility Connections | 1 | ALLOW | $ 225,000.00 | $ 225,000 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 3,619,100*** |
| 27 | | Design / Permitting Service Fees | 10% | | | $ 361,900 |
| 28 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 542,900 |
| 29 | | Contingency | 20% | | | $ 723,800 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 5,247,700*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L2.1 - CONSTRUCT ACCESS ROAD

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the construction of a paved road and paved apron (approx. total 58,500 SF) to support new aircraft hangars. Roadway pavement section includes: 12" stabilized subgrade, 8" optional base group 6 material, and 1½" hot mix asphalt surface course.**

**Program Year:** **2022**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 28,200.00 | $ 28,200 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 5,600.00 | $ 5,600 |
| 3 | C-105 | Mobilization | 1 | LS | $ 28,200.00 | $ 28,200 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 4.7 | AC | $ 14,500.00 | $ 68,723 |
| 5 | P-152 | Unclassified Excavation | 1247 | CY | $ 20.00 | $ 24,945 |
| 6 | P-152 | Embankment | 8132 | CY | $ 20.00 | $ 162,641 |
| 7 | P-154 | Stabilized Subgrade Course - 12" | 6112 | SY | $ 9.00 | $ 55,004 |
| 8 | P-152 | Compacted Subgrade - 12" | 2045 | CY | $ 4.00 | $ 8,182 |
| 9 | P-602 | Emulsified Asphalt Prime Coat | 1547 | GAL | $ 5.00 | $ 7,733 |
| 10 | P-603 | Emulsified Asphalt Tack Coat | 798 | GAL | $ 5.00 | $ 3,991 |
| 11 | FDOT | Hot Mix Asphalt Surface Course - 1.5" | 600 | TN | $ 120.00 | $ 72,000 |
| 12 | FDOT | FDOT Index No. 285, Optional Base Group 6 - 8" | 5700 | SY | $ 16.00 | $ 91,200 |
| 13 | P-620 | Pavement Marking | 9978 | SF | $ 2.00 | $ 19,956 |
| 14 | T-905 | Topsoil | 2445 | CY | $ 2.00 | $ 4,889 |
| 15 | T-904 | Seeding | 17087 | SY | $ 1.00 | $ 17,087 |
| 16 | T-904 | Sodding | 7334 | SY | $ 3.00 | $ 22,001 |
| 17 | FDOT | Directional Signage - Roadway | 10 | EA | $ 500.00 | $ 5,000 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 625,400*** |
| 18 | | Design / Permitting Service Fees | 11% | | | $ 68,800 |
| 19 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 93,800 |
| 20 | | Contingency | 20% | | | $ 125,100 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 913,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L2.2 - CONSTRUCT TWO (2) 5,625 SF HANGARS NORTH OF EXISTING T-HANGAR FACILITIES

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the construction of two conventional aircraft hangars, approximately 5,625 SF each (total 11,250 SF) north of the existing T-Hangar Facilities. The project includes the construction of a paved apron (approx. total 13,000 SF) to support new aircraft hangars. Apron pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course Includes removal of existing security fencing and installation of a new security fence (approx. 250 FT) to replace removed fence section.**

**Program Year:** **2023**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 109,200.00 | $ 109,200 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 21,800.00 | $ 21,800 |
| 3 | C-105 | Mobilization | 1 | LS | $ 109,200.00 | $ 109,200 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.2 | AC | $ 14,500.00 | $ 32,351 |
| 5 | P-151 | Fence Removal | 76.0 | LF | $ 7.00 | $ 532 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 195 | LF | $ 25.00 | $ 4,874 |
| 7 | P-152 | Unclassified Excavation | 1,521 | CY | $ 20.00 | $ 30,427 |
| 8 | P-152 | Embankment | 1,769 | CY | $ 20.00 | $ 35,384 |
| 9 | P-401 | Hot Mix Asphalt Surface Course, 5" | 433 | TN | $ 120.00 | $ 51,984 |
| 10 | P-211 | Limerock Base Course - 17" | 758 | CY | $ 55.00 | $ 41,696 |
| 11 | P-154 | Stabilized Subgrade Course - 12" | 1,330 | SY | $ 9.00 | $ 11,967 |
| 12 | P-152 | Compacted Subgrade | 445 | CY | $ 4.00 | $ 1,780 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 336 | GAL | $ 5.00 | $ 1,682 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 174 | GAL | $ 5.00 | $ 868 |
| 15 | HGR | Conventional Hangars - Two (2) Buildings, 5,625 SF Each | 11,250 | SF | $ 150.00 | $ 1,687,500 |
| 16 | UTY | Utility Connections | 2 | ALLOW | $ 80,000.00 | $ 160,000 |
| 17 | P-620 | Pavement Marking | 2,171 | SF | $ 2.00 | $ 4,342 |
| 18 | F-162 | 8' Chain-Link Fence with Barbed Wire | 238 | LF | $ 29.00 | $ 6,910 |
| 19 | D-705 | Trench Drain | 200 | LF | $ 250.00 | $ 50,000 |
| 20 | D-701 | Reinforced Concrete Pipe | 667 | LF | $ 118.00 | $ 78,659 |
| 21 | D-752 | Concrete End Sections | 4 | EA | $ 1,000.00 | $ 4,000 |
| 22 | L-125 | Taxiway Edge Fixture with Transformer | 4 | EA | $ 700.00 | $ 2,800 |
| 23 | T-905 | Topsoil | 532 | CY | $ 2.00 | $ 1,064 |
| 24 | T-904 | Seeding | 3,717 | SY | $ 1.00 | $ 3,717 |
| 25 | T-904 | Sodding | 1,596 | SY | $ 3.00 | $ 4,787 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$ 2,457,500*** |
| 26 | | Design / Permitting Service Fees | 10% | | | $ 245,800 |
| 27 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 368,600 |
| 28 | | Contingency | 20% | | | $ 491,500 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$ 3,563,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L2.3 - CONSTRUCT ONE (1) 10,000 SF HANGAR OFF OF TAXILANE H

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project consists of construction of one conventional aircraft hangar, approximately 10,000 SF with hangar doors on a track system. The project includes the construction of a paved apron (approx. total 12,500 SF) to support new aircraft hangars. Apron pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course Includes removal of existing security fencing and installation of a new security fence (approx. 250 FT) to replace removed fence section.**

**Program Year:** **2023**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 99,800.00 | $ 99,800 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 20,000.00 | $ 20,000 |
| 3 | C-105 | Mobilization | 1 | LS | $ 99,800.00 | $ 99,800 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.0 | AC | $ 14,500.00 | $ 29,165 |
| 5 | P-151 | Fence Removal | 75 | LF | $ 7.00 | $ 522 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 291 | LF | $ 25.00 | $ 7,281 |
| 7 | P-152 | Unclassified Excavation | 766 | CY | $ 20.00 | $ 15,323 |
| 8 | P-152 | Embankment | 1,735 | CY | $ 20.00 | $ 34,706 |
| 9 | P-401 | Hot Mix Asphalt Surface Course, 5" | 425 | TN | $ 120.00 | $ 51,000 |
| 10 | P-211 | Limerock Base Course - 17" | 744 | CY | $ 55.00 | $ 40,906 |
| 11 | P-154 | Stabilized Subgrade Course - 12" | 1,304 | SY | $ 9.00 | $ 11,737 |
| 12 | P-152 | Compacted Subgrade | 436 | CY | $ 4.00 | $ 1,746 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 330 | GAL | $ 5.00 | $ 1,650 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 170 | GAL | $ 5.00 | $ 852 |
| 15 | HNGR | Conventional Hangars - One (1) Building | 10,000 | SF | $ 150.00 | $ 1,500,000 |
| 16 | UTY | Utility Connections | 1 | ALLOW | $ 100,000.00 | $ 100,000 |
| 17 | P-620 | Pavement Marking | 2,129 | SF | $ 2.00 | $ 4,258 |
| 18 | F-162 | 8' Chain-Link Fence with Barbed Wire | 234 | LF | $ 29.00 | $ 6,779 |
| 19 | D-705 | Trench Drain | 100 | LF | $ 250.00 | $ 25,000 |
| 20 | D-701 | Reinforced Concrete Pipe | 1,213 | LF | $ 118.00 | $ 143,075 |
| 21 | D-752 | Concrete End Sections | 8 | EA | $ 1,000.00 | $ 8,000 |
| 22 | L-125 | Taxiway Edge Fixture with Transformer | 4 | EA | $ 700.00 | $ 2,800 |
| 23 | T-905 | Topsoil | 522 | CY | $ 2.00 | $ 1,043 |
| 24 | T-904 | Seeding | 3,646 | SY | $ 1.00 | $ 3,646 |
| 25 | T-904 | Sodding | 2,065 | SY | $ 3.00 | $ 6,195 |
| 26 | FDOT | Directional Signage - Roadway | 2 | EA | $ 350.00 | $ 700 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 2,216,000*** |
| 27 | | Design / Permitting Service Fees | 11% | | | $ 243,800 |
| 28 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 332,400 |
| 29 | | Contingency | 20% | | | $ 443,200 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 3,235,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L2.4 - CONSTRUCT ONE (1) 10,000 SF HANGAR AND ONE (1) 20,000 SF HANGAR OFF TAXILANE H

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of two conventional aircraft hangars, one approximately 10,000 SF and the second approximately 20,000 SF (total 30,000 SF) to be located off of Taxiway H. The 20,000 SF hangar includes office space and restroom facilities. The project includes the construction of a paved apron (approx. total 33,500 SF) to support new aircraft hangars. Apron pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course Includes removal of existing security fencing and installation of a new security fence (approx. 650 FT) to replace removed fence section.**

**Program Year:** **2023**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 297,800.00 | $ 297,800 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 29,800.00 | $ 29,800 |
| 3 | C-105 | Mobilization | 1 | LS | $ 297,800.00 | $ 297,800 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 5 | AC | $ 14,500.00 | $ 68,410 |
| 5 | P-151 | Fence Removal | 200 | LF | $ 7.00 | $ 4,900 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 764 | LF | $ 25.00 | $ 19,095 |
| 7 | P-152 | Unclassified Excavation | 2,715 | CY | $ 20.00 | $ 54,305 |
| 8 | P-152 | Embankment | 4,663 | CY | $ 20.00 | $ 93,269 |
| 9 | P-401 | Hot Mix Asphalt Surface Course, 5" | 1,142 | TN | $ 120.00 | $ 137,016 |
| 10 | P-211 | Limerock Base Course - 17" | 1,998 | CY | $ 55.00 | $ 109,898 |
| 11 | P-154 | Stabilized Subgrade Course - 12" | 3,505 | SY | $ 9.00 | $ 31,543 |
| 12 | P-152 | Compacted Subgrade | 1,173 | CY | $ 4.00 | $ 4,692 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 887 | GAL | $ 5.00 | $ 4,435 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 458 | GAL | $ 5.00 | $ 2,289 |
| 15 | HNGR | Conventional Hangars - One (1) Building | 10,000 | SF | $ 150.00 | $ 1,500,000 |
| 16 | HNGR | Conventional Hangars - One (1) Building | 20,000 | SF | $ 165.00 | $ 3,300,000 |
| 17 | UTY | Utility Connections | 2 | ALLOW | $ 125,000.00 | $ 250,000 |
| 18 | P-620 | Pavement Marking | 5,722 | SF | $ 2.00 | $ 40,000 |
| 19 | F-162 | 8' Chain-Link Fence with Barbed Wire | 628 | LF | $ 29.00 | $ 31,900 |
| 20 | D-705 | Trench Drain | 300 | LF | $ 250.00 | $ 75,000 |
| 21 | D-701 | Reinforced Concrete Pipe | 1,571 | LF | $ 118.00 | $ 185,366 |
| 22 | D-752 | Concrete End Sections | 8 | EA | $ 1,000.00 | $ 8,000 |
| 23 | L-125 | Taxiway Edge Fixture with Transformer | 4 | EA | $ 700.00 | $ 2,800 |
| 24 | T-905 | Topsoil | 1,402 | CY | $ 2.00 | $ 2,804 |
| 25 | T-904 | Seeding | 9,799 | SY | $ 1.00 | $ 9,799 |
| 26 | T-904 | Sodding | 6,206 | SY | $ 3.00 | $ 18,618 |
| 27 | FDOT | Directional Signage - Roadway | 4 | EA | $ 350.00 | $ 1,400 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$ 6,580,900*** |
| 28 | | Design / Permitting Service Fees | 9% | | | $ 592,300 |
| 29 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 987,100 |
| 30 | | Contingency | 20% | | | $ 1,316,200 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$ 9,476,500*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L3.1 - CONSTRUCT EXECUTIVE AVIATION CENTER ACCESS ROAD

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new 24 ft.-wide paved road from the terminal entrance loop to the future FBO campus including a parking area in front of the future FBO building, and distribution roads to future FBO hangars with hangar parking (total area approx. 176,000 SF). Assumed pavement section includes: 12" stabilized subgrade, 8" optional base group 6 material, and 1½" hot mix asphalt surface course. Milling and overlay assumed at tie-ins to existing pavement. No roadway lighting included in estimate.**

**Program Year:** **2024**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | FDOT | Contractor Quality Control Program | 1 | LS | $ 121,000.00 | $ 121,000 |
| 2 | FDOT | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 24,200.00 | $ 24,200 |
| 3 | FDOT | Mobilization | 1 | LS | $ 121,000.00 | $ 121,000 |
| 4 | FDOT | Clearing and Grubbing / Stripping | 8.5 | AC | $ 14,500.00 | $ 123,250 |
| 5 | FDOT | Saw-Cut and Connect to Existing Pavement | 2,000 | LF | $ 25.00 | $ 50,000 |
| 6 | FDOT | Cold Milling, 3" Depth for Tie-Ins. | 4,500 | SY | $ 12.00 | $ 54,000 |
| 7 | FDOT | Asphalt Resurfacing for Tie-ins | 550 | TN | $ 120.00 | $ 66,000 |
| 8 | FDOT | Unclassified Excavation | 2,000 | CY | $ 20.00 | $ 40,000 |
| 9 | P-152 | Embankment | 34,850 | CY | $ 20.00 | $ 697,000 |
| 10 | FDOT | LBR=40 Stabilized Subgrade Course - 12" | 20,000 | SY | $ 9.00 | $ 180,000 |
| 11 | FDOT | FDOT Index No. 285, Optional Base Group 6 - 8" | 20,000 | SY | $ 16.00 | $ 320,000 |
| 12 | FDOT | Emulsified Asphalt Prime Coat | 5,000 | GAL | $ 5.00 | $ 25,000 |
| 13 | FDOT | Emulsified Asphalt Tack Coat | 2,500 | GAL | $ 5.00 | $ 12,500 |
| 14 | FDOT | Hot Mix Asphalt Surface Course - 1.5" | 1,300 | TN | $ 120.00 | $ 156,000 |
| 15 | FDOT | Pavement Marking | 25,000 | SF | $ 2.00 | $ 50,000 |
| 16 | FDOT | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 17 | FDOT | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 18 | FDOT | Concrete Encased Electrical Conduit, 1 Way, 4-Inch, Schedule 40 PVC | 1,000 | LF | $ 42.00 | $ 42,000 |
| 19 | F-162 | 8' Chain-Link Fence with Barbed Wire | 10,000 | LF | $ 29.00 | $ 290,000 |
| 20 | FDOT | Topsoil | 10,450 | CY | $ 2.00 | $ 20,900 |
| 21 | FDOT | Seeding | 73,250 | SY | $ 1.00 | $ 73,250 |
| 22 | FDOT | Sodding | 31,400 | SY | $ 3.00 | $ 94,200 |
| 23 | FDOT | Directional Signage - Roadway | 5 | EA | $ 500.00 | $ 2,500 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$ 2,686,800*** |
| 24 | | Design / Permitting Service Fees | 10% | | | $ 268,700 |
| 25 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 403,000 |
| 26 | | Contingency | 20% | | | $ 537,400 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$ 3,895,900*** |

## C.2. Medium-Term CIP

***LAKELAND LINDER REGIONAL AIRPORT (LAL)***

**LAKELAND, FLORIDA**

## CONCEPTUAL ESTIMATE SUMMARY

## *AIRFIELD PROJECTS - MID RANGE (6-10 YEAR) CIP*

| | | | FY 2020 | | | Escalated to Program Year* | | |
|---|---|---|---|---|---|---|---|---|
| Project | Program Year | Project Description | Total Construction + Contingency + RI/QA Testing | Total Design Service Fees | Total Program 2020 Budget - Project Total | Total Construction + Contingency + RI/QA Testing | Total Design Service Fees | Total Program Year Budget - Project Total |
| **A8** | **Mid Range** | **Master Plan Update** | **$ -** | **$ 1,200,000** | **$ 1,200,000** | **$ -** | **$ 1,462,100** | **$ 1,462,100** |
| A8.1 | 2028 | Master Plan Update | $ - | $ 1,200,000 | $ 1,200,000 | $ - | $ 1,462,100 | $ 1,462,100 |
| **A9** | **Mid Range** | **Construct South Parallel Runway 10R/28L** | **$ 35,567,300** | **$ 2,775,600** | **$ 38,342,900** | **$ 42,415,700** | **$ 3,263,400** | **$ 45,679,100** |
| A9.1 | 2022 | Relocate VOR & Associated Environmental Assessment | $ 237,400 | $ 61,400 | $ 298,800 | $ 249,400 | $ 64,500 | $ 313,900 |
| A9.2 | 2023 | Conduct Environmental Assessment | $ - | $ 360,000 | $ 360,000 | $ - | $ 387,700 | $ 387,700 |
| A9.3 | 2024 | Relocate AWOS | $ 104,900 | $ 11,700 | $ 116,600 | $ 115,800 | $ 12,900 | $ 128,700 |
| A9.4 | 2027 | Construct Runway 10R/28L | $ 24,350,600 | $ 1,521,900 | $ 25,872,500 | $ 28,945,200 | $ 1,809,100 | $ 30,754,300 |
| A9.5 | 2027 | Construct Connector Taxiway from Runway 28L to Taxiway P | $ 4,849,200 | $ 359,200 | $ 5,208,400 | $ 5,764,200 | $ 427,000 | $ 6,191,200 |
| A9.6 | 2028 | Remove Taxiway D Pavement | $ 2,026,900 | $ 165,200 | $ 2,192,100 | $ 2,469,600 | $ 201,300 | $ 2,670,900 |
| A9.7 | 2028 | Remove Misc. Airfield Pavement and Buildings | $ 3,998,300 | $ 296,200 | $ 4,294,500 | $ 4,871,500 | $ 360,900 | $ 5,232,400 |

***LAKELAND LINDER REGIONAL AIRPORT (LAL)***

**LAKELAND, FLORIDA**

## CONCEPTUAL ESTIMATE SUMMARY

## *AIRFIELD PROJECTS - MID RANGE (6-10 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| ***Project*** | ***Program Year*** | ***Project Description*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program 2020 Budget - Project Total*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program Year Budget - Project Total*** |
| **A10** | **Mid Range** | **Construct South Parallel Taxiway to Runway 10R/28L** | **$ 21,799,200** | **$ 1,339,500** | **$ 23,138,700** | **$ 26,560,200** | **$ 1,722,300** | **$ 28,282,500** |
| A10.1 | 2028 | Construct Parallel Taxiway including Run-Up Apron | $ 18,579,300 | $ 1,101,000 | $ 19,680,300 | $ 22,637,100 | $ 1,409,400 | $ 24,046,500 |
| A10.2 | 2028 | Construct North/South Connector Taxiway from Taxiway E to South Parallel Taxiway | $ 3,219,900 | $ 238,500 | $ 3,458,400 | $ 3,923,100 | $ 312,900 | $ 4,236,000 |
| **A11** | **Mid Range** | **Remove Runway 5/23** | **$ 7,342,800** | **$ 587,400** | **$ 7,930,200** | **$ 9,440,300** | **$ 715,800** | **$ 10,156,100** |
| A11.1 | 2030 | Remove Runway 5/23 Pavement | $ 3,706,500 | $ 274,600 | $ 3,981,100 | $ 4,744,600 | $ 334,600 | $ 5,079,200 |
| A11.2 | 2030 | Remove Taxiway B Pavement and Construct Taxiway Connector between Runway 10L/27R | $ 2,358,900 | $ 192,200 | $ 2,551,100 | $ 3,019,600 | $ 234,200 | $ 3,253,800 |
| A11.3 | 2031 | Remove Taxiway C Pavement | $ 960,600 | $ 85,400 | $ 1,046,000 | $ 1,260,400 | $ 104,100 | $ 1,364,500 |
| A11.4 | 2031 | Remove Taxiway E Pavement from Runway 5 End to Taxiway E1 | $ 316,800 | $ 35,200 | $ 352,000 | $ 415,700 | $ 42,900 | $ 458,600 |
| ***SUMMARY*** | | ***TOTAL - AIRFIELD - MID RANGE (6-10 YEAR) CIP PROJECTS:*** | ***$ 64,709,300*** | ***$ 5,902,500*** | ***$ 70,611,800*** | ***$ 78,416,200*** | ***$ 7,163,600*** | ***$ 85,579,800*** |

* Escalation has been compounded to program year at a rate of 2.5% per year from FY 2020 and rounded.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A8.1 - MASTER PLAN UPDATE

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes an Airport Master Plan Update and new Airport Layout Plans for Lakeland International Airport.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| | | Planning Project Only - No Construction | | | | $0 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$0*** |
| | | Planning Fees | | | | $1,000,000 |
| | | Contingency | 20% | | | $200,000 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$1,200,000*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.1 - RELOCATE VOR & ASSOCIATED ENVIRONMENTAL ASSESSMENT

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes an Environmental Assessment for a relocated VOR (presumed to be a FONSI) and the relocation of the VOR equipment due to the construction of future parallel Runway 10R-28L.**

**Program Year:** **2022**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 3,100.00 | $ 3,100 |
| 2 | C-105 | Mobilization | 1 | LS | $ 15,700.00 | $ 15,700 |
| 3 | P-152 | Compacted Subgrade - 12" | 1,000 | CY | $ 20.00 | $ 20,000 |
| 4 | SP | Concrete Foundation for VOR | 500 | CY | $ 55.00 | $ 27,500 |
| 5 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC Allowance | 200 | LF | $ 86.00 | $ 17,200 |
| 6 | L-115 | Electrical Handhole | 5 | EA | $ 950.00 | $ 4,750 |
| 7 | L-109 | Transformer and Transformer Pad | 1 | ALLOW | $ 2,500.00 | $ 2,500 |
| 8 | VOR | Relocate VOR | 1 | ALLOW | $ 85,000.00 | $ 85,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 175,800*** |
| | | Design / Permitting Service Fees | 15% | | | $ 26,400 |
| | | Environmental Assessment (FONSI) | | | | $ 35,000 |
| | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 26,400 |
| | | Contingency | 20% | | | $ 35,200 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 298,800*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.2 - CONDUCT ENVIRONMENTAL ASSESSMENT

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes an Environmental Assesssment for the future parallel Runway 10R-28L and related taxiway connectors.**

**Program Year:** **2023**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| | | Environmental Planning Project Only - No Construction | | | | $0 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$0*** |
| | | Environmental Planning Fees | | | | $300,000 |
| | | Contingency | 20% | | | $60,000 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$360,000*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.3 - RELOCATE AWOS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes the relocation of the Automated Weather Observing System (AWOS) due to the construction of future parallel Runway 10R-28L.**

**Program Year:** **2024**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-105 | Mobilization | 1 | LS | $ 7,100.00 | $ 7,100 |
| 2 | P-152 | Compacted Subgrade - 12" | 500 | CY | $ 20.00 | $ 10,000 |
| 3 | SP | Concrete Foundation | 150 | CY | $ 55.00 | $ 8,250 |
| 4 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC, Allowance | 500 | LF | $ 86.00 | $ 43,000 |
| 5 | L-115 | Electrical Handhole | 3 | EA | $ 950.00 | $ 2,850 |
| 6 | AWOS | Relocate Existing AWOS | 1 | ALLOW | $ 6,500.00 | $ 6,500 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 77,700*** |
| | | Design / Permitting Service Fees | 15% | | | $ 11,700 |
| | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 11,700 |
| | | Contingency | 20% | | | $ 15,500 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 116,600*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.4 - CONSTRUCT RUNWAY 10R/28L

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new south parallel Runway 10R/28L (7,400 FT x 150 FT, approx. 1,110,000 SF). Assumed pavement section includes: 6" compacted subgrade, 8" stabilized subgrade, 15" limerock base material, and 4" hot mix asphalt surface course. Assumed pavement section for 25 FT runway shoulders (approx. 370,000 SF): 6" compacted subgrade, 6" stabilized subgrade, 12" limerock base material, and 4" hot mix asphalt surface course. Project includes REILs and PAPIs for both runway ends, MIRL lighting, marking and signage.**

**Program Year:** **2027**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 856,900.00 | $ 856,900 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 171,400.00 | $ 171,400 |
| 3 | C-105 | Mobilization | 1 | LS | $ 856,900.00 | $ 856,900 |
| 4 | P-101 | Existing Pavement Removal, Including Base Material | 7,500 | SY | $ 25.00 | $ 187,500 |
| 5 | P-151 | Clearing and Grubbing - Runway Safety Area | 49.50 | AC | $ 14,500.00 | $ 717,750 |
| 6 | P-151 | Tree Removal, Allowance | 1 | LS | $ 15,000.00 | $ 15,000 |
| 7 | P-152 | Grading - Runway Safety Area | 108,200 | CY | $ 25.00 | $ 2,705,000 |
| 8 | P-151 | Clearing and Grubbing - Full-Strength Area | 26.00 | AC | $ 14,500.00 | $ 377,000 |
| 9 | P-152 | Unclassified Excavation - 12" | 41,200 | CY | $ 20.00 | $ 824,000 |
| 10 | P-152 | Compacted Subgrade - 6" | 20,600 | CY | $ 4.00 | $ 82,400 |
| 11 | P-154 | Stabilized Subgrade Course - 8" | 123,400 | SY | $ 9.00 | $ 1,110,600 |
| 12 | P-211 | Limerock Rock Base Course - 15" | 51,400 | CY | $ 35.00 | $ 1,799,000 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 30,850 | GAL | $ 5.00 | $ 154,250 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 15,450 | GAL | $ 5.00 | $ 77,250 |
| 15 | P-403 | Hot Mix Asphalt Surface Course - 4" | 28,500 | TN | $ 120.00 | $ 3,420,000 |
| 16 | P-151 | Clearing and Grubbing / Stripping (Shoulder) | 8.50 | AC | $ 14,500.00 | $ 123,250 |
| 17 | P-152 | Unclassified Excavation - 12" (Shoulder) | 13,700 | CY | $ 20.00 | $ 274,000 |
| 18 | P-152 | Compacted Subgrade - 6" (Shoulder) | 6,900 | CY | $ 4.00 | $ 27,600 |
| 19 | P-154 | Stabilized Subgrade Couse - 6" (Shoulder) | 41,200 | SY | $ 9.00 | $ 370,800 |
| 20 | P-211 | Limerock Base Course - 12" (Shoulder) | 13,700 | CY | $ 55.00 | $ 753,500 |
| 21 | P-602 | Emulsified Asphalt Prime Coast (Shoulder) | 10,300 | GAL | $ 5.00 | $ 51,500 |
| 22 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 5,150 | GAL | $ 5.00 | $ 25,750 |
| 23 | P-403 | Hot Mix Asphalt Surface Course - 4" (Shoulder) | 9,600 | TN | $ 120.00 | $ 1,152,000 |
| 24 | P-620 | Runway Threshold Markings | 25,500 | SF | $ 2.00 | $ 51,000 |
| 25 | P-620 | Runway Landing Designator | 3,900 | SF | $ 2.00 | $ 7,800 |
| 26 | P-620 | Taxiway Center Line Markings | 14,000 | SF | $ 2.00 | $ 28,000 |
| 27 | P-620 | Taxiway Edge Line Markings | 45,000 | SF | $ 2.00 | $ 90,000 |
| 28 | P-620 | Touchdown Zone Markings | 25,200 | SF | $ 2.00 | $ 50,400 |
| 29 | D-701 | Reinforced Concrete Pipe | 2,500 | LF | $ 118.00 | $ 295,000 |
| 30 | D-752 | Concrete End Sections | 16 | EA | $ 1,000.00 | $ 16,000 |
| 31 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 41,600 | LF | $ 2.00 | $ 83,200 |
| 32 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 20,800 | LF | $ 2.00 | $ 41,600 |
| 33 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 14,100 | LF | $ 16.00 | $ 225,600 |
| 34 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 750 | LF | $ 86.00 | $ 64,500 |
| 35 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 200 | LF | $ 100.00 | $ 20,000 |
| 36 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 42 | EA | $ 157.00 | $ 6,531 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.4 - CONSTRUCT RUNWAY 10R/28L

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new south parallel Runway 10R/28L (7,400 FT x 150 FT, approx. 1,110,000 SF). Assumed pavement section includes: 6" compacted subgrade, 8" stabilized subgrade, 15" limerock base material, and 4" hot mix asphalt surface course. Assumed pavement section for 25 FT runway shoulders (approx. 370,000 SF): 6" compacted subgrade, 6" stabilized subgrade, 12" limerock base material, and 4" hot mix asphalt surface course. Project includes REILs and PAPIs for both runway ends, MIRL lighting, marking and signage.**

**Program Year:** **2027**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 37 | L-115 | Electrical Handhole | 38 | EA | $ 950.00 | $ 36,100 |
| 38 | L-125 | Runway Distance Remaining Sign and Foundation | 12 | EA | $ 5,500.00 | $ 66,000 |
| 39 | L-125 | Airfield Guidance Sign and Foundation | 10 | EA | $ 14,000.00 | $ 140,000 |
| 40 | L-125 | Precision Approach Path Indicators (PAPIs) | 2 | SETS | $ 35,000.00 | $ 70,000 |
| 41 | L-849 | Runway End Identification Lights (REILs), Foundations, Power Station, Cabliings and Lightning Protection/Grounding System | 4 | SETS | $ 12,500.00 | $ 50,000 |
| 42 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 75,000.00 | $ 75,000 |
| 43 | L-125 | Elevated Runway Threshold/End Fixture with Transformer | 20 | EA | $ 1,355.00 | $ 27,100 |
| 44 | L-125 | Elevated Runway Edge Fixture with Transformer | 150 | EA | $ 750.00 | $ 112,500 |
| 45 | T-905 | Topsoil | 108,200 | CY | $ 2.00 | $ 216,400 |
| 46 | T-904 | Sodding - Runway Safety Area | 324,600 | SY | $ 3.00 | $ 973,800 |
| 47 | T-904 | Seeding - Outside Runway Safety Area | 144,000 | SY | $ 1.00 | $ 144,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 19,023,900*** |
| 48 | | Design / Permitting Service Fees | 8% | | | $ 1,521,900 |
| 49 | | Resident Inspection / Quality Assurance Testing | 8% | | | $ 1,521,900 |
| 50 | | Contingency | 20% | | | $ 3,804,800 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 25,872,500*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.5 - CONSTRUCT CONNECTOR TAXIWAY FROM RUNWAY 28L TO TAXIWAY P

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of four (4) new connector Taxiways (approx. 190,600 SF) from Runway 10R/28L to Taxiway P. Assumed pavement section includes: 6" compacted subgrade, 8" stabilized subgrade, 15" limerock base material, and 4" hot mix asphalt surface course. This project includes the removal of existing pavement (approx. 37,700 SF), marking, lighting and signage of new taxiways.**

**Program Year:** **2027**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 161,800.00 | $ 161,800 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 32,400.00 | $ 32,400 |
| 3 | C-105 | Mobilization | 1 | LS | $ 161,800.00 | $ 161,800 |
| 4 | P-101 | Existing Pavement Removal, Including Base Material | 4,200 | SY | $ 25.00 | $ 105,000 |
| 5 | P-151 | Clearing and Grubbing / Stripping | 8.50 | AC | $ 14,500.00 | $ 123,250 |
| 6 | P-152 | Embankment | 8,000 | CY | $ 20.00 | $ 160,000 |
| 7 | P-101 | Saw-Cut and Connect to Existing Pavement | 3,200 | LF | $ 25.00 | $ 80,000 |
| 8 | P-152 | Unclassified Excavation - 12" | 7,100 | CY | $ 20.00 | $ 142,000 |
| 9 | P-152 | Compacted Subgrade - 6" | 3,500 | CY | $ 4.00 | $ 14,000 |
| 10 | P-154 | Stabilized Subgrade Course - 8" | 21,200 | SY | $ 9.00 | $ 190,800 |
| 11 | P-211 | Limerock Base Course - 15" | 8,800 | CY | $ 55.00 | $ 484,000 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 5,300 | GAL | $ 5.00 | $ 26,500 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 2,700 | GAL | $ 5.00 | $ 13,500 |
| 14 | P-403 | Hot Mix Asphalt Surface Course - 4" | 4,900 | TN | $ 120.00 | $ 588,000 |
| 15 | P-620 | Surface Painted Holding Position Signs | 960 | SF | $ 2.00 | $ 1,920 |
| 16 | P-620 | Taxiway Hold Line Marking | 3,200 | SF | $ 2.00 | $ 6,400 |
| 17 | P-620 | Taxiway Center Line Markings | 3,200 | SF | $ 2.00 | $ 6,400 |
| 18 | P-620 | Taxiway Edge Line Markings | 9,300 | SF | $ 2.00 | $ 18,600 |
| 19 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 20 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 21 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 76,300 | LF | $ 2.00 | $ 152,600 |
| 22 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 38,200 | LF | $ 2.00 | $ 76,400 |
| 23 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 12,400 | LF | $ 16.00 | $ 198,400 |
| 24 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 800 | LF | $ 86.00 | $ 68,800 |
| 25 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 3,700 | LF | $ 100.00 | $ 370,000 |
| 26 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 76 | EA | $ 157.00 | $ 11,995 |
| 27 | L-115 | Electrical Handhole | 40 | EA | $ 950.00 | $ 38,000 |
| 28 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 25,000.00 | $ 25,000 |
| 29 | L-125 | Airfield Guidance Sign and Foundation | 8 | EA | $ 14,000.00 | $ 112,000 |
| 30 | L-125 | Taxiway Edge Fixture with Transformer | 80 | EA | $ 700.00 | $ 56,000 |
| 31 | T-905 | Topsoil | 2,500 | CY | $ 2.00 | $ 5,000 |
| 32 | T-904 | Sodding | 7,000 | SY | $ 3.00 | $ 21,000 |
| 33 | T-904 | Seeding | 16,400 | SY | $ 1.00 | $ 16,400 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 3,592,000*** |
| 31 | | Design / Permitting Service Fees | 10% | | | $ 359,200 |
| 32 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 538,800 |
| 33 | | Contingency | 20% | | | $ 718,400 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 5,208,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.6 - REMOVE TAXIWAY D PAVEMENT

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of existing Taxiway D pavement (approx. 341,300 SF), portion of existing Taxiway S (approx. 14,200 SF) and demolition of electrical equipment in the area.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 14,200.00 | $14,200 |
| 2 | C-105 | Mobilization | 1 | LS | $ 70,800.00 | $70,800 |
| 3 | P-101 | Existing Pavement Removal, Including Base Material | 39,500 | SY | $ 25.00 | $987,500 |
| 4 | P-152 | Unclassified Excavation - 12" | 13,200 | CY | $ 20.00 | $264,000 |
| 5 | T-905 | Topsoil | 13,200 | CY | $ 2.00 | $26,400 |
| 6 | T-904 | Sodding | 39,500 | SY | $ 3.00 | $118,500 |
| 7 | L-100 | Electrical Demolition | 1 | LS | $ 20,000.00 | $20,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$1,501,400*** |
| 8 | | Design / Permitting Service Fees | 11% | | | $165,200 |
| 9 | | Resident Inspection / Quality Assurance Testing | 15% | | | $225,200 |
| 10 | | Contingency | 20% | | | $300,300 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$2,192,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A9.7 - REMOVE MISC. AIRFIELD PAVEMENT AND BUILDINGS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of existing Airfield miscellaneous pavement (approx. 384,600 SF) and existing building/miscellaneous structures (approx. 140,200 SF).**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 27,900.00 | $27,900 |
| 2 | C-105 | Mobilization | 1 | LS | $ 139,700.00 | $139,700 |
| 3 | P-101 | Existing Miscellaneous Airfield Pavement Removal, Including Base Material | 42,700 | SY | $ 25.00 | $1,067,500 |
| 4 | FDOT | Demolish Existing Buildings and Miscellaneous Structures | 140,300 | SF | $ 2.00 | $280,600 |
| 5 | FDOT | Demolish Building Slab/Foundation | 140,300 | SF | $ 6.00 | $841,800 |
| 6 | P-152 | Unclassified Excavation | 19,500 | CY | $ 20.00 | $390,000 |
| 7 | T-905 | Topsoil | 19,500 | CY | $ 2.00 | $39,000 |
| 8 | T-904 | Sodding | 58,400 | SY | $ 3.00 | $175,200 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$2,961,700*** |
| 9 | | Design / Permitting Service Fees | 10% | | | $296,200 |
| 10 | | Resident Inspection / Quality Assurance Testing | 15% | | | $444,300 |
| 11 | | Contingency | 20% | | | $592,300 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$4,294,500*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A10.1 - CONSTRUCT PARALLEL TAXIWAY INCLUDING RUN-UP APRON

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a new taxiway with connectors (approx. 778,100 SF) parallel to the new Runway 10R/28L including a run-up apron (approx. 284,200 SF). Assumed pavement section includes: 6" compacted subgrade, 8" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course. This project also consists of the removal of existing runway pavement and miscellaneous pavement (approx. 53000 SF), 2" milling of existing Taxiways (approx. 30000 SF) with a 2" hot mix asphalt overlay. Project includes marking, lighting and signage.**

**Program Year:** **2030**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 619,900.00 | $ 619,900 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 124,000.00 | $ 124,000 |
| 3 | C-105 | Mobilization | 1 | LS | $ 619,900.00 | $ 619,900 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 63.00 | AC | $ 14,500.00 | $ 913,500 |
| 5 | P-152 | Embankment | 66,300 | CY | $ 20.00 | $ 1,326,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 1,000 | LF | $ 25.00 | $ 25,000 |
| 7 | P-101 | Existing Pavement Removal, Including Base Material | 5,900 | SY | $ 25.00 | $ 147,500 |
| 8 | P-101 | Existing Asphalt Cold Milling - 2" | 3,400 | SY | $ 10.00 | $ 34,000 |
| 9 | P-152 | Unclassified Excavation - 12" | 38,300 | CY | $ 20.00 | $ 766,000 |
| 10 | P-152 | Compacted Subgrade - 6" | 19,200 | CY | $ 4.00 | $ 76,800 |
| 11 | P-154 | Stabilized Subgrade Course - 8" | 114,700 | SY | $ 9.00 | $ 1,032,300 |
| 12 | P-211 | Limerock Base Course - 15" | 47,800 | CY | $ 55.00 | $ 2,629,000 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 28,700 | GAL | $ 5.00 | $ 143,500 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 14,400 | GAL | $ 5.00 | $ 72,000 |
| 15 | P-403 | Hot Mix Asphalt Surface Course - 4" | 26,700 | TN | $ 120.00 | $ 3,204,000 |
| 16 | P-603 | Emulsified Asphalt Tack Coat for Milled Areas | 450 | GAL | $ 5.00 | $ 2,250 |
| 17 | P-403 | Hot Mix Asphalt Surface Course - 2" for Milled Areas | 400 | TN | $ 120.00 | $ 48,000 |
| 18 | P-620 | Surface Painted Holding Position Signs | 1,200 | SF | $ 2.00 | $ 2,400 |
| 19 | P-620 | Taxiway Hold Line Marking | 4,000 | SF | $ 2.00 | $ 8,000 |
| 20 | P-620 | Taxiway Center Line Markings | 15,000 | SF | $ 2.00 | $ 30,000 |
| 21 | P-620 | Taxiway Edge Line Markings | 21,800 | SF | $ 2.00 | $ 43,600 |
| 22 | D-701 | Reinforced Concrete Pipe | 2,500 | LF | $ 118.00 | $ 295,000 |
| 23 | D-752 | Concrete End Sections | 16 | EA | $ 1,000.00 | $ 16,000 |
| 24 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 55,900 | LF | $ 2.00 | $ 111,800 |
| 25 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 28,000 | LF | $ 2.00 | $ 56,000 |
| 26 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 20,000 | LF | $ 16.00 | $ 320,000 |
| 27 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 2,300 | LF | $ 86.00 | $ 197,800 |
| 28 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,100 | LF | $ 100.00 | $ 110,000 |
| 29 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 56 | EA | $ 157.00 | $ 8,792 |
| 30 | L-115 | Electrical Handhole | 36 | EA | $ 950.00 | $ 34,200 |
| 31 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 65,000.00 | $ 65,000 |
| 32 | L-125 | Airfield Guidance Sign and Foundation | 12 | EA | $ 14,000.00 | $ 168,000 |
| 33 | L-125 | Taxiway Edge Fixture with Transformer | 220 | EA | $ 700.00 | $ 154,000 |
| 34 | T-905 | Topsoil | 19,900 | CY | $ 2.00 | $ 39,800 |
| 35 | T-904 | Seeding | 139,300 | SY | $ 1.00 | $ 139,300 |
| 36 | T-904 | Sodding | 59,700 | SY | $ 3.00 | $ 179,100 |
| | | | | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | ***$ 13,762,400*** |
| 37 | | Design / Permitting Service Fees | 8% | | | $ 1,101,000 |
| 38 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 2,064,400 |
| 39 | | Contingency | 20% | | | $ 2,752,500 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$ 19,680,300*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A10.2 - CONSTRUCT NORTH/SOUTH CONNECTOR TAXIWAY FROM TAXIWAY E TO SOUTH PARALLEL TAXIWAY

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of two connector taxiways of 775 FT and 750 FT (approx. 189,000 SF) connecting taxiway E to the south parallel taxiway. Taxiway S which connects taxiway E to the south parallel taxiway includes milled overlay of 2" (approx 87,100 SF). Assumed new pavement section includes: 6" compacted subgrade, 8" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course. Project includes marking, lighting and signage.**

**Program Year:** **2031**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 107,400.00 | $ 107,400 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 21,500.00 | $ 21,500 |
| 3 | C-105 | Mobilization | 1 | LS | $ 107,400.00 | $ 107,400 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 11.00 | AC | $ 14,500.00 | $ 159,500 |
| 5 | P-152 | Embankment | 14,300 | CY | $ 20.00 | $ 286,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 2,100 | LF | $ 25.00 | $ 52,500 |
| 7 | P-101 | Mill Existing Asphalt - 2" | 9,700 | SY | $ 10.00 | $ 97,000 |
| 8 | P-152 | Unclassified Excavation - 12" | 3,800 | CY | $ 20.00 | $ 76,000 |
| 9 | P-152 | Compacted Subgrade - 6" | 1,900 | CY | $ 4.00 | $ 7,600 |
| 10 | P-154 | Stabilized Subgrade Course - 8" | 11,400 | SY | $ 9.00 | $ 102,600 |
| 11 | P-211 | Limerock Base Course - 15" | 4,750 | CY | $ 55.00 | $ 261,250 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 2,900 | GAL | $ 5.00 | $ 14,500 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 1,500 | GAL | $ 5.00 | $ 7,500 |
| 14 | P-403 | Hot Mix Asphalt Surface Course - 4" | 2,700 | TN | $ 120.00 | $ 324,000 |
| 15 | P-603 | Emulsified Asphalt Tack Coat for Milled Areas | 1,250 | GAL | $ 5.00 | $ 6,250 |
| 16 | P-403 | Hot Mix Asphalt Surface Course - 2" for Milled Areas | 1,150 | TN | $ 120.00 | $ 138,000 |
| 17 | P-620 | Taxiway Center Line Markings | 3,100 | SF | $ 2.00 | $ 6,200 |
| 18 | P-620 | Taxiway Edge Line Markings | 9,400 | SF | $ 2.00 | $ 18,800 |
| 19 | D-701 | Reinforced Concrete Pipe | 800 | LF | $ 118.00 | $ 94,400 |
| 20 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 21 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 19,000 | LF | $ 2.00 | $ 38,000 |
| 22 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 9,500 | LF | $ 2.00 | $ 19,000 |
| 23 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,800 | LF | $ 16.00 | $ 28,800 |
| 24 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,700 | LF | $ 86.00 | $ 146,200 |
| 25 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 1,100 | LF | $ 82.00 | $ 90,200 |
| 26 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 19 | EA | $ 157.00 | $ 2,983 |
| 27 | L-115 | Electrical Handhole | 16 | EA | $ 917.00 | $ 14,672 |
| 28 | L-125 | Remove and Re-install Existing Taxiway Edge Fixture with New Transformer | 8 | EA | $ 539.00 | $ 4,312 |
| 29 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 25,000.00 | $ 25,000 |
| 30 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 31 | L-125 | Taxiway Edge Fixture with Transformer | 25 | EA | $ 659.00 | $ 16,475 |
| 32 | T-905 | Topsoil | 4,300 | CY | $ 2.00 | $ 8,600 |
| 33 | T-904 | Seeding | 29,950 | SY | $ 1.00 | $ 29,950 |
| 34 | T-904 | Sodding | 12,850 | SY | $ 3.00 | $ 38,550 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 2,385,100*** |
| 35 | | Design / Permitting Service Fees | 10% | | | $ 238,500 |
| 36 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 357,800 |
| 37 | | Contingency | 20% | | | $ 477,000 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 3,458,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A11.1 - REMOVE RUNWAY 5/23 PAVEMENT

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of existing Runway 5/23 pavement (approx. 653,000 SF) and demolition of electrical equipment in the area.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 25,900.00 | $25,900 |
| 2 | C-105 | Mobilization | 1 | LS | $ 129,500.00 | $129,500 |
| 3 | P-101 | Existing Pavement Removal, Including Base Material | 72,600 | SY | $ 25.00 | $1,815,000 |
| 4 | P-152 | Unclassified Excavation | 24,200 | CY | $ 20.00 | $484,000 |
| 5 | T-905 | Topsoil | 24,200 | CY | $ 2.00 | $48,400 |
| 6 | T-904 | Sodding | 72,600 | SY | $ 3.00 | $217,800 |
| 7 | L-100 | Electrical Demolition | 1 | LS | $ 25,000.00 | $25,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$2,745,600*** |
| 8 | | Design / Permitting Service Fees | 10% | | | $274,600 |
| 9 | | Resident Inspection / Quality Assurance Testing | 15% | | | $411,800 |
| 10 | | Contingency | 20% | | | $549,100 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$3,981,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A11.2 - REMOVE TAXIWAY B PAVEMENT AND CONSTRUCT TAXIWAY CONNECTOR BETWEEN RUNWAY 10L/27R AND TAXIWAY D

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of Taxiway B pavement (approx. 115,300 SF) and construction of 450 FT connector taxiway between Runway 10L/27R (approx. 64,600 SF). Assumed pavement section includes: 6" compacted subgrade, 8" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course. Project includes marking, lighting and signage.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 78,700.00 | $ 78,700 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 15,700.00 | $ 15,700 |
| 3 | C-105 | Mobilization | 1 | LS | $ 78,700.00 | $ 78,700 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 5.40 | AC | $ 14,500.00 | $ 78,300 |
| 5 | P-152 | Embankment | 6,300 | CY | $ 20.00 | $ 126,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 1,250 | LF | $ 25.00 | $ 31,250 |
| 7 | P-152 | Unclassified Excavation - 12" | 2,400 | CY | $ 20.00 | $ 48,000 |
| 8 | P-152 | Compacted Subgrade - 6" | 1,200 | CY | $ 4.00 | $ 4,800 |
| 9 | P-154 | Stabilized Subgrade Course - 8" | 7,200 | SY | $ 9.00 | $ 64,800 |
| 10 | P-211 | Limerock Base Course - 15" | 3,000 | CY | $ 55.00 | $ 165,000 |
| 11 | P-602 | Emulsified Asphalt Prime Coat | 1,800 | GAL | $ 5.00 | $ 9,000 |
| 12 | P-603 | Emulsified Asphalt Tack Coat | 900 | GAL | $ 5.00 | $ 4,500 |
| 13 | P-403 | Hot Mix Asphalt Surface Course - 4" | 1,700 | TN | $ 120.00 | $ 204,000 |
| 14 | P-620 | Surface Painted Holding Position Signs | 240 | SF | $ 2.00 | $ 480 |
| 15 | P-620 | Taxiway Hold Line Marking | 800 | SF | $ 2.00 | $ 1,600 |
| 16 | P-620 | Taxiway Center Line Markings | 1,000 | SF | $ 2.00 | $ 2,000 |
| 17 | P-620 | Taxiway Edge Line Markings | 3,000 | SF | $ 2.00 | $ 6,000 |
| 18 | P 101 | Existing Pavement Removal, Including Base Material | 12,900 | SY | $ 25.00 | $ 322,500 |
| 19 | P-152 | Unclassified Excavation | 4,300 | CY | $ 20.00 | $ 86,000 |
| 20 | D-701 | Reinforced Concrete Pipe | 250 | LF | $ 118.00 | $ 29,500 |
| 21 | D-752 | Concrete End Sections | 2 | EA | $ 1,000.00 | $ 2,000 |
| 22 | L-100 | Electrical Demolition | 1 | LS | $ 5,000.00 | $ 5,000 |
| 23 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 18,000 | LF | $ 2.00 | $ 36,000 |
| 24 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 9,000 | LF | $ 2.00 | $ 18,000 |
| 25 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 3,000 | LF | $ 16.00 | $ 48,000 |
| 26 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 800 | LF | $ 86.00 | $ 68,800 |
| 27 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 600 | LF | $ 100.00 | $ 60,000 |
| 28 | L-108 | Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 18 | EA | $ 157.00 | $ 2,826 |
| 29 | L-115 | Electrical Handhole | 10 | EA | $ 950.00 | $ 9,500 |
| 30 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 31 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 15,000.00 | $ 15,000 |
| 32 | L-125 | Remove and Re-install Existing Taxiway Edge Fixture with New Transformer | 10 | EA | $ 539.00 | $ 5,390 |
| 33 | L-125 | Taxiway Edge Fixture with Transformer | 15 | EA | $ 700.00 | $ 10,500 |
| 34 | T-905 | Topsoil | 6,200 | CY | $ 2.00 | $ 12,400 |
| 35 | T-904 | Seeding | 13,250 | SY | $ 1.00 | $ 13,250 |
| 36 | T-904 | Sodding | 18,600 | SY | $ 3.00 | $ 55,800 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 1,747,300*** |
| 37 | | Design / Permitting Service Fees | 11% | | | $ 192,200 |
| 38 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 262,100 |
| 39 | | Contingency | 20% | | | $ 349,500 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 2,551,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A11.3 - REMOVE TAXIWAY C PAVEMENT

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of existing Taxiway C pavement (approx. 159,600 SF) and removal of electrical equipment in the area.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 12,700.00 | $12,700 |
| 2 | C-105 | Mobilization | 1 | LS | $ 63,500.00 | $63,500 |
| 3 | P-101 | Existing Pavement Removal, Including Base Material | 17,800 | SY | $ 25.00 | $445,000 |
| 4 | P-152 | Unclassified Excavation | 6,000 | CY | $ 20.00 | $120,000 |
| 5 | T-905 | Topsoil | 6,000 | CY | $ 2.00 | $12,000 |
| 6 | T-904 | Sodding | 17,800 | SY | $ 3.00 | $53,400 |
| 7 | L-100 | Electrical Demolition | 1 | LS | $ 5,000.00 | $5,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$711,600*** |
| 8 | | Design / Permitting Service Fees | 12% | | | $85,400 |
| 9 | | Resident Inspection / Quality Assurance Testing | 15% | | | $106,700 |
| 10 | | Contingency | 20% | | | $142,300 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$1,046,000*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A11.4 - REMOVE TAXIWAY E PAVEMENT FROM RUNWAY 5 END TO TAXIWAY E1

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes removal of existing Taxiway E pavement from Runway 5 end to Taxiway E1 (approx. 51,500 SF) and demolition of electrical equipment in the area.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 4,200.00 | $4,200 |
| 2 | C-105 | Mobilization | 1 | LS | $ 21,000.00 | $21,000 |
| 3 | P-101 | Existing Pavement Removal, Including Base Material | 5,700 | SY | $ 25.00 | $142,500 |
| 4 | P-152 | Unclassified Excavation | 2,000 | CY | $ 20.00 | $40,000 |
| 5 | T-905 | Topsoil | 2,000 | CY | $ 2.00 | $4,000 |
| 6 | T-904 | Sodding | 6,000 | SY | $ 3.00 | $18,000 |
| 7 | L-100 | Electrical Demolition | 1 | LS | $ 5,000.00 | $5,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$234,700*** |
| 8 | | Design / Permitting Service Fees | 15% | | | $35,200 |
| 9 | | Resident Inspection / Quality Assurance Testing | 15% | | | $35,200 |
| 10 | | Contingency | 20% | | | $46,900 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$352,000*** |

*LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)*

LAKELAND, FLORIDA

## CONCEPTUAL ESTIMATE SUMMARY

## *LANDSIDE PROJECTS - MID RANGE (6-10 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| *Project* | *Program Year* | *Project Description* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program 2020 Budget - Project Total* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program Year Budget - Project Total* |
| **L4** | **Mid Range** | **Construct Executive Aviation Center** | **$ 33,462,400** | **$ 2,227,800** | **$ 35,690,200** | **$ 37,859,600** | **$ 2,520,600** | **$ 40,380,200** |
| L4.1 | 2025 | Construct Apron and Taxilane Connector to Taxiway A | $ 4,516,000 | $ 334,500 | $ 4,850,500 | $ 5,109,400 | $ 378,500 | $ 5,487,900 |
| L4.2 | 2025 | Relocate Two-Story FBO Building | $ 7,851,000 | $ 490,700 | $ 8,341,700 | $ 8,882,700 | $ 555,200 | $ 9,437,900 |
| L4.3 | 2025 | Relocate Two (2)-20,000 SF Hangar Buildings | $ 10,803,100 | $ 640,200 | $ 11,443,300 | $ 12,222,700 | $ 724,300 | $ 12,947,000 |
| L4.4 | 2025 | Construct Two (2)-9,375 SF. Hangars | $ 4,977,600 | $ 368,700 | $ 5,346,300 | $ 5,631,700 | $ 417,200 | $ 6,048,900 |
| L4.5 | 2025 | Construct Two (2)-10,125 SF. Hangars | $ 5,314,700 | $ 393,700 | $ 5,708,400 | $ 6,013,100 | $ 445,400 | $ 6,458,500 |
| **L5** | **Mid Range** | **Construct GA Hangar Access Road** | **$ 1,774,600** | **$ 131,500** | **$ 1,906,100** | **$ 2,007,800** | **$ 148,800** | **$ 2,156,600** |
| L5.1 | 2025 | Construct Access Road from Existing ATCT Access Road to Existing and Proposed Buildings | $ 1,774,600 | $ 131,500 | $ 1,906,100 | $ 2,007,800 | $ 148,800 | $ 2,156,600 |
| **L6** | **Short Range** | **Construct 5,625 SF Hangar (West of Taxilane G)** | **$ 7,217,200** | **$ 534,600** | **$ 7,751,800** | **$ 8,804,200** | **$ 620,000** | **$ 9,424,200** |
| L6.1 | 2026 | Construct Two (2) 5,625 SF Hangars to the West of Taxilane G | $ 3,608,600 | $ 267,300 | $ 3,875,900 | $ 4,184,900 | $ 310,000 | $ 4,494,900 |
| L6.2 | 2030 | Construct Two (2) 5,625 SF Hangars to the West of Taxilane G | $ 3,608,600 | $ 267,300 | $ 3,875,900 | $ 4,619,300 | $ 310,000 | $ 4,929,300 |
| **L7** | **Mid Range** | **Expand Taxilane H Nested T-Hangars** | **$ 1,098,000** | **$ 97,600** | **$ 1,195,600** | **$ 1,305,200** | **$ 110,400** | **$ 1,415,600** |
| L7.1 | 2027 | Add Additional Four (4) Units Onto Each of the Three (3) Existing T-Hangar Buildings | $ 1,098,000 | $ 97,600 | $ 1,195,600 | $ 1,305,200 | $ 110,400 | $ 1,415,600 |
| **L8** | **Mid Range** | **Construct T-Hangars** | **$ 5,507,200** | **$ 407,900** | **$ 5,915,100** | **$ 6,546,300** | **$ 484,900** | **$ 7,031,200** |
| L8.1 | 2027 | Add One (1)-18-unit, One (1)-16-unit, and One (1)-14-unit Structure South of Existing T-Hangars | $ 5,507,200 | $ 407,900 | $ 5,915,100 | $ 6,546,300 | $ 484,900 | $ 7,031,200 |

*LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)*

LAKELAND, FLORIDA

## CONCEPTUAL ESTIMATE SUMMARY

## *LANDSIDE PROJECTS - MID RANGE (6-10 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| *Project* | *Program Year* | *Project Description* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program 2020 Budget - Project Total* | *Total Construction + Contingency + RI/QA Testing* | *Total Design Service Fees* | *Total Program Year Budget - Project Total* |
| **L9** | **Mid Range** | **Fuel Farm Expansion** | **$ 5,379,400** | **$ 417,500** | **$ 5,796,900** | **$ 6,554,300** | **$ 508,700** | **$ 7,063,000** |
| L9.1 | 2028 | Construct Necessary Pavement Infrastructure | $ 1,288,500 | $ 114,500 | $ 1,403,000 | $ 1,569,900 | $ 139,500 | $ 1,709,400 |
| L9.2 | 2028 | Install the Following Fuel Storage Tanks: Six (6)-50,000 Gallon Tanks, Two (2)-12,000 Gallon Tanks, Two (2)-250,000 Gallon Tanks | $ 4,090,900 | $ 303,000 | $ 4,393,900 | $ 4,984,400 | $ 369,200 | $ 5,353,600 |
| **L10** | **Mid Range** | **East Terminal Expansion** | **$ 37,945,200** | **$ 2,335,100** | **$ 40,280,300** | **$ 47,388,400** | **$ 2,916,200** | **$ 50,304,600** |
| L10.1 | 2029 | Expand Terminal to the East | $ 37,945,200 | $ 2,335,100 | $ 40,280,300 | $ 47,388,400 | $ 2,916,200 | $ 50,304,600 |
| **L11** | **Mid Range** | **Construct 5,625 SF Hangars (Southwest of existing FBO Apron)** | **$ 11,388,200** | **$ 674,900** | **$ 12,063,100** | **$ 14,222,300** | **$ 842,900** | **$ 15,065,200** |
| L11.1 | 2029 | Construct Eight (8)-5,625 SF Hangars (Southwest of Existing FBO Apron) | $ 11,388,200 | $ 674,900 | $ 12,063,100 | $ 14,222,300 | $ 842,900 | $ 15,065,200 |
| ***SUMMARY*** | | ***TOTAL - LANDSIDE - MID RANGE (6-10 YEAR) CIP PROJECTS:*** | ***$ 103,772,200*** | ***$ 6,826,900*** | ***$ 110,599,100*** | ***$ 124,688,100*** | ***$ 8,152,500*** | ***$ 132,840,600*** |

* Escalation has been compounded to program year at a rate of 2.5% per year from FY 2020 and rounded.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L4.1 - CONSTRUCT APRON AND TAXILANE CONNECTOR TO TAXIWAY A

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved aircraft apron, approximately 480 FT long by 540 FT wide (approx. 270,800 SF) connecting new aircraft hangars to existing Taxiway A. Assumed pavement section includes: 17” limerock base, 12" stabilized subgrade, and 5" hot mix asphalt surface course. Project includes marking, lighting and signage.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 150,700.00 | $ 150,700 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 30,100.00 | $ 30,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 150,700.00 | $ 150,700 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 7.2 | AC | $ 14,500.00 | $ 104,400 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 15 | SY | $ 25.00 | $ 375 |
| 6 | P-152 | Unclassified Excavation | 5,000 | CY | $ 20.00 | $ 100,000 |
| 7 | P-152 | Embankment | 12,900 | CY | $ 20.00 | $ 258,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 5" | 8,800 | TN | $ 120.00 | $ 1,056,000 |
| 9 | P-211 | Limerock Base - 17" | 14,200 | CY | $ 55.00 | $ 781,000 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 30,100 | SY | $ 9.00 | $ 270,900 |
| 11 | FDOT | Compacted Subgrade - 12" | 30,100 | SY | $ 4.00 | $ 120,400 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 7,500 | GAL | $ 5.00 | $ 37,500 |
| 13 | P-603 | Emulsified Asphalt Tack Coat - 1 Layer per 2" Asphalt | 3,800 | GAL | $ 5.00 | $ 19,000 |
| 14 | P-620 | Pavement Marking | 1,700 | LF | $ 2.00 | $ 3,400 |
| 15 | L-108 | No. 8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 600 | LF | $ 2.00 | $ 1,200 |
| 16 | L-108 | No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed Above the Duct Bank or Conduit, Including Connections/Terminations | 600 | LF | $ 2.00 | $ 1,200 |
| 17 | L-110 | Concrete Encased Electrical Conduit, 1 Way, 4-Inch, Schedule 40 PVC | 600 | LF | $ 86.00 | $ 51,600 |
| 18 | L-125 | Airfield Guidance Sign and Foundation | 8 | EA | $ 9,500.00 | $ 76,000 |
| 19 | T-905 | Topsoil | 3,900 | CY | $ 2.00 | $ 7,800 |
| 20 | T-904 | Sodding | 11,600 | SY | $ 3.00 | $ 34,800 |
| 21 | T-904 | Seeding | 27,100 | SY | $ 1.00 | $ 27,100 |
| 22 | D-701 | Reinforced Concrete Pipe | 500 | LF | $ 118.00 | $ 59,000 |
| 23 | D-752 | Concrete End Sections | 4 | EA | $ 1,000.00 | $ 4,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$ 3,345,200*** |
| 24 | | Design / Permitting Service Fees | 10% | | | $ 334,500 |
| 25 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 501,800 |
| 26 | | Contingency | 20% | | | $ 669,000 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 4,850,500*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L4.2 - RELOCATE TWO-STORY FBO BUILDING

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a partial two-story FBO building (approx. 15,000 SF) to the north of the new aircraft apron and taxiway connector. Apron not included in this estimate.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 57,900.00 | $ 57,900 |
| 2 | C-105 | Mobilization | 1 | LS | $ 289,300.00 | $ 289,300 |
| 3 | P-151 | Clearing and Grubbing / Stripping | 0.4 | AC | $ 14,500.00 | $ 5,424 |
| 4 | P-152 | Unclassified Excavation | 300 | CY | $ 20.00 | $ 6,000 |
| 5 | BLDG | New Partial Two-Story FBO Building | 15,000 | SF | $ 375.00 | $ 5,625,000 |
| 6 | UTY | Utility Connections | 1 | ALLOW | $ 150,000.00 | $ 150,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$6,133,600*** |
| 7 | | Design / Permitting Service Fees | 8% | | | $490,700 |
| 8 | | Resident Inspection / Quality Assurance Testing | 8% | | | $490,700 |
| 9 | | Contingency | 20% | | | $1,226,700 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$8,341,700*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L4.3 - RELOCATE TWO (2)-20,000 SQ. FT. HANGAR BUILDINGS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of two (2) conventional aircraft hangars, approximately 20,000 SF each (total 40,000 SF). Apron not included with this estimate.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 360,500.00 | $ 360,500 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 72,100.00 | $ 72,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 360,500.00 | $ 360,500 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 1.0 | AC | $ 14,500.00 | $ 14,500 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 6 | P-152 | Unclassified Excavation | 3,000 | CY | $ 20.00 | $ 60,000 |
| 7 | HNGR | Conventional Hangars - One (1) Building | 20,000 | SF | $ 165.00 | $ 3,300,000 |
| 8 | HNGR | Conventional Hangars - One (1) Building | 20,000 | SF | $ 165.00 | $ 3,300,000 |
| 9 | UTY | Utility Connections | 2 | ALLOW | $ 150,000.00 | $ 300,000 |
| 10 | D-705 | Trench Drain | 400 | LF | $ 250.00 | $ 100,000 |
| 11 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 12 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 13 | T-904 | Sodding | 1,000 | SY | $ 3.00 | $ 3,000 |
| 14 | FDOT | Directional Signage - Roadway | 4 | EA | $ 350.00 | $ 1,400 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 8,002,300*** |
| 15 | | Design / Permitting Service Fees | 8% | | | $ 640,200 |
| 16 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 1,200,300 |
| 17 | | Contingency | 20% | | | $ 1,600,500 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 11,443,300*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L4.4 - CONSTRUCT TWO (2) - 9,375 SQ. FT. HANGARS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of two conventional aircraft hangars, approximately 9,375 SF each (total 18,750 SF). Apron not included in this estimate.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 166,100.00 | $ 166,100 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 33,200.00 | $ 33,200 |
| 3 | C-105 | Mobilization | 1 | LS | $ 166,100.00 | $ 166,100 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 1.0 | AC | $ 14,500.00 | $ 14,500 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 6 | P-152 | Unclassified Excavation | 3,000 | CY | $ 20.00 | $ 60,000 |
| 7 | HNGR | Conventional Hangars - One (1) Building | 9,375 | SF | $ 150.00 | $ 1,406,250 |
| 8 | HNGR | Conventional Hangars - One (1) Building | 9,375 | SF | $ 150.00 | $ 1,406,250 |
| 9 | UTY | Utility Connections | 2 | ALLOW | $ 100,000.00 | $ 200,000 |
| 10 | D-705 | Trench Drain | 400 | LF | $ 250.00 | $ 100,000 |
| 11 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 12 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 13 | T-904 | Sodding | 1,000 | SY | $ 3.00 | $ 3,000 |
| 14 | FDOT | Directional Signage - Roadway | 4 | EA | $ 350.00 | $ 1,400 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 3,687,100*** |
| 15 | | Design / Permitting Service Fees | 10% | | | $ 368,700 |
| 16 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 553,100 |
| 17 | | Contingency | 20% | | | $ 737,400 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 5,346,300*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L4.5 - CONSTRUCT TWO (2) - 10,125 SQ. FT. HANGARS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of two conventional aircraft hangars, approximately 10,125 SF each (total 20,250 SF). Apron not included in this estimate.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 177,300.00 | $ 177,300 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 35,500.00 | $ 35,500 |
| 3 | C-105 | Mobilization | 1 | LS | $ 177,300.00 | $ 177,300 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 1.0 | AC | $ 14,500.00 | $ 14,500 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 6 | P-152 | Unclassified Excavation | 3,000 | CY | $ 20.00 | $ 60,000 |
| 7 | HNGR | Conventional Hangars - One (1) Building | 10,125 | SF | $ 150.00 | $ 1,518,750 |
| 8 | HNGR | Conventional Hangars - One (1) Building | 10,125 | SF | $ 150.00 | $ 1,518,750 |
| 9 | UTY | Utility Connections | 2 | ALLOW | $ 100,000.00 | $ 200,000 |
| 10 | D-705 | Trench Drain | 400 | LF | $ 250.00 | $ 100,000 |
| 11 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000 |
| 12 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 13 | T-904 | Sodding | 1,000 | SY | $ 3.00 | $ 3,000 |
| 14 | FDOT | Directional Signage - Roadway | 4 | EA | $ 350.00 | $ 1,400 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 3,936,800*** |
| 15 | | Design / Permitting Service Fees | 10% | | | $ 393,700 |
| 16 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 590,500 |
| 17 | | Contingency | 20% | | | $ 787,400 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 5,708,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L5.1 - CONSTRUCT ACCESS ROAD FROM EXISTING ATCT ACCESS ROAD TO EXISTING AND PROPOSED BUILDINGS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved road (approx. 61,800 SF) connecting the existing and proposed buildings (assumed existing taxiway pavement not impacted), with fencing and access controlled gates. Assumed roadway pavement section include: 12" Type B stabilization, 12" base course, and 1.5" hot mix asphalt surface course. Project includes marking and signage.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 59,200.00 | $ 59,200 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 11,800.00 | $ 11,800 |
| 3 | C-105 | Mobilization | 1 | LS | $ 59,200.00 | $ 59,200 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 10.6 | AC | $ 14,500.00 | $ 153,700 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 170 | LF | $ 25.00 | $ 4,250 |
| 6 | P-152 | Unclassified Excavation | 1,200 | CY | $ 20.00 | $ 24,000 |
| 7 | P-152 | Embankment | 16,600 | CY | $ 20.00 | $ 332,000 |
| 8 | FDOT | Hot Mix Superpave Asphaltic Concrete - 1.5" | 600 | TN | $ 120.00 | $ 72,000 |
| 9 | FDOT | FDOT Index No. 285, Optional Base Group 1 | 6,900 | SY | $ 16.00 | $ 110,400 |
| 10 | FDOT | Type B Stabilization | 6,900 | SY | $ 5.00 | $ 34,500 |
| 11 | P-602 | Emulsified Asphalt Prime Coat | 1,760 | GAL | $ 5.00 | $ 8,800 |
| 12 | P-603 | Emulsified Asphalt Tack Coat - 1 Layer per 2" Asphalt | 890 | GAL | $ 5.00 | $ 4,450 |
| 13 | FDOT | Pavement Markings (Roadway) | 900 | LF | $ 0.50 | $ 450 |
| 14 | FDOT | Directional Signage - Roadway | 10 | EA | $ 500.00 | $ 5,000 |
| 15 | T-905 | Topsoil | 5,000 | CY | $ 2.00 | $ 10,000 |
| 16 | T-904 | Seeding | 17,400 | SY | $ 1.00 | $ 17,400 |
| 17 | T-904 | Sodding | 7,450 | SY | $ 3.00 | $ 22,350 |
| 18 | F-162 | 8' Chain-Link Fence with Barbed Wire | 10,000 | LF | $ 29.00 | $ 290,000 |
| 19 | F-162 | Vehicular Gate with Access Control | 2 | EA | $ 30,000.00 | $ 60,000 |
| 20 | UTY | Utility Connections | 1 | ALLOW | $ 35,000.00 | $ 35,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$1,314,500*** |
| 21 | | Design / Permitting Service Fees | 10% | | | $131,500 |
| 22 | | Resident Inspection / Quality Assurance Testing | 15% | | | $197,200 |
| 23 | | Contingency | 20% | | | $262,900 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$1,906,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L6.1 CONSTRUCT TWO 5,625 SF HANGARS WEST OF TAXILANE G

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the construction of two conventional aircraft hangars, approximately 5,625 SF each (total 11,250 SF). Apron not included with this estimate. The project includes construction of a new aircraft apron (approx. 527,900 SF) and taxilane connection from the hangar apron to an existing taxiway. Pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Project includes marking, lighting, and signage.**

**Program Year:** **2026**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 120,400.00 | $ 120,400 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 24,100.00 | $ 24,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 120,400.00 | $ 120,400 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.4 | AC | $ 14,500.00 | $ 34,800 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 200 | LF | $ 25.00 | $ 5,000 |
| 6 | P-152 | Unclassified Excavation | 2,300 | CY | $ 20.00 | $ 46,000 |
| 7 | P-152 | Embankment | 1,500 | CY | $ 20.00 | $ 30,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 5" | 925 | TN | $ 120.00 | $ 111,000 |
| 9 | P-211 | Limerock Base Course - 17" | 1,500 | CY | $ 55.00 | $ 82,500 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 3,100 | SY | $ 9.00 | $ 27,900 |
| 11 | HGR | Conventional Hangars - Two (2) Buildings, 5,625 SF Each | 11,250 | SF | $ 150.00 | $ 1,687,500 |
| 12 | UTY | Utility Connections | 2 | ALLOW | $ 80,000.00 | $ 160,000 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 800 | GAL | $ 5.00 | $ 4,000 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 400 | GAL | $ 5.00 | $ 2,000 |
| 15 | P-620 | Taxiway Edge Line Markings | 500 | SF | $ 2.00 | $ 1,000 |
| 16 | D-705 | Trench Drain | 200 | LF | $ 250.00 | $ 50,000 |
| 17 | D-701 | Reinforced Concrete Pipe | 700 | LF | $ 118.00 | $ 82,600 |
| 18 | D-752 | Concrete End Sections | 3 | EA | $ 1,000.00 | $ 3,000 |
| 19 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 1,000 | LF | $ 2.00 | $ 2,000 |
| 20 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 500 | LF | $ 2.00 | $ 1,000 |
| 21 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,000 | LF | $ 16.00 | $ 16,000 |
| 22 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 250 | LF | $ 86.00 | $ 21,500 |
| 23 | L-125 | Taxiway Edge Fixture with Transformer | 6 | EA | $ 700.00 | $ 4,200 |
| 24 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 25 | T-905 | Topsoil | 450 | CY | $ 2.00 | $ 900 |
| 26 | T-904 | Seeding | 3,125 | SY | $ 1.00 | $ 3,125 |
| 27 | T-904 | Sodding | 1,350 | SY | $ 3.00 | $ 4,050 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 2,673,000*** |
| 28 | | Design / Permitting Service Fees | 10% | | | $ 267,300 |
| 29 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 401,000 |
| 30 | | Contingency | 20% | | | $ 534,600 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 3,875,900*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L6.2 CONSTRUCT TWO 5,625 SF HANGARS TO THE WEST OF TAXILANE G

SHORT RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the construction of two conventional aircraft hangars, approximately 5,625 SF each (total 11,250 SF). Apron not included with this estimate. The project includes construction of a new aircraft apron (approx. 527,900 SF) and taxilane connection from the hangar apron to an existing taxiway. Pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Project includes marking, lighting, and signage.**

**Program Year:** **2030**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 120,400.00 | $ 120,400 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 24,100.00 | $ 24,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 120,400.00 | $ 120,400 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.4 | AC | $ 14,500.00 | $ 34,800 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 200 | LF | $ 25.00 | $ 5,000 |
| 6 | P-152 | Unclassified Excavation | 2,300 | CY | $ 20.00 | $ 46,000 |
| 7 | P-152 | Embankment | 1,500 | CY | $ 20.00 | $ 30,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 5" | 925 | TN | $ 120.00 | $ 111,000 |
| 9 | P-211 | Limerock Base Course - 17" | 1,500 | CY | $ 55.00 | $ 82,500 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 3,100 | SY | $ 9.00 | $ 27,900 |
| 11 | HGR | Conventional Hangars - Two (2) Buildings, 5,625 SF Each | 11,250 | SF | $ 150.00 | $ 1,687,500 |
| 12 | UTY | Utility Connections | 2 | ALLOW | $ 80,000.00 | $ 160,000 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 800 | GAL | $ 5.00 | $ 4,000 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 400 | GAL | $ 5.00 | $ 2,000 |
| 15 | P-620 | Taxiway Edge Line Markings | 500 | SF | $ 2.00 | $ 1,000 |
| 16 | D-705 | Trench Drain | 200 | LF | $ 250.00 | $ 50,000 |
| 17 | D-701 | Reinforced Concrete Pipe | 700 | LF | $ 118.00 | $ 82,600 |
| 18 | D-752 | Concrete End Sections | 3 | EA | $ 1,000.00 | $ 3,000 |
| 19 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 1,000 | LF | $ 2.00 | $ 2,000 |
| 20 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 500 | LF | $ 2.00 | $ 1,000 |
| 21 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,000 | LF | $ 16.00 | $ 16,000 |
| 22 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 250 | LF | $ 86.00 | $ 21,500 |
| 23 | L-125 | Taxiway Edge Fixture with Transformer | 6 | EA | $ 700.00 | $ 4,200 |
| 24 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000 |
| 25 | T-905 | Topsoil | 450 | CY | $ 2.00 | $ 900 |
| 26 | T-904 | Seeding | 3,125 | SY | $ 1.00 | $ 3,125 |
| 27 | T-904 | Sodding | 1,350 | SY | $ 3.00 | $ 4,050 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 2,673,000*** |
| 28 | | Design / Permitting Service Fees | 10% | | | $ 267,300 |
| 29 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 401,000 |
| 30 | | Contingency | 20% | | | $ 534,600 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 3,875,900*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L7.1 - ADD ADDITIONAL FOUR (4) UNITS ONTO EACH OF THE THREE (3) EXISTING T-HANGAR BUILDINGS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of four individual T-hangars onto each of three existing T-hangars and construction of a paved aircraft apron (approx. 9,300 SF) to support new hangar expansions and connections to the existing taxiway. Assumed pavement section includes: 12" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 36,600.00 | $ 36,600 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 7,300.00 | $ 7,300 |
| 3 | C-105 | Mobilization | 1 | LS | $ 36,600.00 | $ 36,600 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 1.40 | AC | $ 14,500.00 | $ 20,300 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 500 | LF | $ 25.00 | $ 12,500 |
| 6 | P-152 | Unclassified Excavation | 850 | CY | $ 20.00 | $ 17,000 |
| 7 | P-152 | Embankment | 800 | CY | $ 20.00 | $ 16,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 4" | 250 | TN | $ 120.00 | $ 30,000 |
| 9 | P-211 | Limerock Base Course - 15" | 500 | CY | $ 55.00 | $ 27,500 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 1,100 | SY | $ 9.00 | $ 9,900 |
| 11 | P-152 | Compacted Subgrade - 12" | 350 | CY | $ 4.00 | $ 1,400 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 250 | GAL | $ 5.00 | $ 1,250 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 125 | GAL | $ 5.00 | $ 625 |
| 14 | HNGR | T-Hangars - Twelve (12) Units | 12 | EA | $ 40,000.00 | $ 480,000 |
| 15 | UTY | Utility Connections | 3 | ALLOW | $ 12,000.00 | $ 36,000 |
| 16 | D-705 | Trench Drain | 300 | LF | $ 250.00 | $ 75,000 |
| 17 | T-905 | Topsoil | 800 | CY | $ 2.00 | $ 1,600 |
| 18 | T-904 | Seeding | 1,600 | SY | $ 1.00 | $ 1,600 |
| 19 | T-904 | Sodding | 700 | SY | $ 3.00 | $ 2,100 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$813,300*** |
| 20 | | Design / Permitting Service Fees | 12% | | | $97,600 |
| 21 | | Resident Inspection / Quality Assurance Testing | 15% | | | $122,000 |
| 22 | | Contingency | 20% | | | $162,700 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$1,195,600*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L8.1 - ADDITIONAL UNIT STRUCTURES SOUTH OF EXISTING T-HANGARS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of three sets of aircraft T-hangars, approximately 21,000 SF, 18,800 SF, and 16,600 SF south of existing T-hangar area. The project includes construction of three (3) taxilanes that will provide T-hangar access (approx. 72,800 SF total). Pavement section includes: 12" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course.**

**Program Year:** **2025**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 183,800.00 | $ 183,800 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 36,800.00 | $ 36,800 |
| 3 | C-105 | Mobilization | 1 | LS | $ 183,800.00 | $ 183,800 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 6.00 | AC | $ 14,500.00 | $ 87,000 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 600 | LF | $ 25.00 | $ 15,000 |
| 6 | P-152 | Unclassified Excavation | 5,900 | CY | $ 20.00 | $ 118,000 |
| 7 | P-152 | Embankment | | CY | $ 20.00 | $ - |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 4" | 1,900 | TN | $ 120.00 | $ 228,000 |
| 9 | P-211 | Limerock Base Course - 15" | 3,400 | CY | $ 55.00 | $ 187,000 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 8,100 | SY | $ 9.00 | $ 72,900 |
| 11 | P-152 | Compacted Subgrade - 12" | 2,700 | CY | $ 4.00 | $ 10,800 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 2,000 | GAL | $ 5.00 | $ 10,000 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 1,000 | GAL | $ 5.00 | $ 5,000 |
| 14 | P-620 | Pavement Marking | 2,000 | LF | $ 2.00 | $ 4,000 |
| 15 | HNGR | T-Hangars - Twelve (48) Units | 48 | EA | $ 45,000.00 | $ 2,160,000 |
| 16 | UTY | Utility Connections | 3 | ALLOW | $ 50,000.00 | $ 150,000 |
| 17 | D-705 | Trench Drain | 1,200 | LF | $ 250.00 | $ 300,000 |
| 18 | D-701 | Reinforced Concrete Pipe | 2,000 | LF | $ 118.00 | $ 236,000 |
| 19 | D-752 | Concrete End Sections | 14 | EA | $ 1,000.00 | $ 14,000 |
| 20 | UTY | Utility Connections | 3 | EA | $ 14,000.00 | $ 42,000 |
| 21 | T-905 | Topsoil | 2,000 | CY | $ 2.00 | $ 4,000 |
| 22 | T-904 | Seeding | 13,600 | SY | $ 1.00 | $ 13,600 |
| 23 | T-904 | Sodding | 5,900 | SY | $ 3.00 | $ 17,700 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$4,079,400*** |
| 24 | | Design / Permitting Service Fees | 10% | | | $407,900 |
| 25 | | Resident Inspection / Quality Assurance Testing | 15% | | | $611,900 |
| 26 | | Contingency | 20% | | | $815,900 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$5,915,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L9.1 - CONSTRUCT NECESSARY PAVEMENT INFRASTRUCTURE

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a vehicular loop road (approx. 16,900 SF) and an asphalt pavement apron adjacent to fuel tanks (approx. 18,600 SF). Assumed pavement section: 12" stabilized subgrade, 17" limerock base material, and 5" hot mix asphalt surface course. Fencing and access control gate is included.**

**Program Year:** **2026**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 43,000.00 | $ 43,000 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 8,600.00 | $ 8,600 |
| 3 | C-105 | Mobilization | 1 | LS | $ 43,000.00 | $ 43,000 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.40 | AC | $ 14,500.00 | $ 34,800 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 20 | SY | $ 25.00 | $ 500 |
| 6 | P-152 | Unclassified Excavation | 1,500 | CY | $ 20.00 | $ 30,000 |
| 7 | P-152 | Embankment | 4,500 | CY | $ 20.00 | $ 90,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 5" | 1,200 | TN | $ 120.00 | $ 144,000 |
| 9 | P-211 | Limerock Base - 17" | 4,000 | SY | $ 55.00 | $ 220,000 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 4,000 | SY | $ 9.00 | $ 36,000 |
| 11 | P-602 | Emulsified Asphalt Prime Coat | 520 | GAL | $ 5.00 | $ 2,600 |
| 12 | P-603 | Emulsified Asphalt Tack Coat | 260 | GAL | $ 5.00 | $ 1,300 |
| 13 | F-162 | 8' Chain-Link Fence with Barbed Wire | 4,000 | LF | $ 29.00 | $ 116,000 |
| 14 | F-162 | Vehicular Gate with Access Control | 1 | EA | $ 30,000.00 | $ 30,000 |
| 15 | UTY | Utility Connections | 1 | ALLOW | $ 100,000.00 | $ 100,000 |
| 16 | FDOT | Bollards | 20 | EA | $ 1,500.00 | $ 30,000 |
| 17 | T-905 | Topsoil | 1,400 | CY | $ 2.00 | $ 2,800 |
| 18 | T-904 | Seeding | 9,500 | SY | $ 1.00 | $ 9,500 |
| 19 | T-904 | Sodding | 4,100 | SY | $ 3.00 | $ 12,300 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$954,400*** |
| 20 | | Design / Permitting Service Fees | 12% | | | $114,500 |
| 21 | | Resident Inspection / Quality Assurance Testing | 15% | | | $143,200 |
| 22 | | Contingency | 20% | | | $190,900 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$1,403,000*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L9.2 - INSTALL ADDITIONAL FUEL STORAGE TANKS

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes installation of two (2) fuel tanks of 12,000 gallons, six (6) fuel tanks of 50,000 gallons and two (2) fuel tanks of 250,000 gallons. Tanks all assumed above ground.**

**Program Year:** **2026**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 136,500.00 | $ 136,500 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 27,300.00 | $ 27,300 |
| 3 | C-105 | Mobilization | 1 | LS | $ 136,500.00 | $ 136,500 |
| 4 | FDOT | Concrete Foundations for Fuel Tanks | 2,000 | SY | $ 150.00 | $ 300,000 |
| 5 | FUEL | Fuel Storage Tanks (12,000 gallons) | 2 | EA | 75,000.00 | $ 150,000 |
| 6 | FUEL | Fuel Storage Tanks (50,000 gallons) | 6 | EA | 130,000.00 | $ 780,000 |
| 7 | FUEL | Fuel Storage Tanks (250,000 gallons) | 2 | EA | 750,000.00 | $ 1,500,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$3,030,300*** |
| 8 | | Design / Permitting Service Fees | 10% | | | $303,000 |
| 9 | | Resident Inspection / Quality Assurance Testing | 15% | | | $454,500 |
| 10 | | Contingency | 20% | | | $606,100 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$4,393,900*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L10.1 - EXPAND TERMINAL TO THE EAST

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes a two-story expansion of the existing terminal building (approx. 53,100 GSF). The terminal expansion assumes renovation of 10,000 SF of the existing terminal building, and one new passenger boarding bridge (PBB) with foundation. The project includes construction of paved aircraft apron (approx. 45,000 SF), expanding the existing apron area for the new general aviation terminal. Pavement section includes: 12" stabilized subgrade, 17" limerock base material, and 5" hot mix asphalt surface course. Project includes selective demolition of vehicular roads and connection to existing apron, marking, lighting and signage.**

**Program Year:** **2028**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 275,400.00 | $ 275,400 |
| 2 | C-105 | Mobilization | 1 | LS | $ 1,376,800.00 | $ 1,376,800 |
| 3 | P-151 | Clearing and Grubbing / Stripping | 3.30 | AC | $ 14,500.00 | $ 47,850 |
| 4 | P-152 | Unclassified Excavation | 2,000 | CY | $ 20.00 | $ 40,000 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 6 | P-101 | Full Depth Pavement Removal | 2,000 | SY | $ 25.00 | $ 50,000 |
| 7 | P-152 | Embankment | 2,100 | CY | $ 20.00 | $ 42,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 5" | 1,500 | TN | $ 120.00 | $ 180,000 |
| 9 | P-211 | Limerock Base Course - 17" | 2,400 | CY | $ 55.00 | $ 132,000 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 5,000 | SY | $ 9.00 | $ 45,000 |
| 11 | P-152 | Compacted Subgrade - 12" | 1,700 | CY | $ 20.00 | $ 34,000 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 1,260 | GAL | $ 5.00 | $ 6,300 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 625 | GAL | $ 5.00 | $ 3,127 |
| 14 | P-620 | Pavement Marking | 1,000 | LF | $ 2.00 | $ 2,000 |
| 15 | TERM | Airport Terminal Expansion - Two Floors | 53,000 | SF | $ 450.00 | $ 23,850,000 |
| 16 | TERM | Airport Terminal Expansion - Renovation of Existing Terminal | 10,000 | SF | $ 125.00 | $ 1,250,000 |
| 17 | PBB | Passenger Boarding Bridge with Foundation | 1 | LS | $ 1,450,000.00 | $ 1,450,000 |
| 18 | FDOT | Curb Expansion | 1 | ALLOW | $ 80,000.00 | $ 80,000 |
| 19 | UTY | Utility Expansions | 1 | ALLOW | $ 75,000.00 | $ 75,000 |
| 20 | FDOT | High Mast Light Pole | 4 | EA | $ 25,000.00 | $ 100,000 |
| 21 | T-905 | Topsoil | 1,650 | CY | $ 2.00 | $ 3,300 |
| 22 | T-904 | Seeding | 7,300 | SY | $ 1.00 | $ 7,300 |
| 23 | T-904 | Sodding | 1,900 | SY | $ 3.00 | $ 5,700 |
| 24 | D-701 | Reinforced Concrete Pipe | 700 | LF | $ 118.00 | $ 82,600 |
| 25 | D-752 | Concrete End Sections | 4 | EA | $ 1,000.00 | $ 4,000 |
| 26 | LSC | Landscape Allowance | 1 | ALLOW | $ 40,000.00 | $ 40,000 |
| | | | | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | ***$29,188,600*** |
| 27 | | Design / Permitting Service Fees | 8% | | | $2,335,100 |
| 28 | | Resident Inspection / Quality Assurance Testing | 10% | | | $2,918,900 |
| 29 | | Contingency | 20% | | | $5,837,700 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$40,280,300*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

## L11.1 - CONSTRUCT EIGHT (8) - 5,625 SQ. FT. HANGARS (SOUTHWEST OF EXISTING FBO APRON)

MID RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of eight (8) aircraft hangars, approximately 5,625 SF each (45,000 SF total). Apron not included in this estimate.**

**Program Year:** **2029**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 380,000.00 | $ 380,000 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 76,000.00 | $ 76,000 |
| 3 | C-105 | Mobilization | 1 | LS | $ 380,000.00 | $ 380,000 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 1.4 | AC | $ 14,500.00 | $ 20,300 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 400 | LF | $ 25.00 | $ 10,000 |
| 6 | P-152 | Unclassified Excavation | 3,000 | CY | $ 20.00 | $ 60,000 |
| 7 | P-152 | Embankment | 100 | CY | $ 20.00 | $ 2,000 |
| 8 | HNGR | Conventional Hangars - 8 @ 5,625 SF | 45,000 | SF | $ 150.00 | $ 6,750,000 |
| 9 | UTY | Utility Connections | 8 | ALLOW | $ 50,000.00 | $ 400,000 |
| 10 | D-705 | Trench Drain | 400 | LF | $ 250.00 | $ 100,000 |
| 11 | D-701 | Reinforced Concrete Pipe | 2,000 | LF | $ 118.00 | $ 236,000 |
| 12 | D-752 | Concrete End Sections | 14 | EA | $ 1,000.00 | $ 14,000 |
| 13 | FDOT | Topsoil | 100 | CY | $ 2.00 | $ 200 |
| 14 | T-904 | Sodding | 2,400 | SY | $ 3.00 | $ 7,200 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$ 8,435,700*** |
| 15 | | Design / Permitting Service Fees | 8% | | | $ 674,900 |
| 16 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 1,265,400 |
| 17 | | Contingency | 20% | | | $ 1,687,100 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$ 12,063,100*** |

## C.3. Long-Term CIP

*LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)*

LAKELAND, FLORIDA

## CONCEPTUAL ESTIMATE SUMMARY

## *AIRFIELD PROJECTS - LONG RANGE (11-20 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| ***Project*** | ***Program Year*** | ***Project Description*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program 2020 Budget - Project Total*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program Year Budget - Project Total*** |
| **A12** | **Long Range** | **Runway 9/27 Extension** | **$19,209,600** | **$1,416,200** | **$20,625,800** | **$26,149,700** | **$1,928,600** | **$28,078,300** |
| A12.1 | 2030 | Runway Justification Study | $0 | $75,000 | $75,000 | $0 | $100,900 | $100,900 |
| A12.2 | 2032 | Extend Runway 9/27 by 1,501 Feet to the West | $7,241,400 | $482,800 | $7,724,200 | $9,738,900 | $649,300 | $10,388,200 |
| A12.3 | 2032 | Extend Parallel Taxiways to New Runway End | $6,799,400 | $453,300 | $7,252,700 | $9,144,400 | $609,600 | $9,754,000 |
| A12.4 | 2033 | Relocate ALSF-2 | $785,300 | $69,800 | $855,100 | $1,082,500 | $96,200 | $1,178,700 |
| A12.5 | 2033 | Relocate PAPI-4 | $133,100 | $14,800 | $147,900 | $183,500 | $20,400 | $203,900 |
| A12.6 | 2033 | Relocate Runway Threshold Lights | $153,000 | $17,000 | $170,000 | $210,900 | $23,400 | $234,300 |
| A12.7 | 2034 | Relocate Perimeter Road | $4,097,400 | $303,500 | $4,400,900 | $5,789,500 | $428,800 | $6,218,300 |
| **A13** | **Long Range** | **Ground Runup Enclosure Construction** | **$2,714,600** | **$201,100** | **$2,915,700** | **$3,931,600** | **$291,300** | **$4,222,900** |
| A13.1 | 2035 | Construction of Ground Runup Enclosure (GRE) | $2,714,600 | $201,100 | $2,915,700 | $3,931,600 | $291,300 | $4,222,900 |
| **A14** | **Long Range** | **Master Plan Update** | **$0** | **$1,200,000** | **$1,200,000** | **$0** | **$1,738,000** | **$1,738,000** |
| A14.1 | 2037 | Master Plan Update | $0 | $1,200,000 | $1,200,000 | $0 | $1,738,000 | $1,738,000 |
| ***SUMMARY*** | | ***TOTAL - AIRFIELD - LONG RANGE (11-20 YEAR) CIP PROJECTS:*** | ***$21,924,200*** | ***$2,817,300*** | ***$24,741,500*** | ***$30,081,300*** | ***$3,957,900*** | ***$34,039,200*** |

* Escalation has been compounded to program year at a rate of 2.5% per year from FY 2020 and rounded.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.1 - Runway 9 Extension Justification Study

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes the planning study for the Runway 9 extension justification.**

| **Program Year:** | **2030** | | | | | |
|---|---|---|---|---|---|---|
| **Line No.** | **Item** | **DESCRIPTION** | **EST. QTY.** | **UNIT** | **BASE UNIT PRICE ($)** | **TOTAL AMOUNT** |
| 1 | 1 | Planning Study Only - No Construction Cost | - | - | $ - | $ - |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$0*** |
| 1 | | Design / Permitting Service Fees | 1.00 | | | $75,000 |
| 2 | | Resident Inspection / Quality Assurance Testing | 0% | | | $0 |
| 3 | | Contingency | 0% | | | $0 |
| | | | | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | ***$75,000*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.2 - EXTEND RUNWAY 9/27 BY 1,501 FEET TO THE WEST

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved expansion to existing runway 9/27 (approx. 332,600 SF). Full-strength pavement section assumed as: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Shoulder pavement section assumed as: 8" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course. Project also includes marking, lighting and signage.**

**Program Year:** **2032**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 237,300.00 | $ 237,300.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 47,500.00 | $ 47,500.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 237,300.00 | $ 237,300.00 |
| 4 | MOT | Maintenance of Traffic | 1 | LS | $ 95,000.00 | $ 95,000 |
| 5 | P-151 | Clearing and Grubbing - Runway Safety Area | 17.20 | AC | $ 14,500.00 | $ 249,400 |
| 6 | P-151 | Tree Removal, Allowance | 1 | LS | $ 15,000.00 | $ 15,000 |
| 7 | P-152 | Embankment/Grading - Runway Safety Area | 27,800 | CY | $ 20.00 | $ 556,000 |
| 8 | P-151 | Clearing and Grubbing / Stripping (Full Strength / New Blast Pad Area) | 7.60 | AC | $ 14,500.00 | $ 110,200 |
| 9 | P-151 | Fence Removal | 300 | LF | $ 7.00 | $ 2,100.00 |
| 10 | P-101 | Saw-Cut and Connect to Existing Pavement | 200 | LF | $ 25.00 | $ 5,000.00 |
| 11 | P-101 | Pavement Removal (Blast Pad/Access Road) | 5,000 | SY | $ 25.00 | $ 125,000.00 |
| 12 | P-152 | Unclassified Excavation | 12,350 | CY | $ 20.00 | $ 247,000.00 |
| 13 | P-401 | Hot Mix Asphalt Surface Course - 5" | 8,600 | TN | $ 120.00 | $ 1,032,000.00 |
| 14 | P-211 | Limerock Base Course - 17" | 14,000 | CY | $ 55.00 | $ 770,000.00 |
| 15 | P-154 | Stabilized Subgrade Course - 12" | 30,000 | SY | $ 9.00 | $ 270,000.00 |
| 16 | P-152 | Compacted Subgrade - 12" | 9,850 | CY | $ 4.00 | $ 39,400.00 |
| 17 | P-602 | Emulsified Asphalt Prime Coat | 7,500 | GAL | $ 5.00 | $ 37,500.00 |
| 18 | P-603 | Emulsified Asphalt Tack Coat | 3,750 | GAL | $ 5.00 | $ 18,750.00 |
| 19 | P-403 | Hot Mix Asphalt Shoulder Course - 4" (Shoulder) | 1,750 | TN | $ 120.00 | $ 210,000.00 |
| 20 | P-211 | Limerock Base Course - 15" (Shoulder) | 3,150 | CY | $ 55.00 | $ 173,250.00 |
| 21 | P-154 | Stabilized Subgrade Course - 8" (Shoulder) | 7,500 | SY | $ 9.00 | $ 67,500.00 |
| 22 | P-152 | Compacted Subgrade - 6" (Shoulder) | 1,250 | CY | $ 4.00 | $ 5,000.00 |
| 23 | P-602 | Emulsified Asphalt Prime Coat (Shoulder) | 1,900 | GAL | $ 5.00 | $ 9,500.00 |
| 24 | P-603 | Emulsified Asphalt Tack Coat (Shoulder) | 950 | GAL | $ 5.00 | $ 4,750.00 |
| 25 | P-620 | Runway Threshold Markings | 25,500 | SF | $ 2.00 | $ 51,000.00 |
| 26 | P-620 | Runway Landing Designator / Blast Pad Markings | 3,000 | SF | $ 2.00 | $ 6,000.00 |
| 27 | P-620 | Taxiway Center Line Markings | 2,700 | SF | $ 2.00 | $ 5,400.00 |
| 28 | P-620 | Taxiway Edge Line Markings | 9,000 | SF | $ 2.00 | $ 18,000.00 |
| 29 | P-620 | Touchdown Zone Markings | 25,200 | SF | $ 2.00 | $ 50,400.00 |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.2 - EXTEND RUNWAY 9/27 BY 1,501 FEET TO THE WEST

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved expansion to existing runway 9/27 (approx. 332,600 SF). Full-strength pavement section assumed as: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Shoulder pavement section assumed as: 8" stabilized subgrade, 15" limerock base, and 4" hot mix asphalt surface course. Project also includes marking, lighting and signage.**

**Program Year:** **2032**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 30 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 7,000 | LF | $ 2.00 | $ 14,000.00 |
| 31 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 3,500 | LF | $ 2.00 | $ 7,000.00 |
| 32 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 2,500 | LF | $ 16.00 | $ 40,000.00 |
| 33 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 700 | LF | $ 86.00 | $ 60,200.00 |
| 34 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 300 | LF | $ 100.00 | $ 30,000.00 |
| 35 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 7 | EA | $ 157.00 | $ 1,099.00 |
| 36 | L-115 | Electrical Handhole | 12 | EA | $ 950.00 | $ 11,400.00 |
| 37 | L-109 | Airfield Electrical Vault Modification | 1 | LS | $ 60,000.00 | $ 60,000 |
| 38 | L-125 | Elevated Runway Edge Fixture with Transformer | 30 | EA | $ 750.00 | $ 22,500 |
| 39 | L-125 | Runway Distance Remaining Sign and Foundation | 2 | EA | $ 5,500.00 | $ 11,000 |
| 40 | L-125 | Airfield Guidance Sign and Foundation | 6 | EA | $ 14,000.00 | $ 84,000 |
| 41 | F-162 | 8' Chain-Link Fence with Barbed Wire | 750 | LF | $ 29.00 | $ 21,750.00 |
| 42 | T-905 | Topsoil | 27,800 | CY | $ 2.00 | $ 55,600 |
| 43 | T-904 | Sodding - Runway Safety Area | 83,400 | SY | $ 3.00 | $ 250,200 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$5,364,000*** |
| 44 | | Design / Permitting Service Fees | 9% | | | $482,800 |
| 45 | | Resident Inspection / Quality Assurance Testing | 15% | | | $804,600 |
| 46 | | Contingency | 20% | | | $1,072,800 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$7,724,200*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.3 - EXTEND PARALLEL TAXIWAYS TO NEW RUNWAY END

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved aircraft-rated taxiway, approximately 333,900 SF, extending the current parallel taxiways to accommodate the extension of Runway 10/28. Pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Project to include connection to existing taxiway, connection to new runway extension, marking, lighting and signage.**

**Program Year:** **2032**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program (CQCP) | 1 | LS | $ 226,900.00 | $ 226,900.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 45,400.00 | $ 45,400.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 226,900.00 | $ 226,900.00 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 24.00 | AC | $ 14,500.00 | $ 348,000.00 |
| 5 | P-152 | Embankment | 26,300 | CY | $ 20.00 | $ 526,000 |
| 6 | P-151 | Fence Removal | 1,500 | LF | $ 7.00 | $ 10,500.00 |
| 7 | P-101 | Saw-Cut and Connect to Existing Pavement | 960 | LF | $ 25.00 | $ 24,000.00 |
| 8 | P-152 | Unclassified Excavation | 12,400 | CY | $ 20.00 | $ 248,000.00 |
| 9 | P-152 | Haul Excavated Material | 12,400 | CY | $ 1.00 | $ 12,400.00 |
| 10 | P-401 | Hot Mix Asphalt Surface Course - 5" | 10,800 | TN | $ 120.00 | $ 1,296,000.00 |
| 11 | P-211 | Limerock Base Course - 17" | 17,600 | CY | $ 55.00 | $ 968,000.00 |
| 12 | P-154 | Stabilized Subgrade Course - 12" | 37,200 | SY | $ 9.00 | $ 334,800.00 |
| 13 | P-152 | Compacted Subgrade - 12" | 12,400 | CY | $ 4.00 | $ 49,600.00 |
| 14 | P-602 | Emulsified Asphalt Prime Coat | 9,300 | GAL | $ 5.00 | $ 46,500.00 |
| 15 | P-603 | Emulsified Asphalt Tack Coat | 4,650 | GAL | $ 5.00 | $ 23,250.00 |
| 16 | P-620 | Surface Painted Holding Position Signs | 960 | SF | $ 2.00 | $ 1,920.00 |
| 17 | P-620 | Taxiway Hold Line Marking | 3,200 | SF | $ 2.00 | $ 6,400.00 |
| 18 | P-620 | Taxiway Center Line Markings | 4,000 | SF | $ 2.00 | $ 8,000.00 |
| 19 | P-620 | Taxiway Edge Line Markings | 7,200 | SF | $ 2.00 | $ 14,400.00 |
| 20 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 19,000 | LF | $ 2.00 | $ 38,000.00 |
| 21 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 9,500 | LF | $ 2.00 | $ 19,000.00 |
| 22 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 7,650 | LF | $ 16.00 | $ 122,400.00 |
| 23 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,000 | LF | $ 86.00 | $ 86,000.00 |
| 24 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 850 | LF | $ 100.00 | $ 85,000.00 |
| 25 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 19 | EA | $ 157.00 | $ 2,983.00 |
| 26 | L-115 | Electrical Handhole | 20 | EA | $ 950.00 | $ 19,000.00 |
| 27 | L-125 | Taxiway Edge Fixture with Transformer | 88 | EA | $ 700.00 | $ 61,600.00 |
| 28 | F-162 | 7' Chain-Link Fence with Barbed Wire - Temporary | 1,500 | LF | $ 29.00 | $ 43,500.00 |
| 29 | T-905 | Topsoil | 7,900 | CY | $ 2.00 | $ 15,800 |
| 30 | T-904 | Sodding | 23,700 | SY | $ 3.00 | $ 71,100 |
| 31 | T-904 | Seeding | 55,250 | SY | $ 1.00 | $ 55,250 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$5,036,600*** |
| 32 | | Design / Permitting Service Fees | 9% | | | $453,300 |
| 33 | | Resident Inspection / Quality Assurance Testing | 15% | | | $755,500 |
| 34 | | Contingency | 20% | | | $1,007,300 |
| | | | | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | ***$7,252,700*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.4 - RELOCATE ALSF-2

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes modifications to the Approach Lighting System (ALSF-2) for Runway 9/27. The project includes removal and reinstallation of the existing system, reuse of existing fixtures and extension of existing lighting system to support the extension of Runway 9/27.**

**Program Year:** **2033**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 26,400.00 | $ 26,400.00 |
| 2 | C-105 | Mobilization | 1 | LS | $ 26,400.00 | $ 26,400.00 |
| 3 | L-125 | Remove and Reinstall ALSF-2 | 1 | LS | $ 100,000.00 | $ 100,000.00 |
| 4 | P-401 | Asphalt Surface Course - Repair | 84 | EA | $ 500.00 | $ 42,000.00 |
| 5 | L-100 | Electrical Demolition | 1 | LS | $ 10,000.00 | $ 10,000.00 |
| 6 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 8,000 | LF | $ 2.00 | $ 16,000.00 |
| 7 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 4,000 | LF | $ 2.00 | $ 8,000.00 |
| 8 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 4,000 | LF | $ 86.00 | $ 344,000.00 |
| 9 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 8 | EA | $ 157.00 | $ 1,256.00 |
| 10 | L-115 | Electrical Handhole | 8 | EA | $ 950.00 | $ 7,600.00 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$581,700*** |
| 11 | | Design / Permitting Service Fees | 12% | | | $69,800 |
| 12 | | Resident Inspection / Quality Assurance Testing | 15% | | | $87,300 |
| 13 | | Contingency | 20% | | | $116,300 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$855,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.5 - RELOCATE PAPI-4

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project consists of modifications to the Precision Approach Path Indicator (PAPI-4L) System for Runway 9/27. The project includes removal and reinstallation of the existing system, reuse of all lighting fixtures, extension of existing electrical components, and sodding of the surrounding area as needed.**

| | |
|---|---|
| **Program Year:** | **2033** |

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 4,300.00 | $ 4,300.00 |
| 2 | C-105 | Mobilization | 1 | LS | $ 8,600.00 | $ 8,600.00 |
| 3 | L-125 | Remove and Reinstall PAPI-4 | 1 | SET | $ 50,000.00 | $ 50,000.00 |
| 4 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 1,000 | LF | $ 2.00 | $ 2,000.00 |
| 5 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 500 | LF | $ 2.00 | $ 1,000.00 |
| 6 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 200 | LF | $ 16.00 | $ 3,200.00 |
| 7 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 300 | LF | $ 86.00 | $ 25,800.00 |
| 8 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 2 | EA | $ 157.00 | $ 314.00 |
| 9 | L-115 | Electrical Handhole | 2 | EA | $ 950.00 | $ 1,900.00 |
| 10 | T-904 | Sodding | 500 | SY | $ 3.00 | $ 1,500.00 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$98,600*** |
| 11 | | Design / Permitting Service Fees | 15% | | | $14,800 |
| 12 | | Resident Inspection / Quality Assurance Testing | 15% | | | $14,800 |
| 13 | | Contingency | 20% | | | $19,700 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$147,900*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.6 - RELOCATE RUNWAY THRESHOLD LIGHTS

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes modifications to the threshold lighting system for Runway 9. The project includes removal and reinstallation of the existing system, reuse of the existing lighting fixtures, extension of existing electrical system.**

**Program Year:** **2033**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 5,100.00 | $ 5,100.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 1,000.00 | $ 1,000.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 5,100.00 | $ 5,100.00 |
| 4 | L-125 | Remove and Reinstall Threshold Lighting System | 1 | LS | $ 35,000.00 | $ 35,000.00 |
| 5 | L-100 | Electrical Demolition | 1 | LS | $ 5,000.00 | $ 5,000.00 |
| 6 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 3,000 | LF | $ 2.00 | $ 6,000.00 |
| 7 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 1,500 | LF | $ 2.00 | $ 3,000.00 |
| 8 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 1,200 | LF | $ 16.00 | $ 19,200.00 |
| 9 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 300 | LF | $ 86.00 | $ 25,800.00 |
| 10 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 3 | EA | $ 157.00 | $ 471.00 |
| 11 | L-115 | Electrical Handhole | 8 | EA | $ 950.00 | $ 7,600.00 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$113,300*** |
| 12 | | Design / Permitting Service Fees | 15% | | | $17,000 |
| 13 | | Resident Inspection / Quality Assurance Testing | 15% | | | $17,000 |
| 14 | | Contingency | 20% | | | $22,700 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$170,000*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A12.7 - RELOCATE PERIMETER ROAD

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved vehicular roadway (approx. 180,000 SF), relocating the perimeter road to accommodate the construction of Runway 9/27 Expansion. Pavement section includes: 12" LBR-40 subbase, 8" limerock base, and 1½" hot mix asphalt surface course. Project includes installation of a new 8 FT-high chain-link security fence (approx. 9,000 ft).**

**Program Year:** **2034**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 136,700.00 | $ 136,700.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 27,300.00 | $ 27,300.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 136,700.00 | $ 136,700.00 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 33.00 | AC | $ 14,500.00 | $ 478,500.00 |
| 5 | P-152 | Embankment | 33,400 | CY | $ 20.00 | $ 668,000 |
| 6 | P-101 | Saw-Cut and Connect to Existing Pavement | 175 | LF | $ 25.00 | $ 4,375.00 |
| 7 | P-152 | Unclassified Excavation | 3,300 | CY | $ 20.00 | $ 66,000.00 |
| 8 | FDOT | Asphalt Concrete Friction Course - 1.5" | 1,800 | TN | $ 145.00 | $ 261,000.00 |
| 9 | FDOT | Hot Mix Asphalt Surface Course - 1.5" | 1,800 | TN | $ 120.00 | $ 216,000.00 |
| 10 | FDOT | FDOT Index No. 285, Optional Base Group 6 - 8" | 20,000 | SY | $ 16.00 | $ 320,000.00 |
| 11 | P-154 | Stabilized Subgrade Course - 6" | 20,000 | SY | $ 9.00 | $ 180,000.00 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 5,000 | GAL | $ 5.00 | $ 25,000.00 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 2,500 | GAL | $ 5.00 | $ 12,500.00 |
| 14 | FDOT | Thermoplastic Painted Pavement Markings | 18,000 | LF | $ 1.00 | $ 18,000.00 |
| 15 | F-162 | 8' Chain-Link Fence with Barbed Wire | 9,000 | LF | $ 29.00 | $ 261,000.00 |
| 16 | T-905 | Topsoil | 20,000 | CY | $ 2.00 | $ 40,000 |
| 17 | T-904 | Sodding | 60,000 | SY | $ 3.00 | $ 180,000 |
| 18 | T-904 | Seeding | 4,000 | SY | $ 1.00 | $ 4,000 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$3,035,100*** |
| 19 | | Design / Permitting Service Fees | 10% | | | $303,500 |
| 20 | | Resident Inspection / Quality Assurance Testing | 15% | | | $455,300 |
| 21 | | Contingency | 20% | | | $607,000 |
| | | | | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | ***$4,400,900*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A13.1 - CONSTRUCTION OF GROUND RUN-UP ENCLOSURE (GRE)

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a Ground Run-up Enclosure (GRE), approximately 650 FT long by 35 FT height for the purpose of reducing aircraft run-up noise in the area. The project includes a three-sided GRE structure, paved area for the GRE (approximately 47,000 SF), and paved taxilane to existing taxiway (approximately 19,000 SF). Pavement section assumed includes: 8" stabilized subgrade, 15" limerock base material, and 4" hot mix asphalt surface course. Project to include markings, lighting and signage.**

**Program Year:** **2035**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 90,600.00 | $ 90,600.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 18,100.00 | $ 18,100.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 90,600.00 | $ 90,600.00 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 4.30 | AC | $ 14,500.00 | $ 62,350.00 |
| 5 | P-152 | Embankment | 4,600 | CY | $ 20.00 | $ 92,000 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250.00 |
| 6 | P-152 | Unclassified Excavation | 2,500 | CY | $ 20.00 | $ 50,000.00 |
| 7 | GRE | Ground Run-Up Enclosure (35' height - 3 sides) | 650 | LF | $ 1,500.00 | $ 975,000.00 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 4" | 1,750 | TON | $ 120.00 | $ 210,000.00 |
| 9 | P-211 | Limerock Base Course - 15" | 3,100 | CY | $ 55.00 | $ 170,500.00 |
| 10 | P-154 | Stabilized Subgrade Course - 8" | 7,400 | SY | $ 9.00 | $ 66,600.00 |
| 11 | P-152 | Compacted Subgrade - 6" | 1,200 | CY | $ 4.00 | $ 4,800.00 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 1,900 | GAL | $ 5.00 | $ 9,500.00 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 850 | GAL | $ 5.00 | $ 4,250.00 |
| 14 | P-620 | Pavement Marking | 1,050 | SF | $ 2.00 | $ 2,100.00 |
| 15 | L-108 | No.8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit | 2,000 | LF | $ 2.00 | $ 4,000.00 |
| 16 | L-108 | No.6 AWG, Solid Bare Counterpoise Wire, Installed Above the Conduit, Including the Connectors/Terminators | 1,000 | LF | $ 2.00 | $ 2,000.00 |
| 17 | L-110 | Non-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 500 | LF | $ 16.00 | $ 8,000.00 |
| 18 | L-110 | Concrete-Encased Electrical Conduit, 1-Way, 2-inch Schedule 40 PVC | 350 | LF | $ 86.00 | $ 30,100.00 |
| 19 | L-112 | Directional Drill Conduit, 4 Way, 2-inch, HDPE | 350 | LF | $ 100.00 | $ 35,000.00 |
| 20 | L-108 | 3/4" x 10' Copper Clad Steel Sectional Ground Rods with Exothermic Ground Connectors | 2 | EA | $ 157.00 | $ 314.00 |
| 21 | L-115 | Electrical Handhole | 6 | EA | $ 950.00 | $ 5,700.00 |
| 22 | L-125 | Airfield Guidance Sign and Foundation | 1 | EA | $ 14,000.00 | $ 14,000.00 |
| 23 | L-125 | Taxiway Edge Fixture with Transformer | 12 | EA | $ 700.00 | $ 8,400 |
| 24 | T-905 | Topsoil | 4,600 | CY | $ 2.00 | $ 9,200 |
| 25 | T-904 | Sodding | 13,800 | SY | $ 3.00 | $ 41,400.00 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$2,010,800*** |
| 26 | | Design / Permitting Service Fees | 10% | | | $201,100 |
| 27 | | Resident Inspection / Quality Assurance Testing | 15% | | | $301,600 |
| 28 | | Contingency | 20% | | | $402,200 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$2,915,700*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# A14.1 - MASTER PLAN UPDATE

LONG RANGE *CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**This project includes an Airport Master Plan Update and new Airport Layout Plans for Lakeland International Airport.**

**Program Year:** **2035**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | UNIT PRICE | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| | | Planning Project Only - No Construction | | | | $0 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$0*** |
| | | Planning Fees | | | | $1,000,000 |
| | | Contingency | 20% | | | $200,000 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$1,200,000*** |

*LAKELAND LINDER INTERNATIONAL AIRPORT (LAL)*
LAKELAND, FLORIDA

# CONCEPTUAL ESTIMATE SUMMARY

## *LANDSIDE PROJECTS - LONG RANGE (11-20 YEAR) CIP*

| | | | *FY 2020* | | | *Escalated to Program Year** | | |
|---|---|---|---|---|---|---|---|---|
| ***Project*** | ***Program Year*** | ***Project Description*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program 2020 Budget - Project Total*** | ***Total Construction + Contingency + RI/QA Testing*** | ***Total Design Service Fees*** | ***Total Program Year Budget - Project Total*** |
| **L12** | **Long Range** | **Construct 8,100 SF Hangar** | **$ 17,439,800** | **$ 1,071,700** | **$ 18,511,500** | **$ 22,324,400** | **$ 1,371,900** | **$ 23,696,300** |
| L12.1 | 2030 | Construct Supporting Taxilane/Apron Area to Connect to Taxilane G and Existing Apron Area | $ 1,289,500 | $ 114,600 | $ 1,404,100 | $ 1,650,700 | $ 146,700 | $ 1,797,400 |
| L12.2 | 2030 | Construct eight (8) - 8,100 SF Hangars to the East of Taxilane G | $ 16,150,300 | $ 957,100 | $ 17,107,400 | $ 20,673,700 | $ 1,225,200 | $ 21,898,900 |
| **L13** | **Long Range** | **West Terminal Expansion** | **$ 43,054,200** | **$ 2,751,700** | **$ 45,805,900** | **$ 56,490,800** | **$ 3,610,400** | **$ 60,101,200** |
| L13.1 | 2031 | Remove FBO and FBO Hangars | $ 750,500 | $ 66,700 | $ 817,200 | $ 984,700 | $ 87,500 | $ 1,072,200 |
| L13.2 | 2031 | Expand West Terminal Apron | $ 3,856,700 | $ 285,700 | $ 4,142,400 | $ 5,060,300 | $ 374,900 | $ 5,435,200 |
| L13.3 | 2031 | Expand South Terminal Apron | $ 1,668,800 | $ 136,000 | $ 1,804,800 | $ 2,189,600 | $ 178,400 | $ 2,368,000 |
| L13.4 | 2031 | Expand Terminal to the West | $ 36,778,200 | $ 2,263,300 | $ 39,041,500 | $ 48,256,200 | $ 2,969,600 | $ 51,225,800 |
| ***SUMMARY*** | | ***TOTAL - LANDSIDE - LONG RANGE (11-20 YEAR) CIP PROJECTS:*** | ***$ 60,494,000*** | ***$ 3,823,400*** | ***$ 64,317,400*** | ***$ 78,815,200*** | ***$ 4,982,300*** | ***$ 83,797,500*** |

* Escalation has been compounded to program year at a rate of 2.5% per year from FY 2020 and rounded.

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L12.1 - CONSTRUCT SUPPORTING TAXILANE/APRON AREA

*LONG RANGE CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of a paved aircraft apron and taxilane (approx. 62,100 SF) supporting eight new hangars. Pavement section includes: 12” stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course.**

| **Program Year:** | **2030** |
|---|---|

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 43,000.00 | $ 43,000.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 8,600.00 | $ 8,600.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 43,000.00 | $ 43,000.00 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 3.50 | AC | $ 14,500.00 | $ 50,750.00 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 360 | LF | $ 25.00 | $ 9,000.00 |
| 6 | P-152 | Unclassified Excavation | 1,200 | CY | $ 20.00 | $ 24,000.00 |
| 7 | P-152 | Embankment | 4,100 | CY | $ 20.00 | $ 82,000 |
| 8 | P-401 | Hot Mix Asphalt Surface Course - 5" | 2,050 | TN | $ 120.00 | $ 246,000.00 |
| 9 | P-211 | Limerock Base Course - 17" | 3,300 | CY | $ 55.00 | $ 181,500.00 |
| 10 | P-154 | Stabilized Subgrade Course - 12" | 6,900 | SY | $ 9.00 | $ 62,100.00 |
| 11 | P-152 | Compacted Subgrade - 12" | 2,300 | CY | $ 4.00 | $ 9,200.00 |
| 12 | P-602 | Emulsified Asphalt Prime Coat | 1,730 | GAL | $ 5.00 | $ 8,650.00 |
| 13 | P-603 | Emulsified Asphalt Tack Coat | 870 | GAL | $ 5.00 | $ 4,350.00 |
| 14 | P-620 | Pavement Marking | 400 | LF | $ 2.00 | $ 800.00 |
| 15 | L-125 | Taxiway Edge Fixture with Transformer | 4 | EA | $ 700.00 | $ 2,800.00 |
| 16 | D-701 | Reinforced Concrete Pipe | 1,000 | LF | $ 118.00 | $ 118,000.00 |
| 17 | D-752 | Concrete End Sections | 6 | EA | $ 1,000.00 | $ 6,000 |
| 18 | L-125 | Airfield Guidance Sign and Foundation | 2 | EA | $ 14,000.00 | $ 28,000.00 |
| 19 | T-905 | Topsoil | 2,500 | CY | $ 2.00 | $ 5,000 |
| 20 | T-904 | Seeding | 7,400 | SY | $ 1.00 | $ 7,400 |
| 21 | T-904 | Sodding | 5,000 | SY | $ 3.00 | $ 15,000.00 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$955,200*** |
| 22 | | Design / Permitting Service Fees | 12% | | | $114,600 |
| 23 | | Resident Inspection / Quality Assurance Testing | 15% | | | $143,300 |
| 24 | | Contingency | 20% | | | $191,000 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$1,404,100*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L12.2 - CONSTRUCT EIGHT (8) UNITS EAST OF TAXILANE G

*LONG RANGE CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of eight (8) conventional aircraft hangars, approximately 8,100 SF each (64,800 SF total), next to a new section of aircraft apron.**

**Program Year:** **2030**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 538,900.00 | $ 538,900 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 107,800.00 | $ 107,800 |
| 3 | C-105 | Mobilization | 1 | LS | $ 538,900.00 | $ 538,900 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 1.5 | AC | $ 14,500.00 | $ 21,750 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 250 | LF | $ 25.00 | $ 6,250 |
| 6 | P-152 | Unclassified Excavation | 3,000 | CY | $ 20.00 | $ 60,000 |
| 7 | HNGR | Conventional Hangars - 8 @ 8,100 SF | 64,800 | SF | $ 150.00 | $ 9,720,000 |
| 8 | UTY | Utility Connections | 8 | ALLOW | $ 60,000.00 | $ 480,000 |
| 9 | D-705 | Trench Drain | 800 | LF | $ 250.00 | $ 200,000 |
| 10 | D-701 | Reinforced Concrete Pipe | 2,000 | LF | $ 118.00 | $ 236,000 |
| 11 | D-752 | Concrete End Sections | 14 | EA | $ 1,000.00 | $ 14,000 |
| 12 | T-905 | Topsoil | 2,200 | CY | $ 2.00 | $ 4,400 |
| 13 | T-904 | Seeding | 15,400 | SY | $ 1.00 | $ 15,400 |
| 14 | T-904 | Sodding | 6,600 | SY | $ 3.00 | $ 19,800 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$ 11,963,200*** |
| 15 | | Design / Permitting Service Fees | 8% | | | $ 957,100 |
| 16 | | Resident Inspection / Quality Assurance Testing | 15% | | | $ 1,794,500 |
| 17 | | Contingency | 20% | | | $ 2,392,600 |
| | | | | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | ***$ 17,107,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L13.1 - REMOVE FBO AND FBO HANGARS

*LONG RANGE CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes demolition of three (3) existing buildings (approx. 37,350 SF total) including a single-floor Fixed Based Operations (FBO) building and two conventional hangars associated with the FBO.**

**Program Year:** **2031**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 25,000.00 | $ 25,000.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 5,000.00 | $ 5,000.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 25,000.00 | $ 25,000.00 |
| 4 | FDOT | Terminate Utility Connections | 3 | ALLOW | $ 15,000.00 | $ 45,000.00 |
| 5 | FDOT | Demolish Existing Building - FBO | 4,200 | SF | $ 8.00 | $ 33,600.00 |
| 6 | FDOT | Demolish Existing Building - Hangars (2) | 33,150 | SF | $ 6.00 | $ 198,900.00 |
| 7 | FDOT | Demolish Building Slab/Foundation | 37,350 | SF | $ 1.00 | $ 37,350.00 |
| 8 | FDOT | Unclassified Excavation | 3,000 | CY | $ 20.00 | $ 60,000.00 |
| 9 | T-905 | Topsoil | 3,000 | CY | $ 2.00 | $ 6,000 |
| 10 | FDOT | Load, Haul, and Dump Demolished Material | 24 | LOAD | $ 5,000.00 | $ 120,000.00 |
| | | | | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | ***$555,900*** |
| 11 | | Design / Permitting Service Fees | 12% | | | $66,700 |
| 12 | | Resident Inspection / Quality Assurance Testing | 15% | | | $83,400 |
| 13 | | Contingency | 20% | | | $111,200 |
| | | | | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | ***$817,200*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L13.2 - EXPAND WEST TERMINAL APRON

*LONG RANGE CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of paved aircraft apron (approx. 217,600 SF), which expands the existing apron area for the general aviation terminal. Pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Project includes selective demolition of vehicular roads, resurfacing of select existing apron areas, and connection to existing apron and taxiways.**

**Program Year:** **2031**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 128,700.00 | $ 128,700.00 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 25,700.00 | $ 25,700.00 |
| 3 | C-105 | Mobilization | 1 | LS | $ 128,700.00 | $ 128,700.00 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 2.50 | AC | $ 14,500.00 | $ 36,250.00 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 1,600 | LF | $ 25.00 | $ 40,000.00 |
| 6 | P-101 | Cold Milling, Variable Depth | 5,300 | SY | $ 25.00 | $ 132,500.00 |
| 7 | P-101 | Full Depth Pavement Removal, including Base Material | 11,300 | SY | $ 25.00 | $ 282,500.00 |
| 8 | P-152 | Unclassified Excavation | 1,450 | CY | $ 20.00 | $ 28,991.35 |
| 9 | P-152 | Embankment | 200 | CY | $ 20.00 | $ 4,000 |
| 10 | P-401 | Hot Mix Asphalt Surface Course - 5" | 7,100 | TN | $ 120.00 | $ 852,000.00 |
| 11 | P-211 | Limerock Base Course - 17" | 9,000 | CY | $ 55.00 | $ 495,000.00 |
| 12 | P-154 | Stabilized Subgrade Course - 12" | 18,900 | SY | $ 9.00 | $ 170,100.00 |
| 13 | P-152 | Compacted Subgrade - 12" | 6,300 | CY | $ 4.00 | $ 25,200.00 |
| 14 | P-602 | Emulsified Asphalt Prime Coat | 4,730 | GAL | $ 5.00 | $ 23,650.00 |
| 15 | P-603 | Emulsified Asphalt Tack Coat | 2,370 | GAL | $ 5.00 | $ 11,850.00 |
| 16 | P-620 | Pavement Marking | 2,000 | LF | $ 2.00 | $ 4,000.00 |
| 17 | L-125 | Taxiway Edge Fixture with Transformer | 12 | EA | $ 700.00 | $ 8,400.00 |
| 18 | D-701 | Reinforced Concrete Pipe | 3,000 | LF | $ 118.00 | $ 354,000.00 |
| 19 | D-752 | Concrete End Sections | 20 | EA | $ 1,000.00 | $ 20,000 |
| 20 | L-125 | Airfield Guidance Sign and Foundation | 6 | EA | $ 14,000.00 | $ 84,000.00 |
| 21 | FDOT | Topsoil | 200 | CY | $ 2.00 | $ 400 |
| 22 | T-904 | Sodding | 300 | SY | $ 3.00 | $ 900 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$2,856,800*** |
| 23 | | Design / Permitting Service Fees | 10% | | | $285,700 |
| 24 | | Resident Inspection / Quality Assurance Testing | 15% | | | $428,500 |
| 25 | | Contingency | 20% | | | $571,400 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$4,142,400*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L13.3 - EXPAND SOUTH TERMINAL APRON

*LONG RANGE CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes construction of paved aircraft apron (approx. 90,000 SF), which expands the existing apron area for the general aviation terminal. Pavement section includes: 12" stabilized subgrade, 17" limerock base, and 5" hot mix asphalt surface course. Project includes connection to existing taxiways.**

**Program Year:** **2031**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-100 | Contractor Quality Control Program | 1 | LS | $ 55,700.00 | $ 55,700 |
| 2 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 11,100.00 | $ 11,100 |
| 3 | C-105 | Mobilization | 1 | LS | $ 55,700.00 | $ 55,700 |
| 4 | P-151 | Clearing and Grubbing / Stripping | 3.50 | AC | $ 14,500.00 | $ 50,750 |
| 5 | P-101 | Saw-Cut and Connect to Existing Pavement | 800 | LF | $ 25.00 | $ 20,000 |
| 6 | P-101 | Full Depth Pavement Removal | 450 | SY | $ 25.00 | $ 11,250 |
| 7 | P-152 | Unclassified Excavation | 1,700 | CY | $ 20.00 | $ 34,000 |
| 8 | P-152 | Embankment | 2,300 | CY | $ 20.00 | $ 46,000 |
| 9 | P-401 | Hot Mix Asphalt Surface Course - 5" | 2,950 | TN | $ 120.00 | $ 354,000 |
| 10 | P-211 | Limerock Base Course - 17" | 4,700 | CY | $ 55.00 | $ 258,500 |
| 11 | P-154 | Stabilized Subgrade Course - 12" | 10,000 | SY | $ 9.00 | $ 90,000 |
| 12 | P-152 | Compacted Subgrade - 12" | 3,300 | CY | $ 4.00 | $ 13,200 |
| 13 | P-602 | Emulsified Asphalt Prime Coat | 2,500 | GAL | $ 5.00 | $ 12,500 |
| 14 | P-603 | Emulsified Asphalt Tack Coat | 1,250 | GAL | $ 5.00 | $ 6,250 |
| 15 | P-620 | Pavement Marking | 1,400 | LF | $ 2.00 | $ 2,800 |
| 16 | L-125 | Taxiway Edge Fixture with Transformer | 12 | EA | $ 700.00 | $ 8,400 |
| 17 | D-701 | Reinforced Concrete Pipe | 1,100 | LF | $ 118.00 | $ 129,800 |
| 18 | D-752 | Concrete End Sections | 8 | EA | $ 1,000.00 | $ 8,000 |
| 19 | L-125 | Airfield Guidance Sign and Foundation | 4 | EA | $ 14,000.00 | $ 56,000 |
| 20 | FDOT | Topsoil | 700 | CY | $ 2.00 | $ 1,400 |
| 21 | FDOT | Seeding | 4,700 | SY | $ 1.00 | $ 4,700 |
| 22 | T-904 | Sodding | 2,050 | SY | $ 3.00 | $ 6,150 |
| | | ***TOTAL ESTIMATED CONSTRUCTION COST (2020 DOLLARS)*** | | | | ***$1,236,200*** |
| 23 | | Design / Permitting Service Fees | 11% | | | $136,000 |
| 24 | | Resident Inspection / Quality Assurance Testing | 15% | | | $185,400 |
| 25 | | Contingency | 20% | | | $247,200 |
| | | ***TOTAL ESTIMATED PROJECT COST (2020 DOLLARS)*** | | | | ***$1,804,800*** |

LAKELAND LINDER INTERNATIONAL AIRPORT (LAL) - CIP

# L13.4 - EXPAND TERMINAL TO THE WEST

*LONG RANGE CONCEPTUAL ESTIMATE and PROJECT DETAIL*

**The project includes a two-story expansion of the existing terminal building (approx. 53,100 GSF). The terminal expansion assumes renovation of 10,000 SF of the existing terminal building, and one new passenger boarding bridge (PBB) with foundation.**

**Program Year:** **2031**

| Line No. | Item | DESCRIPTION | EST. QTY. | UNIT | BASE UNIT PRICE ($) | TOTAL AMOUNT |
|---|---|---|---|---|---|---|
| 1 | C-102 | Temporary Pollution, Erosion and Siltation Control | 1 | LS | $ 26,900.00 | $ 26,900 |
| 2 | C-105 | Mobilization | 1 | LS | $ 1,345,900.00 | $ 1,345,900 |
| 3 | P-151 | Clearing and Grubbing / Stripping | 2.00 | AC | $ 14,500.00 | $ 29,000 |
| 4 | P-152 | Unclassified Excavation | 2,000 | CY | $ 20.00 | $ 40,000 |
| 5 | TERM | Airport Terminal Expansion - Two Floors | 53,000 | SF | $ 450.00 | $ 23,850,000 |
| 6 | TERM | Airport Terminal Expansion - Renovation of Existing Terminal | 10,000 | SF | $ 125.00 | $ 1,250,000 |
| 7 | PBB | Passenger Boarding Bridge with Foundation | 1 | LS | $ 1,450,000.00 | $ 1,450,000 |
| 8 | FDOT | Curb Expansion | 1 | ALLOW | $ 80,000.00 | $ 80,000 |
| 9 | UTY | Utility Expansions | 1 | ALLOW | $ 75,000.00 | $ 75,000 |
| 10 | FDOT | High Mast Light Pole | 4 | EA | $ 25,000.00 | $ 100,000 |
| 11 | FDOT | Topsoil | 500 | CY | $ 2.00 | $ 1,000 |
| 12 | FDOT | Seeding | 3,100 | SY | $ 1.00 | $ 3,100 |
| 13 | LSC | Landscape Allowance | 1 | ALLOW | $ 40,000.00 | $ 40,000 |
| | | ***TOTAL ESTIMATED DIRECT COST OF WORK (2020 DOLLARS)*** | | | | ***$28,290,900*** |
| 14 | | Design / Permitting Service Fees | 8% | | | $2,263,300 |
| 15 | | Resident Inspection / Quality Assurance Testing | 10% | | | $2,829,100 |
| 16 | | Contingency | 20% | | | $5,658,200 |
| | | ***TOTAL ESTIMATED PROGRAM BUDGET (2020 DOLLARS)*** | | | | ***$39,041,500*** |

This Page Intentionally Left Blank

# Appendix D

Public Involvement Program Documentation

# Appendix D: Public Involvement Program Documentation

The following attachments are included for reference regarding the public involvement program that was included as part of the Lakeland Linder International Airports Master Plan Update.

- Advertisements
- Handouts
- Public Comments
- Public Meeting Attendees

## Devera, Amy

**Subject:** Lakeland Linder International Airport Master Plan - Public Workshop
**Location:** Lakeland Linder International Terminal

**Start:** Wed 1/15/2020 4:00 PM
**End:** Wed 1/15/2020 7:00 PM

**Recurrence:** (none)

**Meeting Status:** Meeting organizer

**Organizer:** Devera, Amy
**Required Attendees:** Andy Castro; Bob Highley; Carl Newman; Chris Ryle; City Commission Cal; Craig Stewart; Eric Crump; Franklin, Scott; Gene Conrad; Gerald Prescott; Greg Gibson; Hallstrand, Chris; Jared Moreng; Jay Scalise; Jennifer Stovall; John Von Preysing; Justin Edwards; Larry Alexander; Laurie Fuller; Lunn, Adam; Municipal Boards; Mutz, Bill; Samantha Meadows; Sharon Herber; Stacy Allison; Stanley Price; Teresa Cornett; Tim Shea; Tony Delgado; Traci Terry; Sherrouse, Shawn; csucich@avconinc.com

# LAKELAND LINDER INTERNATIONAL AIRPORT MASTER PLAN

PUBLIC MEETING JANUARY 15TH

The Lakeland Linder International Airport (LAL) is currently undergoing an update to the Airport Master Plan. An Airport Master Plan is a comprehensive study of the airport and describes the short-, medium-, and long-term development plans necessary to meet the anticipated future demand. The City of Lakeland has retained the services of Atkins North America in assisting with the development of the Airport Master Plan. The Master Plan has been under development since early 2018 and is fast approaching its conclusion.

The City of Lakeland and Atkins invite you to attend a public meeting on the Lakeland Linder International Airport Master Plan that will be held on Wednesday January 15, 2020 between 4 pm and 7 pm at the Lakeland Linder International Terminal building, located at 3900 Don Emerson Drive Lakeland 33811. Please stop by during this time to learn more about the planning process, review the alternative development plans, and speak with the airport staff and consultant about your concerns and recommendations.

Your voice will help in shaping the future of the Lakeland Linder International Airport long into the future. We look forward to seeing you on January 15th.

If you have any questions, please let me know.

Thank you,

**Amy Devera**
**Administrative Assistant**
**Lakeland Linder International Airport**
**City of Lakeland**
**3900 Don Emerson Drive, Suite 210**
**Lakeland, FL 33811**
**p. 863.834.3294**

**Devera, Amy**

**From:** Devera, Amy
**Sent:** Friday, December 20, 2019 2:04 PM
**Subject:** Lakeland Linder International Airport Master Plan - Public Meeting

## LAKELAND LINDER INTERNATIONAL AIRPORT MASTER PLAN

PUBLIC MEETING JANUARY 15TH

The Lakeland Linder International Airport (LAL) is currently undergoing an update to the Airport Master Plan. An Airport Master Plan is a comprehensive study of the airport and describes the short-, medium-, and long-term development plans necessary to meet the anticipated future demand. The City of Lakeland has retained the services of Atkins North America in assisting with the development of the Airport Master Plan. The Master Plan has been under development since early 2018 and is fast approaching its conclusion.

The City of Lakeland and Atkins invite you to attend a public meeting on the Lakeland Linder International Airport Master Plan that will be held on Wednesday January 15, 2020 between 4 pm and 7 pm at the Lakeland Linder International Terminal building, located at 3900 Don Emerson Drive Lakeland 33811. Please stop by during this time to learn more about the planning process, review the alternative development plans, and speak with the airport staff and consultant about your concerns and recommendations.

Your voice will help in shaping the future of the Lakeland Linder International Airport long into the future. We look forward to seeing you on January 15th.

If you have any questions, please let me know.

Thank you,

**Amy Devera**
**Administrative Assistant**
**Lakeland Linder International Airport**
**City of Lakeland**
**3900 Don Emerson Drive, Suite 210**
**Lakeland, FL 33811**
**p. 863.834.3294**
**c. 813.659.6125**
**f. 863.834.3274**
**facebook.com/LakelandAirport**

**PUBLIC NOITCE**

The Lakeland Linder International Airport (LAL) is currently undergoing an update to the Airport Master Plan. An Airport Master Plan is a comprehensive study of the airport and describes the short-, medium-, and long-term development plans necessary to meet the anticipated future demand. The City of Lakeland has retained the services of Atkins North America in assisting with the development of the Airport Master Plan. The Master Plan has been under development since early 2018 and is fast approaching its conclusion.

The City of Lakeland and Atkins invite you to attend a public meeting on the Lakeland Linder International Airport Master Plan that will be held on Wednesday January 15, 2020 between 4 pm and 7 pm at the Lakeland Linder International Terminal building, located at 3900 Don Emerson Drive Lakeland 33811. Please stop by during this time to learn more about the planning process, review the alternative development plans, and speak with the airport staff and consultant about your concerns and recommendations.

Your voice will help in shaping the future of the Lakeland Linder International Airport long into the future. We look forward to seeing you on January 15th.

LL-LH345793 1-5; 2020

☐ **PROOF O.K. BY:**____________________ ☐ **O.K. WITH CORRECTIONS BY:**____________________

**PLEASE READ CAREFULLY • SUBMIT CORRECTIONS ONLINE**

**LL-LH345793 (100%)**

ADVERTISER: CITY OF LAKELAND_LEGAL A
PROOF CREATED AT: 12/19/2019 3:02:29 PM
SALES PERSON: LLL060
NEXT RUN DATE: 01/05/20
SIZE: 2X3
PROOF DUE: 01/03/20 10:59:55
PUBLICATION: LL-LEDGER

# Upcoming Event


## Public Meeting: Lakeland Linder International Airport Master Plan

01/15/2020 4:00 PM - 01/15/2020 7:00 PM
Lakeland Linder International Airport Terminal | 3900 Don Emerson Drive, Lakeland, FL 33811

Lakeland Linder International Airport (LAL) is currently undergoing an update to the Airport Master Plan. This 20-year plan is a comprehensive study of the airport and describes the short, medium, and long-term development strategy necessary to meet the anticipated future demand of the airport.

The public is invited to attend a public meeting on the Airport Master Plan that will take place on Wednesday, January 15, 2020. The public meeting will be from 4 p.m. - 7 p.m. at the Lakeland Linder International Terminal building, located at 3900 Don Emerson Drive Lakeland 33811.

The City of Lakeland has retained the services of Atkins North America in assisting with the development of the Airport Master Plan. Atkins North America is one of the world's most respected design, engineering and project management consultants for the international aviation market. The Master Plan for Lakeland Linder International Airport has been under development since early 2018 and is approaching its conclusion.

Gene Conrad, Director of the Lakeland Linder International Airport said, "We have experienced a tremendous amount of growth and new development at the airport since the last master plan was completed in 2011." He added, "Over the past several years Lakeland Linder International Airport has become home to the NOAA Hurricane Hunters, Polk State College Aerospace and Amazon's new Air Cargo facility."

Lakeland Linder International Airport invites the public to attend the master plan session on January 15th to learn more about the strategic process, review alternative development plans and share ideas with staff. Conrad said, "Your voice will help in shaping the future of the Lakeland Linder International Airport long into the future. We look forward to seeing you on January 15th."

Lakeland Linder International Airport is home to the world-famous NOAA Hurricane Hunters. The airport property delivers a $574 million economic impact to the region based on the 2019 FDOT Economic Impact Study. Lakeland Linder is a FAA Part 139 Certificated Airport capable of accepting air carrier aircraft with Aircraft Rescue Firefighting services. There were over 125,000 aircraft operations this past year, making it the 112th busiest airport in the United States. Lakeland Linder International Airport is home to over 275 based aircraft including 40 jets and turboprop aircraft. The airport is home to the Central Florida Aerospace Academy and Polk State College - Aerospace programs.

## Contact

**Kevin Cook**
Director of Communications
City of Lakeland
863.834.6264
kevin.cook@lakelandgov.net

All Events

*228 S. Massachusetts Ave. | Lakeland, Florida 33801 | 863.834.6000 | Hours & Closing | Accessibility | Important Numbers | Site Map*


The City of Lakeland is committed to facilitating the accessibility and usability of its Website, lakelandgov.net, for all people with disabilities. If you use assistive technology (such as a Braille reader, a screen reader, or TTY) and the format of any material on this website interferes with your ability to access information, please contact us. If you do encounter an accessibility issue, please be sure to specify the Web page in your email, and we will make all reasonable efforts to make the page accessible for you. Users who need accessibility assistance can also contact Jenny Sykes, ADA Specialist at 863.834.8444 or Jennifer.Sykes@lakelandgov.net. Our Website will be reviewed and tested on an ongoing basis, utilizing assistive technologies by users who have knowledge of and depend on the performance of these technologies.

# LAKELAND CITY COMMISSION CALENDAR OF EVENTS

## JANUARY 2020

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|
| DECEMBER 30 | DECEMBER 31 | 1<br>New Year's Day Holiday<br>City Hall Closed | 2 | 3<br>8:30 AM-Agenda Study (CC Conf Rm) |
| 6<br>1:00 PM-Utility Committee (CC Chamber)<br>3:00 PM-City Commission Meeting (CC Chamber) | 7 | 8<br>8:30 AM-LAMTD Board Meeting (1212 George Jenkins Blvd) | 9 | 10 |
| 13 | 14 | 15<br>4:00 PM-Lakeland Linder International Airport Master Plan - Public Workshop (LLIA Terminal) | 16<br>6:45 AM-Chamber's Annual Economic Forecast Breakfast (RP Funding Center) | 17<br>8:30 AM-Agenda Study (CC Conf Rm) |
| 20<br>Martin Luther King Jr. Holiday<br>City Hall Closed<br>9:00 AM-MLK Prayer Breakfast (Henry Ross Family Life Center--1302 MLK Avenue) | 21<br>3:00 PM-City Commission Meeting (CC Chamber) | 22 | 23 | 24 |
| 27 | 28 | 29 | 30 | 31<br>8:30 AM-Agenda Study (CC Conf Rm)<br>9:30 AM-Policy Workshop (CC Conf Rm) |
| FEBRUARY 3<br>1:00 PM-Utility Committee (CC Chamber)<br>3:00 PM-City Commission Meeting (CC Chamber) | FEBRUARY 4 | FEBRUARY 5 | FEBRUARY 6 | FEBRUARY 7 |

# Airports 101

## Airport & Aviation Terminology

**Airport Master Plan**
An airport master plan is a comprehensive study of an airport and usually describes the short, medium, and long-term development plans to meet future aviation demand.

**Aircraft Operation**
The landing, takeoff or touch-and-go procedure by an aircraft on a runway at an airport.

**Airport Improvement Program (AIP)**
The AIP provides grants to public agencies, and in some cases, to private owners and entities, for the planning and development of public-use airports that are included in the NPIAS.

**Airport Layout Plan (ALP)**
A scaled drawing (or set of drawings), in either traditional or electronic form, of current and future airport facilities that provides a graphic representation of the existing and long-term development plan for the airport and demonstrates the preservation and continuity of safety, utility, and efficiency of the airport to the satisfaction of the FAA.

**Airport Reference Code (ARC)**
An ARC is a combination of the design aircraft's Aircraft Approach Category and Airplane Design Group. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely on the airport.

**Airport Reference Point (ARP)**
The approximate geometric center of all usable runways at the airport.

**Aircraft Approach Category (AAC)**
A term used to specify a grouping of aircraft based upon approach speed in a landing configuration at their maximum certified landing weight.

**Airplane Design Group (ADG)**
A classification of aircraft based upon wingspan and tail height.

**Based Aircraft**
Based aircraft are those that have a lease either for storage facilities or space on a parking apron at the airport, for a majority of the year.

**Building Restriction Line (BRL)**
A notional line that identifies suitable and unsuitable locations for buildings on airports on the Airport Layout Plan.

**Declared Distances**
The distances the airport owner declares available for an aircraft's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:
• Takeoff Run Available (TORA)
• Takeoff Distance Available (TODA)
• Accelerate-Stop Distance Available (ASDA)
• Landing Distance Available (LDA)

**Design Aircraft / Critical Aircraft**
An aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This aircraft can be a specific aircraft model or a composite of several aircraft using, expected, or intended to use the airport or part of the airport. (Also called "critical aircraft" or "critical design aircraft.")

# Airports 101

## Airport & Aviation Terminology

**Displaced Threshold**
A threshold that is located at a point on the runway beyond the beginning of the runway.

**Enplanement**
The boarding of a passenger or unit of cargo, freight, and mail on an aircraft at an airport.

**Fixed Base Operator (FBO)**
A business enterprise located at on airport that provides services to pilots including aircraft rental, training, fueling, maintenance, parking, and the sale of pilot supplies.

**General Aviation (GA)**
All non-scheduled flights other than military conducted by non-commercial aircraft. General aviation covers local recreational flying to business transport that is not operating under the FAA regulations for commercial air carriers.

**Hot Spot**
A location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.

**Imaginary Surfaces**
Described in Federal Aviation Regulations (FAR) Part 77 as established surfaces based on the runway that are used to identify objects that may impact airport plans or aircraft departure/arrival procedures or routes. There are five types of imaginary surfaces: horizontal, conical, primary, approach and transitional.

**Instrument Approach Procedure (IAP)**
A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

**Itinerant Operations**
Operations by aircraft that leaves the local airspace.

**Large Aircraft**
An aircraft with a maximum certificated takeoff weight of more than 12,500 lbs

**Local Operations**
Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

**Modification to Standards**
Any approved nonconformance to FAA standards, other than dimensional standards for Runway Safety Areas (RSAs), applicable to an airport design, construction, or equipment procurement project that is necessary to accommodate an unusual local condition for a specific project on a case-by-case basis while maintaining an acceptable level of safety.

**Movement Area**
The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft including helicopters and tilt-rotors, exclusive of loading aprons and aircraft parking areas

**National Plan of Integrated Airport Systems (NPIAS)**
The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

# Airports 101

## Airport & Aviation Terminology

**National Environmental Policy Act (NEPA)**
A U.S. Environmental law that promotes the enhancement of the environment. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations.

**Navigational Aid (NAVAID)**
Electronic and visual air navigation aids, lights, signs, and associated supporting equipment.

**Object Free Area (OFA)**
An area centered on the ground on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects, except for objects that need to be in the OFA for air navigation or aircraft ground maneuvering purposes.

**Obstacle Free Zone (OFZ)**
The OFZ is the three-dimensional airspace along the runway and extended runway centerline that is required to be clear of obstacles for protection for aircraft landing or taking off from the runway and for missed approaches.

**Runway Safety Area (RSA)**
Defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.

**Runway Protection Zone (RPZ)**
A trapezoidal area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground.

**Small Aircraft**
An aircraft with a maximum certificated takeoff weight of 12,500 lbs or less.

**Terminal Area Forecast (TAF)**
The official forecast of aviation activity, both aircraft and enplanements, at FAA facilities. This includes FAA-towered airports, federally contracted towered airports, non-federal towered airports, and many non-towered airports.

**Taxilane**
A taxiway designed for low speed and precise taxiing. Taxilanes are usually, but not always, located outside the movement area, providing access from taxiways (usually an apron taxiway) to aircraft parking positions and other terminal areas.

**Taxiway**
A defined path established for the taxiing of aircraft from one part of an airport to another.

**Taxiway Design Group (TDG)**
A number classification of aircraft based upon the aircraft main gear width, and distance from the cockpit to the main gear.

**Threshold**
The beginning of that portion of the runway available for landing. In some instances, the threshold may be displaced. “Threshold” always refers to landing, not the start of takeoff.

# Airport Master Plan

## Frequently Asked Questions

**1. What is an Airport Master Plan?**

An Airport Master Plan presents the community and airport's vision for a 20-year strategic development plan based on the forecast of activity. The Master plan is used as a decision-making tool and is intended to complement and integrate into other local regional and national plans. The Airport Master Plan consists of a report documenting existing conditions of the Airport, a forecast of activity, facility requirements (the airport's needs based on the forecast and compliance with FAA Design Standards for airports), development and evaluation of alternatives to meet those needs, and a funding plan for that development. The Airport Master Plan also includes an Airport Layout Plan (ALP).

**2. What is an Airport Layout Plan and why do we need one?**

An Airport Layout Plan (ALP) graphically depicts all planned development at the airport within the 20-year planning period which is studied in the Airport Master Plan. This drawing requires approval by the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT) which makes the airport eligible to receive federal and state funding under the FAA's Airport Improvement Program and the FDOT's Grant Program.

**3. How often are Airport Master Plans and Airport Layout Plans undertaken?**

FAA guidance recommends that Airport Master Plans be completed every 5 to 10 years based on the development needs of the airport and market changes. Airport Layout Plans should be kept current always to ensure Airport Improvement Program funding compliance.

**4. Why are you doing this Airport Master Plan?**

The FAA requires a current approved ALP for an airport to be eligible for federal funding. In the years since the Airport's previous ALP and Airport Master Plan were prepared, there have been significant changes that necessitate a Master Plan and ALP update. These factors include the airport accomplishing a significant amount of previously programmed improvements, updated FAA Design standards, changes in aviation markets, and shifts in the types and levels of activity at the Airport.

**5. How much input will the community have in the planning process?**

The City of Lakeland and Lakeland Linder International Airport are excited to welcome community input at all stages of the Airport Master Plan process. Feedback can be provided to the airport via email at lakelandairport@lakelandgov.net. Additionally, the planning process will include one public meeting to invite the community to share ideas, opinions and concerns regarding the future of Lakeland Linder International Airport. To receive notification of future public meetings please contact the Airport at lakelandairport@lakelandgov.net or visit the Airport's website (www.FlyLakeland.com). Updates on the progress of the Airport Master Plan process as well as supporting documentation will be posted on the Airport's website (www.FlyLakeland.com).

**6. Will the Airport Master Plan report be made available to the public?**

The Airport Master Plan will be divided into several draft reports, available in draft format for public review and comment. All draft reports and the final submission will be posted on the Airport's website for public review (www.FlyLakeland.com).

**7. What is the cost to prepare the Airport Master Plan study?**

The cost to prepare the Airport Master Plan study is $665,000. Ninety percent of the cost is covered by the FAA, 5-percent covered by the FDOT, and a 5-percent local match by the City of Lakeland.

**8. What level of environmental analysis will be conducted as part of the study?**

The Airport Master Plan will include an Environmental Overview section that will outline the environmental resources on and surrounding the airport. This overview will aid in the development of airport alternatives. A noise analysis will also be completed as part of the environmental analysis process.

# Project Fact Sheet

The City of Lakeland and the Lakeland Linder International Airport (LAL) have begun a master planning process to define the vision and provide the necessary framework to guide airport development at the airport for the next 20 years.

## WHAT IS AN AIRPORT MASTER PLAN?

An Airport Master Plan is a study to determine the long-term development plans for an airport including the extent, type and schedule of development required to meet the forecasted needs. Airport master planning is a strategic process used to establish guidelines for the efficient development of airports that is consistent with local, state and national goals.

The purpose of an Airport Master Plan Update is to study and provide the Airport a 20-year development program that will create a safe, efficient, economical, and environmentally responsible airport facility. This study will capable of facilitating the demand for aviation services expected, meet the development goals of the Airport Authority, and create additional public value for residents in the Lakeland area and the aeronautical community at large.

The final product will serve as a critical tool for LAL depicting the existing airport facilities, and planned development initiatives. This document is vital for coordination between LAL, the Federal Aviation Administration (FAA), and the Florida Department of Transportation (FDOT) for capital improvement needs.

## ABOUT THE PROJECT

The Airport Master Plan project is an 18-month process that will be completed in the Spring of 2020.

The Airport Master Plan project is funded through a grant partnership with the FAA, FDOT and local funding sources. The Airport received an FAA grant for approx. 90% of project costs, and an FDOT grant for approx. 5% of project costs, with the City providing funding for the remaining approx. 5%.

FlyLakeland
Lakeland Linder International Airport

## ABOUT THE AIRPORT

The Lakeland Linder International Airport is the primary public-use airport, serving the Lakeland Community. Situated along the I-4 corridor, the Airport is midway between Tampa and Orlando, with excellent access to I-4 via the Polk Parkway. The Airport is owned and operated by the City of Lakeland and managed by the Airport Director.

In 1940 the Lakeland City Commission passed a resolution to replace the City's municipal airport. Tentatively named Lakeland Municipal Airport No. 2 the planned location was leased to the War Department at the start of WWII. The U.S. Army Air Corps took possession of the planned airport and constructed three runways along with associated taxiways, ramps, hangars, and outbuildings to support flight training activities on heavy bombardment, medium bombardment, and fighter aircraft.

Today, Lakeland Linder International Airport is the 115th busiest airport in the United States, and the 19th busiest airport in the State of Florida. The Airport supports a variety of activities including: aerospace education (Central Florida Aerospace Academy and Polk State College – Aerospace); the NOAA Aircraft Operations Center; U.S. Customs Services; Department of Defense (DoD) Contractors (Draken International); aircraft export and ferrying; flight training; military training exercises, aircraft storage; aircraft rental; car rental; restaurants; hotels; special events; emergency relief staging and logistics distribution; air charter operations; and aircraft servicing, maintenance, painting, interior, and avionics shops among other non-aviation activities.

## GET INVOLVED

The City is dedicated to a transparent, complete and inclusive planning process. The Airport is excited to engage the community and stakeholders to gather feedback to develop the Airport Master Plan. You can participate in the Airport Master Plan Process in any of the following ways:

### Visit the Project Website

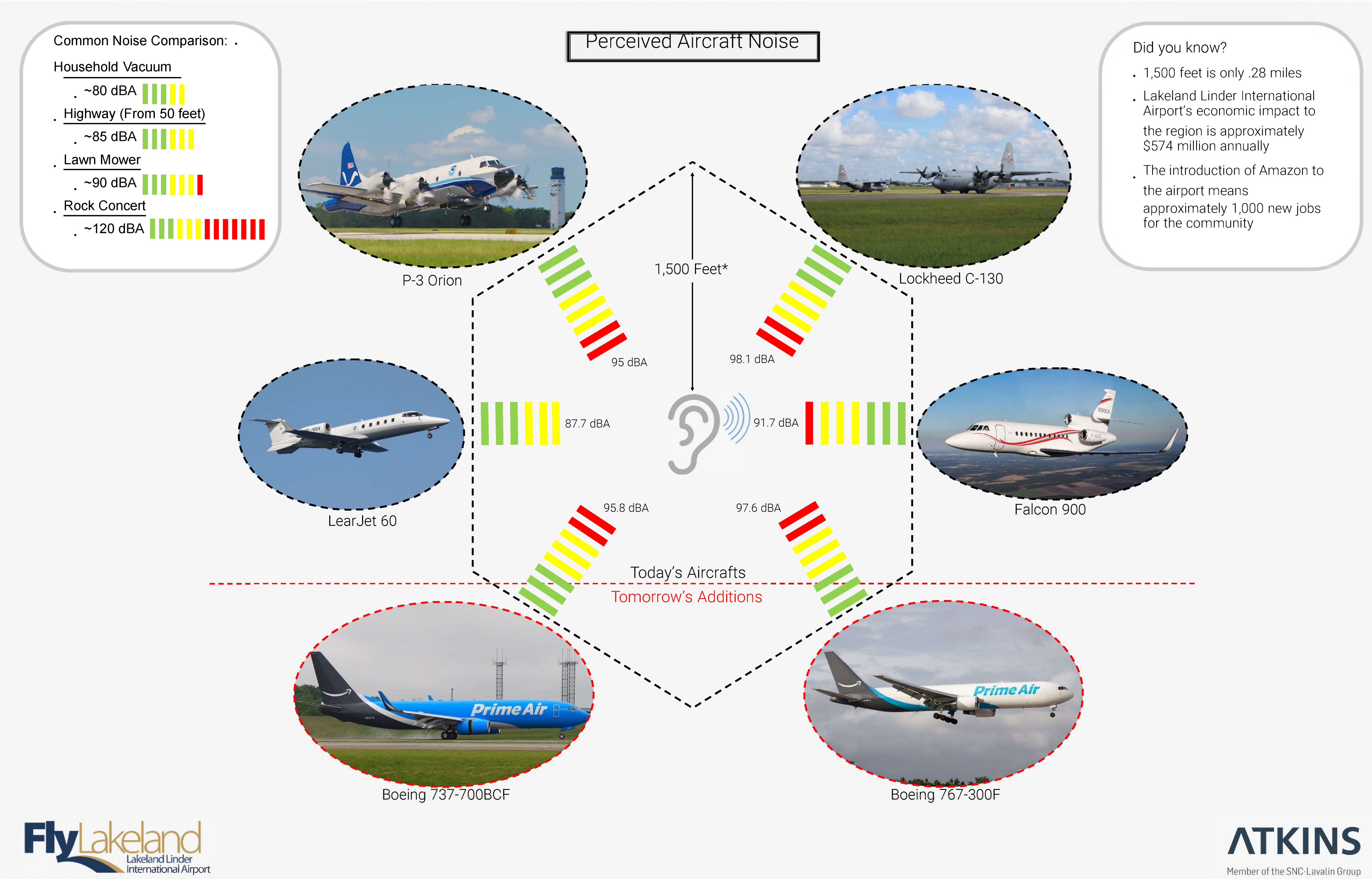
Located at **www.FlyLakeland.com/airportmasterplan** for Airport Master Plan updates and events, informational materials, and to submit public comment.

### Participate in a Public Workshop

To learn more about the project and provide feedback that will help shape the Airport Master Plan, a public workshop will be held during the planning process.

### Attend Advisory Committee Meetings

A Technical Advisory Committee will be composed of airport stakeholder representatives who will provide input throughout the planning process. Meetings will be held periodically, and the public is welcome to attend and provide comment.




*Note: The perceived noise levels illustrated in the above figure is as if an individual is standing 1,500 feet from the noise source. The presented noise levels are the maximum anticipated noise output for each aircraft.

Note: Noise levels based on Federal Aviation Administration Advisory Circular 36 1H, *Noise Levels of U.S. Certificated and Foreign Aircraft.*

THANK YOU!

FlyLakeland Lakeland Linder International Airport

ATKINS

Name [redacted] Phone [redacted]

Comment: Thank you for growing Lakeland Business Love the open / transparent open house.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

---

THANK YOU!

FlyLakeland Lakeland Linder International Airport

ATKINS

Name [redacted] Phone [redacted]

Comment: Thank you for Keeping your neighbors informed. Good Luck in The future

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

---

THANK YOU!

FlyLakeland Lakeland Linder International Airport

ATKINS

Name [redacted] Phone [redacted]

Comment: Thanx for invite – please post on line!

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

---

THANK YOU!

FlyLakeland Lakeland Linder International Airport

ATKINS

Name [redacted] Phone [redacted]

Comment: Exciting plans for our airport. All in all, the future planned seems reasonable, and doable! Thanks Jeff Lakeland

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

---

THANK YOU!

FlyLakeland Lakeland Linder International Airport

ATKINS

Name [redacted] Phone [redacted]

Comment: AN EXCELLENT PRESENTATION – DATA DRIVEN AND THE PLAN WELL THOUGHT OUT, MORGAN CREEK RESIDENTS WILL BE RELIVED.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

---

THANK YOU!

FlyLakeland Lakeland Linder International Airport

ATKINS

Name [redacted] Phone [redacted]

Comment: Great plan – well thought out – good for Lakeland & Polk County.

I hope we can have good quality / value resturant operations as a priority too.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Thanks for this great opportunity to see the future expansion. Very good approach to have an open house

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: As a resident in the Forestgreen neighborhood, I'm still excited to see the Linder airport grow. Noise level will always be a concern, but I would personally love to see commercial flights to major airport hubs like Atlanta, Denver, LAX, etc. Of course while taking into consideration standard noise ordinances that other cities implement (i.e. flights after 6am, etc). Thank you for keeping the public informed about these exciting plans!

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Thank you for the opportunity to learn. I am new to the area (moved here August 2019). Honestly, I don't know enough to voice a comment. I do like the opportunity to see photo boards of proposed ideas + concepts. I do support the concepts shared today.

—Thanks again!

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: very informative.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Thank you for taking the time to schedule this public meeting. As a homeowner near the airport I found the information informative. I support the airport's growth plan and agree with the preferred alternative. I believe this is a positive for the Lakeland community. I would like to see more commercial flights from the airport. I would also like more information regarding the airport's impact on local roads.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Thank you for providing this much-needed information. I learned much and had many questions answered. We appreciate this opportunity. Thank you for wanting to be a good neighbor.

Morgan Creek Preserve

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: EXCITING THINGS ARE HAPPENING AT KLAL. GREAT JOB!

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Really Nice plan! I agree to many of the alternatives. If there was room and a need for it, would there be a Terminal B east of the original terminal?

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: A principal concern for SNF is (would be) that there is a written commitment that, as part of the overall project cost, funds are definitely there for constructing the equivalent square footage that SNF would lose. We ~~would~~ would not want to go back to the SNF sponsors and donors to ask them to (donate) pay to rebuild the buildings that SNF lost to this project.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Happy to see Air Traffic from 5-23 go away with new parallel
Sadly it may open opportunity for developer of MCP to try again fill in pond + build on it.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Concerns about flight paths and who regulates them needs further explaining.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

## THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Noise curfew

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

# THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: Noise = Curfew

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

# THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment:
I'm very concerned regarding increase in noise pollution as well as increase in road traffic.
I liked Lakeland as a "bedroom" community and would rather drive to Orlando or Tampa once in a while to fly than have planes flying across the city daily.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

# THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment: I would like to see some type of an "alert" app, available to residents in the dense residential areas surrounding the airport in the event of some aviation ~~aviation~~ related emergency.
Nextdoor.com is a social media platform that covers areas surrounding the airport plus almost 49 other communities in Polk County and further (I think)
It would be wise for this airport to link in with this platform.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

# THANK YOU!

FlyLakeland Lakeland Linder International Airport | ATKINS

Name [redacted] Phone [redacted]

Comment:
When commercial flight operations begin --
1) More people parking (Short + Long term)
2) Do NOT Charge for parking for 1-2 yrs.
3) Encourage people to use new service + not penalize them by charging for parking.

Lakeland Linder International Airport
Airport Master Plan Update
Public Meeting | January 15, 2020

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| MIKE MAGUIRE | The MAGUIRES OF LAKELAND | [redacted] | |
| DONOVAN BALTICH | | | |
| Pat Steed | CFRPC | | |
| Ron Gaul | Pilot & PLANE OWNER | | |
| John Bunn | B. H. Bunn Co. | | |
| Jack Waters | | | |
| Wendy & Ed Rees | Waring Rd. | | |
| LYNDA Iorio | Carillon LAKES | | |
| Regis Finnegan | " | | |
| John Vollbrecht | Menzies Aviation | | |
| | | | |
| | | | |
| | | | |
| | | | |

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| Chris Knight | Town Park Estates Resident | [redacted] | |
| Mary Stanton | Carillon Lakes | | |
| Jeff Brombaugh | Morgan Creek. | | |
| Larry Alexander | City of Lakeland | | |
| Jason Willey | " " | | |
| MaryBeth Hall | Morgan Creek Preserve. | | |
| Brandy Randolph | Hamilton Rd | | |
| Anthony Ferraro | Steeple Chase | | |
| Lisa Ruthven | The Ruthvens | | |
| Matt Ruthven | The Ruthvens | | |
| Kelly Stanwood | Morgan Creek Preserve | | |
| Kimberly Brewer | Aerospace Center for Excellence | | |
| Janci B. Lunn | – | | |
| Barbara Johnson | Carillon Lakes | | |

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| Patty Lee | Medulla | [redacted] | |
| Rosaline Cabrera | Forestgreen Homeowner | | |
| Nicolas Leon | Forestgreen Homeowner | | |
| TRACY NEAL | SUN n FUN | | |
| GEORGE URBANO | POLK STATE COLLEGE | | |
| JAMES PRECIOUS | | | |
| JUDY HARRINGTON | FORREST GREEN | | |
| SEAN MALOTT | CFDC | | |
| Ryan Reis | Lakeland Chamber | | |
| GARY HERRFORD | Morgan Creek Preserve | | |
| JAKE DEHAAN | SUN N FUN | | |
| Vecelia Greives | | | |
| Geil Cragg | Carillon Lakes | | |
| JON HIERL | Legends Airways | | |

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| JOANNE CHAVES | CARILLON LAKES | [redacted] | |
| Charles Stanphill | The Beck Group | | |
| PETE GARRITT | | | |
| Gwynne Johnson | | | |
| Maggie Briggs | The Lunz Group | | |
| David Duncan | Hangar Tenant | | |
| EMILY BREHENY | THE LUNZ GROUP | | |
| Curtis Hall | Morgan Creek Preserve | | |
| Theresa DeHaan | | | |
| JUSTIN EDWARDS | ICE | | |
| Merrick Endres | | | |
| HARRY SILCOX | AIRPORT TENNENT / NEIGHBOR | | |
| DARYL G. HICKS | LEGENDS AIRWAY | | |
| THOMAS COLEMAN | Legends Airway | | |

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| Joe Childs | Southeastern University | [redacted] | |
| Harold & Linda Webb | Property owner - Forestwood Dev | | |
| Bob & Megan Hawkes | Property Owner - Morgan Creek | | |
| Dave + Sandra Moss | Morgan Creek | | |
| Liz Rovaldi | Morgan creek | | |
| Chris + Julie LaFay | Morgan Creek | | |
| David Buckner | | | |
| Michelle VanAllen | Medulla | | |
| Dave Baker | Stoney Pointe Sub | | |
| CHERI CURTIS | HIGHLANDS CROSSING | | |
| Audrey Lussier | Carillion Lakes homeowner | | |
| Danny Roach | Hamilton Rd | | |
| Fidel Peralta | Morgan creek | | |
| Kofi Oboeng | Legends Airways | | |

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| CRAIG PAYNE | TENANT | [redacted] | |
| Ken Bell | Local citizen | | |
| Bob Perro | " " | | |
| Darrell Deal | " " | | |
| Robert White | | | |
| Matt & Donna Bishop | " | | |
| Judy Anderson | " | | |
| Bill & Paula Hoenstine | " | | |
| Gary Thomas | " | | |
| Dewey Winstead | " | | |
| Pete Hoffman | TSA / RESIDENT | | |
| Kati Lundy | Neighbor | | |
| Randy Aitkin | Contractor | | |
| Daryl Zagrocki | Local citizen | | |

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| [illegible] | tenant | [redacted] | [redacted] |
| [illegible] | tenant | [redacted] | [redacted] |
| Lynne DeLong | | [redacted] | [redacted] |
| Cheryl Tallman | Country Village | [redacted] | [redacted] |
| JARED WYNN | CONSULTANT | [redacted] | [redacted] |
| John Malott | | [redacted] | [redacted] |
| Debbie Hannifan | | [redacted] | [redacted] |
| BOB & SUSAN HICKEY | AIRPORT TENANT | [redacted] | [redacted] |
| Shawn Graham | | [redacted] | [redacted] |
| Susan Phelps | | [redacted] | [redacted] |
| George + Rosemarie Maguire | resident | [redacted] | [redacted] |
| STEVE ALCORN | DME SERVICES | [redacted] | [redacted] |
| JOHN McSHANE | | [redacted] | [redacted] |
| JOHN HALL | X49 SNF | [redacted] | [redacted] |

FlyLakeland
Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| Beverly Humphries | Morgan Creek Prop. Owner | [redacted] | |
| Thomas Manske | Property Owner | | |
| Gary A. Hoff | SNF | | |
| Dany Romero | NOVA ENGINEERING | | |
| Pam Stephens | Carillon Lakes | | |
| Dana Plunkett | City | | |
| CBMcPeek | Res. / REALTOR | | |
| [illegible] | Res | | |
| William Day | Prop Owner | | |
| Frank Howes | | | |
| MIKE MERCK | | | |
| Gary Erickson | Carillon Lakes | | |
| Dixie Davis | Morgan Creek | | |
| Donna Alder | | | |

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| Steve Michaler | Property owner | [redacted] | |
| Beth Smith | property owner | | |
| Donna Berberot | " " | | |
| Stan & Maren Jones | " " | | |
| Doug + Nancy Kickhush | " " | | |
| LAWRENCE BLACKWELDER | Property OWNER | | |
| Walter Hill | Ret | | |
| Jim Verplanck | Sun'n Fun | | |
| Chad HAYNES | Ret | | |
| Jeff Lakeland | all | | |
| Bill JANSSEN | SUN N FUN | | |
| John MacGregor | resident | | |
| Mark [illegible] | Eng Co LLC | | |
| CLIFF GOODSPEED | Res. | | |

FlyLakeland Lakeland Linder International Airport

ATKINS

Meeting: Public Meeting | LAL Airport Master Plan

Date: January 15, 2020 Time: 4:00 PM Location Lakeland Linder International Airport

| Name | Affiliation | Email | Phone |
|---|---|---|---|
| Brenda Roach | Prop Owner | [redacted] | |
| Marilyn + Nelson Kimball | Morgan Creek Homeowner | | |
| SAM LYONS | | | |
| Stephen L. Thomas | Sun-n-Fun | | |
| DAVID COSS | DRAKEN | | |
| Nicole Glasgow | Hertz Rental | | |
| William Kidwell | | | |
| Joyce Sanborn | Sun n fun + Seaplane Pilots Assoc. | | |
| Ernie Sanborn | " " | | |
| Jim Goldman | Sun-n-Fun | | |
| Bob Beaty | Sun-n-Fun | | |
| Lea Ann Joyner | | | |
| Barbara Sweeney | Carillon Lakes | | |
| Mike O'Connor | Dixie Jet & Rotor | | |

**Tom Roda**
813.281.7672
*Thomas.Roda@atkinsglobal.com*

4030 West Boy Scout Boulevard
Suite 700
Tampa, Florida 33607

FlyLakeland
Lakeland Linder
International Airport

ATKINS
Member of the SNC-Lavalin Group