Miami Executive Airport (TMB)

Airport Layout Plans Set Narrative Report

PREPARED FOR:

Miami-Dade Aviation Department

PREPARED BY:

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Table of Contents

List of Appendices

List of Tables

List of Exhibits

A. Executive Summary

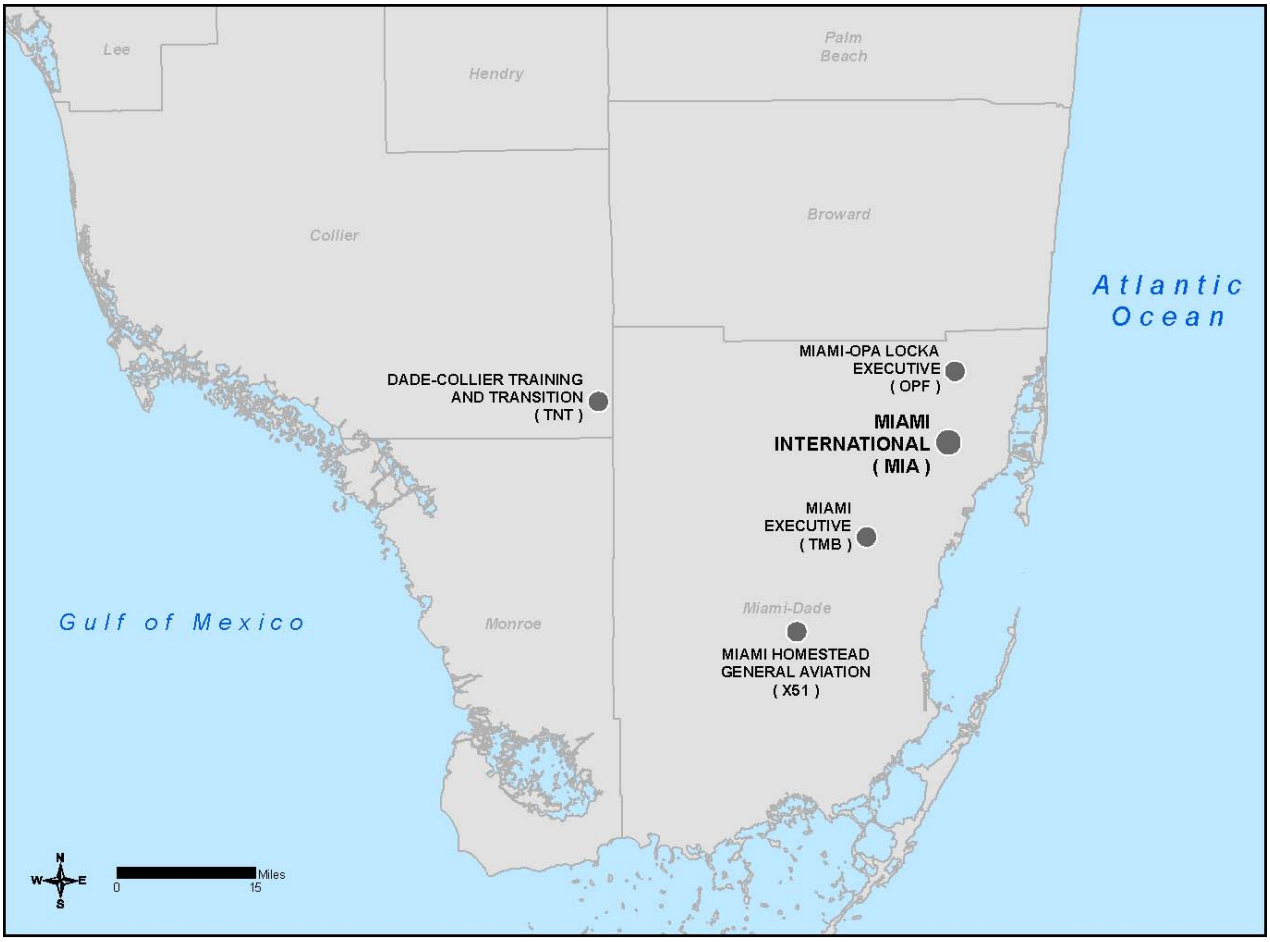
In 2009, the Miami-Dade Aviation Department (MDAD) initiated the Miami Dade Strategic Master Plan (SMP) for the Miami-Dade County system of airports. The SMP serves as an update to the master plans for Miami International Airport (MIA) and the County's four general aviation (GA) airports: Miami Executive Airport (TMB or the Airport), Miami-Opa Locka Executive Airport (OPF), Miami Homestead General Aviation Airport (X51), and Dade-Collier Training and Transition Airport (TNT). The SMP defines MDAD's overall approach to implementing long-term airport improvement or expansion projects for its system of five airports to continue providing a high level of service to the surrounding communities. In lieu of submitting a comprehensive airport master plan report to the Federal Aviation Administration (FAA), MDAD decided to submit stand-alone *General Aviation Activity Forecasts* documents (Aeronautical Forecasts) and Airport Layout Plan (ALP) set for FAA review and approval. The aeronautical forecasts for the County's four GA airports were approved by the FAA on August 6, 2012.

This document serves as the ALP Set Narrative Report for TMB, which accompanies the ALP drawing set reflecting the final recommendations for the Airport as set forth in the SMP. The proposed development shown on the ALP for TMB would satisfy the aeronautical demand forecast at the Airport through 2035, as presented in the SMP *Aeronautical Forecasts* document for the Airport. In accordance with the FAA Airports Division's Standard Operating Procedure 2.00 (ARP SOP 2.00), *Standard Procedure for FAA Review and Approval of Airport Layout Plans*, the structure of this ALP Set Narrative Report is consistent with that of the ARP SOP 2.00 ALP Review Checklist provided in **Appendix A**.

Exhibit A-1 illustrates the locations of the five County airports operated by MDAD. Until 2014, TMB was known as Kendall-Tamiami Executive Airport. On October 7, 2014, the Miami-Dade County Board of County Commissioners passed Resolution 761.14, which renamed the Airport to the Miami Executive Airport. TMB is located in the east-central portion of Miami-Dade County, approximately 15 minutes from the business district of south Miami-Dade County, and is bounded by SW 120th street to the north, Lindgren road to the east, SW 136th street to the south and SW 157th Avenue to the west. The Airport accommodates a diverse range of general aviation activity, including business, recreational/sport, flight training, and governmental uses (i.e., police/fire rescue and other safety-related operations).

The Airport is one of the busiest general aviation facilities in Florida, with corporate jets representing the largest category of aircraft that use the Airport on a regular basis. The Airport serves as a primary GA reliever airport for MIA, and is expected to continue to operate in a similar capacity and role for the foreseeable future. The existence of four on-Airport flight schools may also provide the potential for increased local training operations at the Airport in the future.

Exhibit A-1: Miami-Dade County Airport Locations



PREPARED BY: Ricondo & Associates, Inc., November 2015.

The TMB airfield has two parallel runways and one crosswind runway and is served by an Airport traffic control tower (ATCT) that is operational 16 hours per day from 7:00 am to 11:00 pm. **Table A-1** summarizes the predominant characteristics of the runways at TMB.

Table A-1: Runway Characteristics

CHARACTERISTIC	9L-27R	9R-27L	13-31
Length	5,003 feet	6,000 feet	4,001 feet
Width	150 feet	150 feet	150 feet
Runway Design Code	C/III/4000	C/III/2400 – C/III/4000	C/III/VIS
Approach Capability	Non-Precision	Precision	Visual
Lowest Visibility Minimums	0.75 mile	0.5 mile	3.0 miles

SOURCES: Federal Aviation Administration, Advisory Circular 150/5300-13A (Change 1), *Airport Design*, February 26, 2014; Federal Aviation Administration Order 8260.3B (Change 26), *United States Standard for Terminal Instrument Procedures*, February 24, 2014; Ricondo & Associates, Inc., November 2015.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

This report describes the planning and rationale that resulted in the identification of a preferred development scenario for TMB and summarizes the drawings included in the ALP set. The purpose of the ALP set is to provide Airport management with a scaled, graphic presentation of the Airport's 20-year development program, as presented in the SMP for 2015 through 2035 (the planning horizon). The ALP drawing sheets also provide information such as specific Airport data (e.g., runway coordinates, design aircraft), a graphical depiction of airspace surfaces (e.g., Title 14 Code of Federal Regulations Part 77 [14 CFR Part 77] imaginary surfaces, FAA Order 8260.3B, *United States Standard for Terminal Instrument Procedures* [TERPS] departure surfaces, threshold siting surfaces), land use information, and property boundaries. These drawing sheets identify areas for future aviation-related development, as well as available land that can be used for revenue generation to support the Airport. The ultimate configuration of Airport facilities demonstrates a feasible improvement plan that provides for safe, compatible, and efficient Airport operations.

The dimensional information provided on the ALP drawings demonstrates compliance with minimum airport design standards established by federal, State of Florida, and local authorities. The ALP set was developed in accordance with the guidance set forth in FAA Advisory Circulars (ACs) 150/5070-6B (Change 2), *Airport Master Plans*, and 150/5300-13A (Change 1), *Airport Design*, and the Florida Department of Transportation's (FDOT's) *Guidebook for Airport Master Planning*. Furthermore, the ALP set was reviewed for compliance with the FAA's ALP Checklist-ARP SOP 2.00, which is provided in Appendix A of this document**.** The ALP set will be revised over time to reflect new facility and infrastructure development and proposed changes to planned development at TMB so that the FAA and FDOT will be continually updated regarding current conditions at TMB.

Other considerations, such as modifications of standards (MOS), declared distances, wind coverage, obstruction surfaces, and runway protection zones (RPZs), were also investigated. The current and future Airport Reference Code (ARC), Runway Design Codes (RDCs), Approach Reference Codes (APRCs), and Departure Reference Codes (DPRCs) are also identified for the airfield.

The aeronautical forecasts for TMB include annual and peak period GA aircraft operations, as well as the number of based GA aircraft at the Airport in the 2010 Base Year and at two additional planning periods,

referred to as planning activity levels (PALs):

- PAL 1 – reflecting demand forecasts for 2025 under the SMP's Baseline Forecast
- PAL 2 – reflecting demand forecasts for 2035 under the SMP's Baseline Forecast

The aeronautical forecasts are unconstrained, representing conditions for future GA activity without consideration of existing or potential capacity constraints. The forecasts also provide justification for planning and development recommendations contained in the SMP. The various forecast metrics, such as annual GA aircraft operations, annual itinerant operations by all aircraft, annual itinerant operations by the current and future critical aircraft, and the forecasts of based aircraft at TMB are summarized in **Table A-2**:

Table A-2: Aeronautical Forecasts Summary

FORECAST METRIC	2010 (ACTUAL)	PAL 1 (2025)	PAL 2 (2035)
Annual General Aviation Aircraft Operations	195,709	224,500	266,700
Annual Itinerant Operation by All Aircraft	113,841	137,200	155,300
Annual Itinerant Operation by Current Critical Aircraft	1,054	1,300	1,450
Annual Itinerant Operation by Future Critical Aircraft	18	200	500
Based Aircraft	224	233	258
Annual Instrument Operations	22,679	27,300	30,900
Annual Enplaned Passengers	N/A	N/A	N/A

N/A = Not Applicable

SOURCES: URS Corporation, *SMP General Aviation Forecasts*, June 2012; Ricondo & Associates, Inc. November 2015.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

Demand-capacity analyses of both the airfield and tenant/support facilities that serve aeronautical purposes was conducted for TMB. From the results of the airfield demand-capacity analysis, it was concluded that TMB will have adequate capacity to accommodate demand forecast through PAL 2 (2035). In developing tenant and support facility requirements, consideration was given to aircraft parking and storage, automobile parking, aircraft fueling facilities, and Airport support functions. Future facility requirements for accommodating the PAL 2 demand forecast for TMB include the following facilities and infrastructure:

- Automobile parking associated with tenant facilities
- Conventional hangars
- A replacement ATCT
- Aviation (Jet A) fuel storage facilities

While no additional runways are anticipated at TMB, other airfield modifications may be warranted prior to reaching the operational demand associated with PAL 2. MDAD has elected to provide consideration for the potential extension of Runways 9R-27L and 9L-27R to allow more demanding aircraft types to operate at the Airport. The depicted extensions are intended to ensure the preservation of the land and protection of the airspace surrounding the airport. As the capacity of MIA becomes constrained, it may be desirable to relocate certain operations and facilities to TMB, such as aircraft maintenance, repair, and overhaul (MRO) facilities and GA facilities. MDAD has also elected to perform runway exit modifications along with certain taxiway enhancements, which would support conformance with FAA design standards and taxiway circulation improvements. These airfield modifications would result in:

- Mitigation of Hot Spot #1, which includes shortening Runway 13-31 and reconfiguring the taxiway crossings associated with Taxiways E and H
- Taxiway enhancement for circulation improvements and to conform with FAA design standards
- Construction of Taxiway J as a full length parallel taxiway west of Runway 13-31 (if necessary to support future west side aeronautical development)
- Runway 9R-27L extension (if necessary)
- Runway 9L-27R extension (if necessary)

Using the gross facility requirements derived for TMB, a series of development scenarios were generated and a preferred development scenario was selected. To demonstrate the general locations of future facility development, these development scenarios were generated at a land use level of detail (i.e., detailed facility layouts were not developed). The areas designated for future tenant facilities coincide with the facility requirements for PAL 2 (2035) and these requirements are the basis for generating an engineer's estimate of probable costs. These costs include consideration of construction costs and soft costs associated with design, permitting, bidding, construction, and program management.

For capital planning purposes, the facility and infrastructure development initiatives associated with the preferred development scenario were categorized into one of four development phases. Each phase reflects a 5-year period, as follows:

- Phase 1 (2016 - 2020)
- Phase 2 (2021 – 2025)
- Phase 3 (2026 – 2030)
- Phase 4 (2031 – 2035)

Table A-3 presents the total implementation costs for each capital improvement development need identified in the SMP for TMB. These projects are summarized in accordance with the four development phases.

To clearly present existing conditions and the proposed Airport improvements, the ALP set for TMB consists of 25 drawing sheets. The ALP sheets are essential in the process of applying for federal or State funding

assistance for any development project and also serve as the mechanism for projects to undergo FAA airspace review.

Table A-3: Development Costs Summary

Project Description	TOTAL
Phase 1	
Mitigate Hot Spot #1	18,580,000
Extend Taxiway H East/Relocate E3	8,998,000
Subtotal (Phase 1)	**27,578,000**
Phase 2	
Construct Future Parallel Taxiway	15,475,000
(South of Taxiway A – Phase I)	
Subtotal (Phase 2)	**15,475,000**
Phase 3	
Construct Runway 9L-27R Blast Pads	1,459,000
Construct Future Parallel Taxiway	8,741,000
(South of Taxiway A – Phase II)	
Subtotal (Phase 3)	**10,200,000**
Phase 4	
Modify East Side Roadway	4,689,000
Extend Runway 9R-27L	30,069,000
Extend Taxiway H (West)	3,279,000
Reconfigure Runway 9L and 13 Entrance Taxiways and Construct Run-up Pad	6,786,000
Subtotal (Phase 4)	**44,823,000**
Grand Total	**98,076,000**

NOTES:

Costs include consideration for both hard costs (construction) and soft costs (design, permitting, and construction administration) and reflect projected costs at the time of construction using an annual escalation rate of 3 percent.

The costs associated with the potential construction of a replacement Airport traffic control tower and extension of Runway 9L-27R are excluded, as the timing for these improvements are speculative.

Assuming that the construction of tenant facilities (hangars, aprons, terminals, automobile parking lots, fuel farms, etc.) will be funded by others.

SOURCES: URS Corporation, *Construction Costs*, April 2014; RIB US Cost, *RIM Order of Magnitude Cost Estimate,* August 2015, Ricondo & Associates, Inc, *TMB Hot Spot #1 Runway Incursions Mitigation Plan Reevaluation*, November 2017; Ricondo & Associates, Inc., *SMP Technical Analyses*, August 2014.
PREPARED BY: Ricondo & Associates, Inc., May 2018.

For TMB, the ALP set is presented on the following drawing sheets:

- Cover Sheet (1 of 25)
- Data Sheet (2 of 25)
- Existing Airport Layout Plan (3 of 25)
- Future Airport Layout Plan (4 of 25)
- Airport Airspace Drawing (5 of 25)
- Runway 9L and 9R Outer Approach Airspace Drawing (6 of 25)
- Runway 27R Outer Approach Airspace Drawing (7 of 25)
- Airport Airspace Plan and Profile (8 of 25)
- Runway 9L Inner Portion of the Approach Surface Drawing (9 of 25)
- Future Runway 9L Inner Portion of the Approach Surface Drawing (10 of 25)
- Runway 27R Inner Portion of the Approach Surface Drawing (11 of 25)
- Future Runway 27R Inner Portion of the Approach Surface Drawing (12 of 25)
- Runway 9R Inner Portion of the Approach Surface Drawing (13 of 25)
- Future Runway 9R Inner Portion of the Approach Surface Drawing (14 of 25)
- Runway 27L Inner Portion of the Approach Surface Drawing (15 of 25)
- Future Runway 27L Inner Portion of the Approach Surface Drawing (16 of 25)
- Runway 13 Inner Portion of the Approach Surface Drawing (17 of 25)
- Runway 31 Inner Portion of the Approach Surface Drawing (18 of 25)
- Future Runway 31 Inner Portion of the Approach Surface Drawing (19 of 25)
- Runway 9L-27R Departure Surface Drawing (20 of 25)
- Runway 9R-27L Departure Surface Drawing (21 of 25)
- Runway 13-31 Departure Surface Drawing (22 of 25)
- On-Airport Land Use Drawing (23 of 25)
- Off-Airport Land Use Drawing (24 of 25)
- Airport Property Map (25 of 25)

Reduced reproductions of these drawings are included in this report in **Appendix B** for illustration purposes. A full-size set of the drawings is also being submitted with this report to the FAA and FDOT for review and acceptance.

B. Basic Aeronautical Forecasts

Aeronautical forecasts were developed for future aviation demand at the Airport. Forecasts of aviation demand are important in the planning process as they provide the basis for determining the orderly development of Airport facilities and infrastructure, including:

- Documentation of the role of the Airport and determination of the type of aircraft to be accommodated in the 10- and 20-year planning horizons.
- Evaluation of the capacity of existing Airport facilities and their ability to accommodate future growth in demand.
- Determination of the extent of airside and landside facilities required to accommodate forecast demand through the 20-year planning horizon.

The *SMP General Aviation Activity Forecasts* (Aeronautical Forecasts) report was prepared for MDAD in June 2012 and the forecasts were subsequently approved by the FAA in August 2012. The FAA approval letter is included in **Appendix C** of this document. The findings from that report are summarized below.

The aeronautical forecasts for TMB include annual and peak period GA aircraft operations, as well as the number of based GA aircraft accommodated at the Airport in the FY 2010 Base Year and at two planning activity levels (PAL's):

- PAL 1 (2025)
- PAL 2 (2035)

The aeronautical forecasts are unconstrained, representing conditions for future GA activity without consideration of existing or potential capacity constraints. The forecasts also provide justification for planning and development recommendations contained in the SMP. The forecasts were reviewed and approved by the FAA as being consistent with its most current *Terminal Area Forecast* (TAF) [1] and provide justification for the planning and development recommendations contained in the SMP.

The approach to forecasting general aviation activity at MDAD's GA airports, including TMB, differs from the approach used to forecast air carrier activity at MIA because of the unique operational characteristics and role of each airport. To reflect the diversity of the level of service and facilities offered at TMB, as well as

[1] The most current FAA TAF available at the time the TMB Aeronautical Forecasts were prepared is dated January 2012.

recognition of the limited availability of historical aircraft operations and based aircraft data, data reported in the FAA's Air Traffic Activity Data System (ATADS) and the TAF were used to forecast annual aircraft operations and based aircraft at all four of the County's GA airports. This approach reflects a "top-down" market share approach to forecasting in which current activity at an airport is calculated as a static share (percentage or ratio) of some other more aggregate external measure for which forecasts have already been produced. Then, assumptions were made relative to the future share of that activity to be accommodated at each airport.

Using general aviation-specific data, as provided in Table 28, "Active General Aviation and Air Taxi Aircraft," of the FAA's *Aerospace Forecasts, FY 2012-2032*[2], forecasts of future year-over-year growth trends of the various types of active general aviation aircraft were developed. These trends served as the basis for forecasting general aviation activity by aircraft type at TMB, as well as numbers of based aircraft.

B.1 Total Annual Aircraft Operations

Exhibit B-1 reflects the forecasts of total annual GA aircraft operations, as TMB is a GA airport. Based on the Aeronautical Forecasts, the total number of annual GA aircraft operations at TMB is forecast to increase from 195,709 in 2010 to 224,500 in 2025 (PAL 1) and to 266,700 by 2035 (PAL 2), representing an average annual compound growth rate (AACGR) of 1.25 percent. GA aircraft operations at TMB in the FAA TAF are forecast to decrease from 195,709 in 2010 to 194,269 at PAL 2 (2035), at an AACGR of -0.03 percent.

B.2 Annual Itinerant Operations by All Aircraft

For purposes of this ALP Set Narrative Report, the annual growth rate for total aircraft operations in the SMP was applied to the actual number of itinerant aircraft operations in 2010, as contained in the FAA TAF. As presented on **Exhibit B-2**, applying these growth rates would result in itinerant aircraft operations increasing from 113,841 (2010) to 137,200 at PAL 1 (2025) and 155,300 at PAL 2 (2035). The annual itinerant operations at TMB in the FAA TAF are forecast to increase from 113,841 in 2010 to 125,372 at PAL 2 (2035), at an AACGR of 0.39 percent.

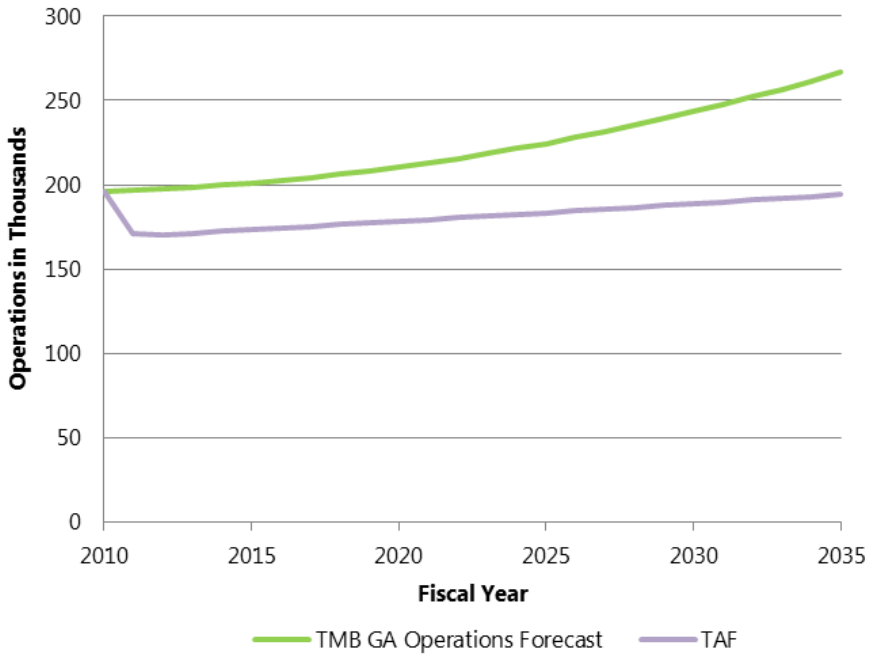
B.3 Annual Itinerant Operations by Current Critical Aircraft

Exhibit B-3 presents total annual itinerant operations by the current critical aircraft at TMB. In accordance with operational data obtained from MDAD's Aircraft Noise and Operations Monitoring System (ANOMS), the

[2] The federal fiscal year (FY) is from October 1 through September 30.

current critical aircraft at TMB is comprised of the following aircraft: Challenger 300, Challenger 600, Citation V, and Gulfstream 450.

Exhibit B-1: Total Forecast of General Aviation Aircraft Operations



FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST FOR TMB	FAA TERMINAL AREA FORECAST FOR TMB
2010 (Actual)	195,709	195,709
PAL 1 (2025)	224,500	183,435
PAL 2 (2035)	266,700	194,269
AACGR (2010 – 2035)	1.25%	-0.03%

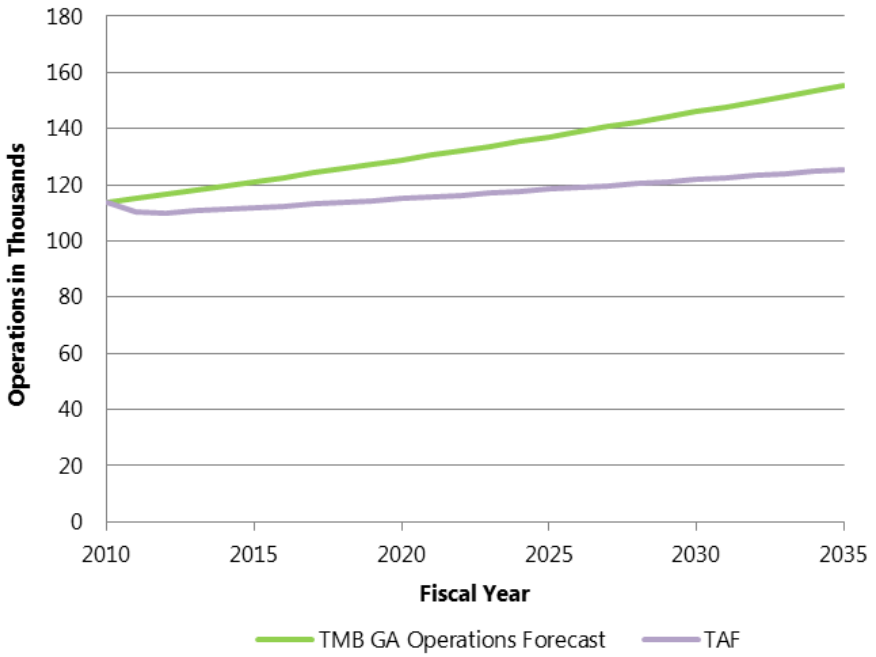
NOTES:

The County's Fiscal Year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate
FAA = Federal Aviation Administration
GA = General Aviation
PAL = Planning Activity Level
SMP = Strategic Master Plan
TAF = Terminal Area Forecast

SOURCES: URS Corporation, *SMP General Aviation Activity Forecasts*, June 2012; Federal Aviation Administration *Terminal Area Forecast*, January 2012.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

Exhibit B-2: Annual Itinerant Operations by All Aircraft



FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST[1/] FOR TMB	FAA TERMINAL AREA FORECAST FOR TMB
2010 (Actual)	113,841	113,841
PAL 1 (2025)	137,200	118,381
PAL 2 (2035)	155,300	125,372
AACGR (2010 – 2035)	1.25%	0.39%

NOTES:

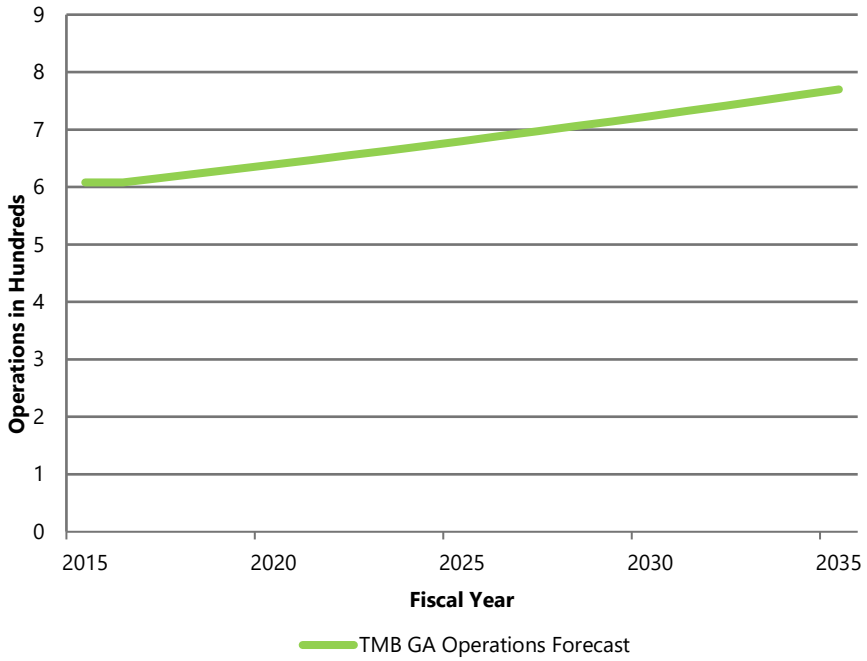
The County's Fiscal Year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate
GA = General Aviation
PAL = Planning Activity Level
SMP = Strategic Master Plan
TAF = Terminal Area Forecast

1/ Using the TAF total annual itinerant operations by all aircraft in FY 2010 as the starting point for the SMP forecasts, values were calculated by applying the AACGR for total annual aircraft operations (1.25 percent) to the total annual itinerant operations at TMB in FY 2010.

SOURCES: URS Corporation, *SMP General Aviation Activity Forecasts*, June 2012; Federal Aviation Administration, *Terminal Area Forecast*, January 2012.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

Exhibit B-3: Annual Itinerant Operations by Current Critical Aircraft



FISCAL YEAR	CURRENT CRITICAL AIRCRAFT OPERATIONS FORECAST[1/] FOR TMB	FAA TERMINAL AREA FORECAST FOR TMB
2015 (Actual)	608	Not Available
PAL 1 (2025)	680	Not Available
PAL 2 (2035)	770	Not Available
AACGR (2010 – 2035)	1.25%	Not Available

NOTES:

The County's Fiscal Year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate
FAA = Federal Aviation Administration
GA = General Aviation
PAL = Planning Activity Level
SMP = Strategic Master Plan

1/ Using the critical aircraft (Citation V) operations in FY 2010 as the starting point, the SMP forecasts were calculated by applying the AACGR for total annual aircraft operations (1.25 percent) to the actual number of current critical aircraft operations in FY 2010.

SOURCE: URS Corporation, *SMP General Aviation Activity Forecasts*, June 2012.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

To forecast annual itinerant operations by the current critical aircraft, a composite of the Challenger 300, Challenger 600, Citation V, and the Gulfstream 450 aircraft was used. Operations by the current critical aircraft at TMB totaled 608 in 2015. Growth in annual itinerant operations by the current critical aircraft was calculated by applying the AACGR for total annual aircraft operations (1.25 percent) to the actual number of current critical aircraft operations in 2010. At this growth rate, the number of annual itinerant operations by the current critical aircraft at TMB is forecast to increase from 608 in 2015 to 680 at PAL 1 (2025) and to 770 at PAL 2 (2035).

B.4 Annual Itinerant Operations by Future Critical Aircraft

An evaluation of the 2010 aircraft fleet mix identified the Global Express 5000 and the Gulfstream 500 as the most demanding aircraft that would be likely to exceed 500 annual operations at TMB during the planning horizon. Therefore, the future critical aircraft at TMB is forecast to be a composite of the Global Express 5000 and the Gulfstream 500.

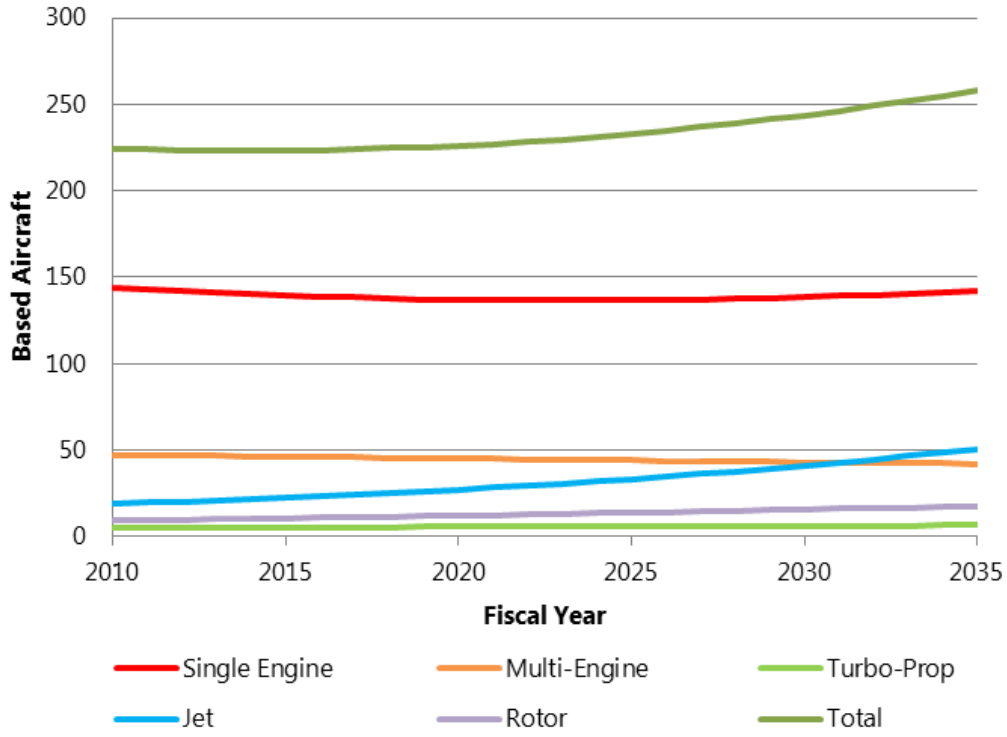
B.5 Based Aircraft

Using information and data provided by MDAD, an inventory of the numbers and types of aircraft permanently based at TMB was developed and analyzed. Using these data, the numbers of future based aircraft by type at TMB were forecast by referencing the FAA *Aerospace Forecasts, FY 2012-2032*, Table 28, "Active General Aviation and Air Taxi Aircraft." The forecasts of based aircraft at TMB are presented by PAL and graphically shown on **Exhibit B-4**.

B.6 Annual Instrument Approaches

The ATCT at TMB is operated through the FAA's contract tower program. Both primary Runways 9R-27L and 9L-27R at TMB are equipped to accommodate arrivals using instrument approach procedures and are configured to serve aircraft with wingspans less than 118 feet, which corresponds to Airplane Design Group (ADG) III. The crosswind runway, Runway 13-31, is a visual runway and is typically used when excessive crosswinds are experienced on the two primary runways. The FAA's ATADS was used to retrieve information on historical annual itinerant instrument operations at TMB. The growth in annual itinerant instrument flight rule (IFR) operations was calculated by applying the AACGR for total annual aircraft operations (1.25 percent) to the actual number of itinerant IFR operations at TMB in 2010. At this growth rate, annual itinerant IFR operations are forecast to increase from 22,679 in 2010 to 27,300 at PAL 1 (2025) and to 30,900 at PAL 2 (2035). **Exhibit B-5** presents total annual itinerant IFR operations.

Exhibit B-4: Forecasts of Based Aircraft



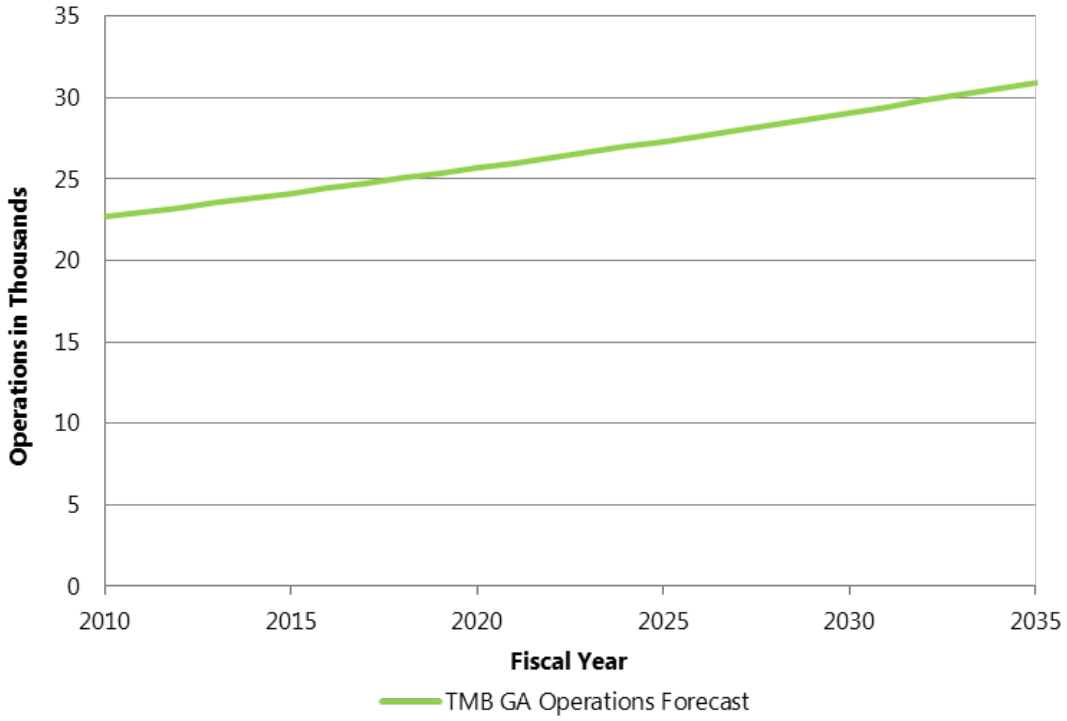
FISCAL YEAR	SINGLE ENGINE	MULTI-ENGINE	TURBO-PROP	JET	ROTOR	TOTAL
2010 (Actual)	144	47	5	19	9	224
PAL 1 (2025)	136	44	6	33	14	233
PAL 2 (2035)	142	42	6	51	17	258
AACGR (2010 – 2035)	-0.06%	-0.46%	0.73%	4.00%	2.69%	0.57%

NOTES:

The County's Fiscal Year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate
PAL = Planning Activity Level
SOURCE: URS Corporation, *SMP General Aviation Activity Forecasts*, June 2012.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

Exhibit B-5: Annual Itinerant Instrument Operations by All Aircraft



FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST[1/] FOR TMB	FAA TERMINAL AREA FORECAST FOR TMB
2010 (Actual)	22,679	Not Available
PAL 1 (2025)	27,300	Not Available
PAL 2 (2035)	30,900	Not Available
AACGR (2010 – 2035)	1.25%	Not Available

NOTES:

The County's Fiscal Year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate
FAA = Federal Aviation Administration
GA = General Aviation
PAL = Planning Activity Level
SMP = Strategic Master Plan

1/ Using the total itinerant instrument flight rule aircraft operations in FY 2010 as the starting point, the SMP forecasts were calculated by applying the AACGR for total annual aircraft operations (1.25 percent) to the actual number of itinerant instrument flight rule aircraft operations in FY 2010.

SOURCES: URS Corporation, *SMP General Aviation Activity Forecasts*, June 2012; Federal Aviation Administration, Air Traffic Activity Data System, August 2015; Ricondo & Associates, Inc., November 2015.

PREPARED BY: Ricondo & Associates, Inc., November 2015.

B.7 Enplaned Passengers

TMB is a GA airport with no scheduled or charter air carrier or cargo service. As such, forecasts of enplaned passengers were not prepared for TMB.

B.8 Critical Aircraft

The current critical aircraft at TMB is the Citation V jet, which is an ADG II aircraft, accounting for 1,054 operations in 2010. It is anticipated that a composite of the Global Express 5000 and the Gulfstream 500 would be the future critical aircraft at TMB during the planning horizon, requiring ADG III planning standards.

B.9 Runway Design Code

The Runway Design Code is a coding system described in FAA AC 150/5300-13A (Change 1), *Airport Design*, as the basis for specifying applicable runway design standards. The RDC is used to compile the numerous dimensional and performance specifications of aircraft operating at or expected to operate at an airport into criteria that define the dimensional and design standards for a given runway. The RDC consists of three parameters: Aircraft Approach Category (AAC), ADG, and approach visibility minimums. **Table B-1** summarizes the current RDCs for the three runways at TMB. A change to the RDCs for TMB's runways is not anticipated unless aircraft maintenance and corporate GA operations are shifted from MIA to TMB in the future (not anticipated to occur within the 20-year planning horizon).

Table B-1: Runway Design Code

	AIRCRAFT APPROACH CATEGORY		AIRPLANE DESIGN GROUP		VISIBILITY MINIMUMS	
RUNWAY	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
9L	C	Same	III	Same	4,000	2,400
27R	C	Same	III	Same	4,000	2,400
9R	C	Same	III	Same	2,400	Same
27L	C	Same	III	Same	4,000	Same
13	C	B	III	II	VIS	Same
31	C	B	III	Same	VIS	Same

NOTE:

VIS = Visual

SOURCES: Federal Aviation Administration, Advisory Circular 150/5300-13A (Change1), *Airport Design*, February 26, 2014; Jacobsen Daniels Associates, LLC, September 2015; Ricondo & Associates, Inc., November 2015.

PREPARED BY: Ricondo & Associates, Inc., November 2015.

B.10 Runway Reference Codes

The Runway Reference Code (RRC) or the Approach and Departure Reference Codes (APRC and DPRC), as set forth in FAA AC 150/5300-13A (Change 1), *Airport Design,* describe the current operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. The APRC consists of the same three parameters as the RDC (AAC, ADG, and visibility minimums) whereas the DPRC consists of the AAC and ADG only. The APRC and DPRC differ from the RDC, as the RDC is based on planned development and has no operational application. The APRC and DPRC may change over time as improvements are made to the runway, taxiway, and navigational aids. **Table B-2** summarizes the existing and future APRCs and DPRCs for TMB.

Table B-2: Approach and Departure Reference Codes

	APRC		DPRC	
RUNWAY	**EXISTING**	**FUTURE**	**EXISTING**	**FUTURE**
9L	D/IV/4000 - D/V/4000	D/IV/2400 - D/V/2400	D/IV – D/V	Same
27R	D/IV/4000 - D/V/4000	D/IV/2400 - D/V/2400	D/IV - D/V	Same
9R	D/IV/2400 - D/V/2400	Same	D/IV - D/V	Same
27L	D/IV/4000 - D/V/4000	Same	D/IV - D/V	Same
13	D/IV/VIS - D/V/VIS	Same	D/IV - D/V	Same
31	D/IV/VIS – D/V/VIS	Same	D/IV - D/V	Same

SOURCES: Federal Aviation Administration, Advisory Circular 150/5300-13A (Change1), *Airport Design*, February 26, 2014; Jacobsen/Daniels Associates, LLC, September 2015; Ricondo & Associates, Inc., November 2015.

PREPARED BY: Ricondo & Associates, Inc., November 2015.

C. Alternatives/Proposed Development

C.1 Proposed Development Items

Demand-capacity analyses of the airfield and tenant/support facilities that serve aeronautical purposes were conducted for TMB. The purpose of these analyses was to compare the capacity of existing facilities and infrastructure with current and future operational demand to determine when additional airport improvements would be required. When deficiencies were identified, future facility requirements were projected and quantified. Demand-capacity analyses were conducted for the following airport components:

- Airfield
- Tenant/support facilities
  - Aircraft hangars, fixed base operator (FBO) terminals, and shops
  - Automobile parking facilities
  - Aircraft fuel storage facilities
  - Airport administration offices and maintenance
  - Aircraft rescue and fire-fighting (ARFF) facilities

C.1.1 AIRFIELD

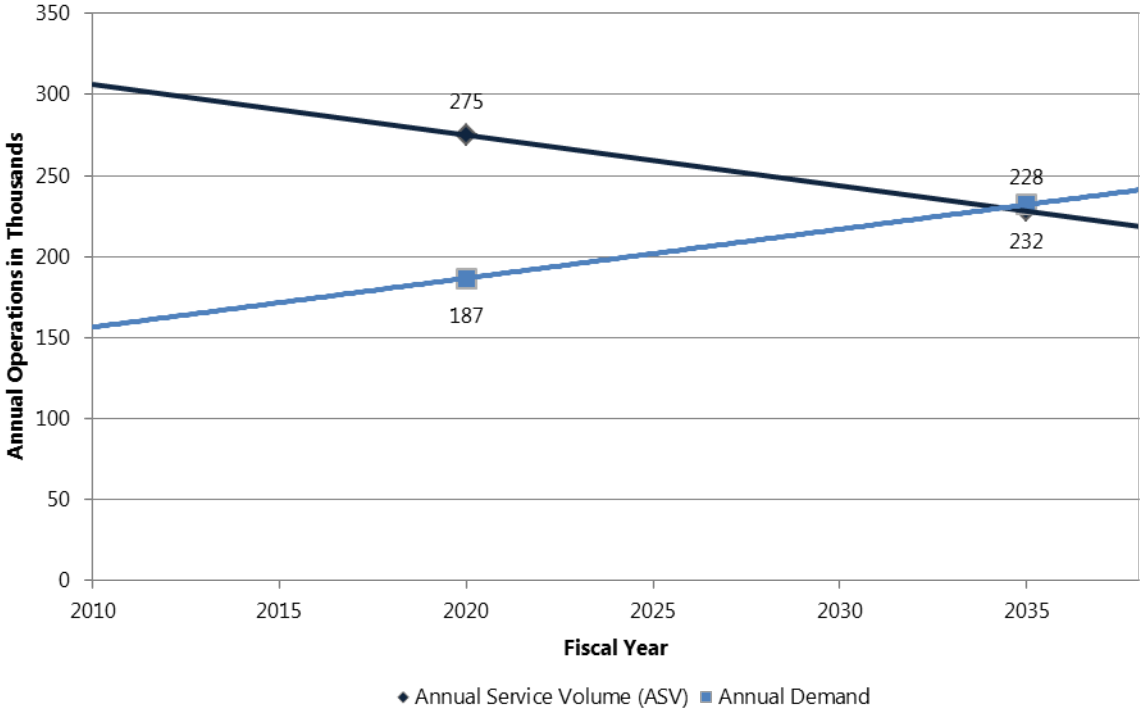
Exhibit C-1 graphically represents the airfield demand-capacity analyses for TMB. More specifically, the exhibit demonstrates the forecast operational demand at which the annual service volume (ASV) of the airfield would be reached. ASV represents the airfield's annual capacity given seasonal and daily fluctuations in aircraft operational demand.

It was determined through the airfield demand-capacity analysis that TMB would have adequate capacity to accommodate demand forecast through PAL 2 (2035). At PAL 2 demand, the ASV of the airfield would be reached. However, as a result of the high level of touch-and go-training at TMB, the capacity of the airfield could be extended by shifting training operations to other nearby airports, such as Miami Homestead General Aviation and Dade-Collier Training and Transition Airports.

While no additional runways are anticipated at TMB, other airfield modifications may be warranted prior to reaching the operational demand associated with PAL 2. MDAD has elected to provide consideration for the potential extension of Runways 9R-27L and 9L-27R to allow more demanding aircraft types to operate at the

Airport. The runway extensions are also intended to protect the land use and airspace around the Airport. As the capacity of MIA becomes constrained, it may be desirable to relocate certain operations and facilities to TMB, such as aircraft MRO facilities and GA facilities.

Exhibit C-1: Airfield Demand-Capacity Comparison



SOURCES: Federal Aviation Administration Advisory Circular 150/5060-5A (Change 1), *Airport Capacity and Delay,* September 23, 1983; Ricondo & Associates, Inc., *SMP Technical Analyses*, July 2012.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

MDAD has also elected to modify runway exits along with enhancing certain taxiways that would support conformance with FAA design standards and taxiway circulation improvements. The following airfield modifications would be implemented.

- **Mitigation of Hot Spot 1 –** Hot Spot #1 is located on Runway 13-31, where Taxiways E and H intersect the Runway. A reevaluation of the preferred alternative to mitigate Hot Spot #1 was performed in November 2017. From the reevaluation, mitigation would include reconfiguring the Runway 13-31 crossing points at Taxiways E and H to initially establish a single perpendicular crossing. Taxiway H would be extended to the west to provide areas to stage and sequence aircraft waiting for departure. Runway 13-31 would be shortened at the south end and downgraded to RDC B-II-VIS to mitigate the runway safety area (RSA) encroachments associated with Runway 9R-27L.
- **Modifications of taxiways –** These modifications would include taxiway circulation enhancements to conform to the latest airfield design standards set forth in FAA AC 150/5300-13A (Change 1), *Airport*

Design. The proposed taxiway circulation enhancements include construction of a partial length parallel taxiway south of existing Taxiway A and extension of Taxiway H to provide a full-length dual parallel taxiway system to serve Runway 9R-27L.

- **Construction of new Taxiway J –** MDAD would like to protect a portion of Airport property west of Runway 13-31 for future aeronautical development, which could trigger the need to construct a full-length parallel taxiway (Taxiway J) along the west side of Runway 13-31.
- **Extension of Runway 9R-27L** – Should more demanding corporate jet or charter aircraft materialize at TMB, Runway 9R-27L could be extended by 550 feet to the east and 800 feet to the west for a total length of 7,350 feet. Also included would be the extension of parallel Taxiway E and the extension of Taxiway H to a full-length inboard parallel taxiway.
- **Extension of Runway 9L-27R** – If MIA becomes constrained, it may be prudent to shift some operational demand to TMB. If this shift in operations were to occur, it may be prudent to reconstruct and extend Runway 9L-27R to accommodate larger and more demanding aircraft than can be accommodated on Runway 9R-27L. Therefore, MDAD would like to preserve the ability to extend Runway 9L-27R by 1,400 feet to the east and 1,900 feet to the west for a total length of 8,003 feet. Also included would be extension and reconstruction of parallel Taxiway A and construction of a second inboard parallel taxiway.

C.1.2 TENANT/SUPPORT FACILITIES

Table C-1 summarizes the facility requirements for TMB to accommodate the demand associated with PAL 2 (2035). These facility requirements include consideration for aircraft parking and storage, automobile parking, aircraft fueling facilities, and Airport support functions. To translate these requirements into gross acreage, a contingency for aircraft circulation and drainage/landscaping features was added.[3] Aircraft circulation includes areas dedicated to hangar egress and taxiway/taxilane circulation.

In accordance with the facility requirements associated with PAL 2, the Future ALP depicts the development of the following tenant/support facilities at TMB:

- Expansion of automobile parking in various locations around the Airport to support the use of existing GA facilities.
- Construction of new conventional hangars to accommodate the larger mix of aircraft anticipated to use the Airport. The development of landside improvements, including automobile parking and access, may also be required. As the Airport has an excess of aircraft parking apron, the construction of additional airside apron is not warranted.
- As the existing ATCT at TMB is antiquated, MDAD has also identified the need to construct a new ATCT. The new ATCT would be constructed on a site adjacent to the existing ATCT site.

[3] A total contingency of 5.79 acres was added for aircraft circulation (3.14 acres) and drainage and landscaping (2.65 acres).

- Expansion of Jet A fuel tank storage facilities with an estimated land area of 1.0 acre to serve the forecast growth in jet aircraft activity.

Table C-1: Tenant/Support Facility Requirements (in square feet unless otherwise noted)

FACILITY TYPE	EXISTING	PAL 2 (2035) GROSS FACILITY REQUIREMENTS	ADDITIONAL FACILITIES TO SERVE PAL 2 (2035) DEMAND
Aircraft Parking/Storage			
T-hangars	342,500 1/	266,200	0
Conventional Hangars	278,300	415,100	136,800
Apron/Ramp	2,354,700	1,286,900	0
Automobile Parking	126,750	181,700	54,950
Aviation Fuel			
100 LL	4,700	0	0
Jet A	5,000	6,000	1,000
Airport Support			
MDAD Maintenance Yard	31,500	31,500	0
MDAD Administration	9,400	9,400	0
MDAD Covered Parking	150	150	0
Aircraft Rescue and Fire-fighting Facilities	N/A	N/A	N/A
Total Facilities	**3,153,000**	**2,196,950**	**192,750**
		Aircraft Circulation Adjustment	136,800
		Drainage and Landscape Adjustment	115,300
		Total Adjusted PAL 2 Requirements	**444,850**
		Acreage	**10.2 acres**

NOTES:
N/A = Not Applicable
PAL = Planning Activity Level
1/ The gross area of the existing T-hangars was increased to account for the areas dedicated to hangar access and egress.
SOURCES: Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *SMP Technical Analyses*, March 2013.
PREPARED BY: Jacobsen/Daniels Associates, LLC, November 2013.

C.2 Near-Term and Future Approach Procedure Requirements

Currently, the only precision instrument approach procedure at TMB is for Runway 9R. Runways 27L, 9L, and 27R have existing non-precision instrument approach procedures, while Runway 13-31 has no published instrument approach procedure. To serve future operations, the precision approach procedure to Runway 9R would be maintained; approach procedures for Runways 9L and 27R may be upgraded to precision instrument approach procedures if the need to extend the runway to accommodate the potential shift of demand from MIA occurs. Runways 13-31 will remain a visual runway, while Runway 27L will remain a non-precision instrument runway.

C.3 Navigational Aids

TMB has both visual and instrument approach aids, as summarized in **Table C-2**.

Table C-2: Navigational Aids

	RUNWAY LIGHTS		RUNWAY MARKING		VISUAL APPROACH AIDS		INSTRUMENT APPROACH AIDS	
RUNWAY	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
9L	MIRL	Same	Non-Precision	Precision	PAPI-4L	MALSR	None	LOC, GS
27R	MIRL	Same	Non-Precision	Precision	PAPI-2L	MALSR	None	LOC, GS
9R	HIRL	Same	Precision	Same	PAPI-4R MALSR	Same	LOC, GS	Same
27L	HIRL	Same	Non-Precision	Same	PAPI-P4L	Same	None	Same
13	MIRL	Same	Visual	Same	PAPI-P4L REIL	Same	None	Same
31	MIRL	Same	Visual	Same	N/A	Same	None	Same

NOTES:

GS = Glide Slope
HIRL = High Intensity Runway Lights
LOC = Localizer
MALSR = Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
MIRL = Medium Intensity Runway Lights
PAPI–2L = 2 Box Precision Approach Path Indicator on the Left Side of Runway Centerline
PAPI–4L = 4 Box Precision Approach Path Indicator on the Left Side of Runway Centerline
PAPI–4R = 4 Box Precision Approach Path Indicator on the Right Side of Runway Centerline
REIL = Runway End Identifier Lights

SOURCES: Jacobsen/Daniels Associates, LLC, September 2015; Ricondo & Associates, Inc., November 2015.
PREPARED BY: Ricondo & Associates, Inc., November 2015

C.4 Wind Coverage

Table C-3 summarizes the wind coverage associated with each runway at TMB. As shown, all three runways provide a combined all weather wind coverage of 99.96 percent. As the wind coverage associated with the existing runway configuration at TMB exceeds 95 percent, no additional runways are required to provide adequate wind coverage.

Table C-3: Runway Wind Coverage

RUNWAY	RUNWAY DESIGN CODE	MAXIMUM CROSSWIND COMPONENT	ALL WEATHER WIND COVERAGE
9L-27R	C-III	16 knots	99.73%
9R-27L	C-III	16 knots	99.73%
13-31	C-III	16 knots	99.64%
		Combined	**99.96%**

SOURCES: National Climatic Data Center, US Department of Commerce; Asheville, North Carolina, January 2004 through December 2013.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

D. Modification of Standards

There are currently no modifications of standards for TMB. It is anticipated that with future development to accommodate demand through PAL 2, there would still be no need for any modification of standards.

E. Obstruction Surfaces

There are no threshold siting obstructions at TMB. A total of 24 obstructions to 14 CFR Part 77 surfaces (existing and future) were identified. The threshold siting surfaces and the 14 CFR Part 77 obstructions are as follows.

14 CFR Part 77 Obstructions

- EXISTING OBSTRUCTIONS
  - Obstruction #1 (Antenna on obstruction light [OL] tower on building) results in a 46.3-foot penetration of the Conical Surface.
  - Obstruction #3 (Rod on OL radio tower) results in a 29.7-foot penetration of the Conical Surface.
  - Obstruction #4 (Antenna on OL mast) results in a 4.0-foot penetration of the Conical Surface.
  - Obstruction #10 (Rod on glide slope) results in a 43.0-foot penetration of the Transitional Surface.
  - Obstruction #12 (OL windsock) results in a 28.0-foot penetration of the Primary Surface.
  - Obstruction #14 (Sign) results in a 1.4-foot penetration of the Primary Surface.
  - Obstruction #18 (OL on anemometer) results in a 21.8-foot penetration of the Transitional Surface.
  - Obstruction #24 (Antenna on OL ATCT) results in a 7.4-foot penetration of the Transitional Surface.
  - Obstruction #28 (OL on windsock) results in a 3.4-foot penetration of the Transitional Surface.
  - Obstruction #32 (OL on tower) results in a 3.2-foot penetration of the Runway 9L 34:1 14 CFR Part 77 Approach Surface and in a 44.7-foot penetration of the Runway 27R 40:1 Departure Surface.
  - Obstruction #100 (Fence) results in a 0.4-foot penetration of the Runway 9L 34:1 14 CFR Part 77 Approach Surface.
  - Obstruction #101 (Fence) results in a 3.6-foot penetration of the Runway 9L 34:1 14 CFR Part 77 Approach Surface.
  - Obstruction #102 (Dirt road) results in a 4.4-foot penetration of the Runway 9L 34:1 14 CFR Part 77 Approach Surface.
  - Obstruction #302 (Equipment shelter) results in a 3.7-foot penetration of the Runway 9L 34:1 14 CFR Part 77 Approach Surface.

  - Obstruction #303 (Equipment shelter) results in a 3.3-foot penetration of the Runway 9L 34:1 14 CFR Part 77 Approach Surface.

- FUTURE OBSTRUCTIONS
  - Obstruction #33 (Antenna on building) would result in an 11.4-foot penetration of the future Runway 27R 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #104 (Dirt road) would result in a 3.4-foot penetration of the future Runway 9L 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #107 (Dirt road) would result in a 1.4-foot penetration of the future Runway 9L 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #109 (Dirt road) would result in an 8.4-foot penetration of the future Runway 27R 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #124 (Dirt road) would result in a 0.8-foot penetration of the future Runway 9R 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #147 (Dirt road) would result in a 2.2-foot penetration of the future Runway 27R 40:1 Departure Surface.
  - Obstruction #211 (Future service road) would result in a 7.8-foot penetration of the future Runway 27R 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #300 (Equipment shelter) would result in a 3.5-foot penetration of the future Runway 27R 50:1 14 CFR Part 77 Approach Surface.
  - Obstruction #301 (Equipment shelter) would result in a 6.4-foot penetration of the future Runway 27R 50:1 14 CFR Part 77 Approach Surface.

F. Runway Protection Zone

The runway protection zone enhances the protection of people and property on the ground. The existing RPZs for Runways 9L, 9R, 27R, 27L, and 13 are within the Airport boundary. Portions of the existing RPZ for Runway 31 extend beyond the Airport boundary. However, with the proposed downgrading of Runway 13-31 to RDC B-II-VIS as part of the mitigation of Hot Spot #1, the Runway 31 arrival RPZ would be reduced so that its remains within the existing Airport property boundary. The potential extension of Runway 9L-27R includes consideration of the acquisition of property within the relocated RPZs, while the future RPZs associated with the proposed extension of Runway 9R-27L would remain within the existing Airport property boundary.

G. Development Summary

In consultation with MDAD staff, a preferred development scenario was identified for the Airport. The preferred development scenario was limited to GA development only within the 20-year planning horizon. In addition to the development and expansion of general aviation facilities, airfield modifications necessary to support future tenant facility development and conformance with FAA airfield design standards were also included in the preferred development scenario. MDAD also provided for consideration of the potential extension of Runways 9R-27L and 9L-27R to protect for potential changes in the aircraft fleet mix composition, particularly if demand is shifted from MIA to TMB. As a result, the following developments are depicted on the Future ALP:

- Airfield Modifications
  - Mitigation of Hot Spot #1
    - Extension of Taxiway H
    - Construction of new parallel outer dual taxiways south of Taxiway A
    - Construction of Runway 9L-27R blast pads
- Tenant Facility Expansion
  - Automobile parking
  - Conventional hangars
  - Aviation (Jet A) fuel facility
- East Side Roadway Modifications
- Other Development (as required)
  - Extension of Runway 9R-27L
  - Extension of Runway 9L-27R
  - Replacement ATCT
    - Reduction of entrance taxiways at Runways 9L and 13
    - Construction of connector taxiway with run-up pad
    - Roadway access to west side of airifeld
    - Construction of Taxiway J parallel to Runway 13-31

To demonstrate the general location of future facility development, the preferred development scenario was created at a land use level of detail (i.e., detailed facility layouts were not developed). The areas designated for future tenant facilities coincide with the facility requirements associated with PAL 2. The preferred development scenario does, however, include specific airfield improvements that would enhance airfield efficiency and/or mitigate the risk of runway incursions. **Exhibit G-1** illustrates the proposed development scenario for TMB.

Rough Order-of-Magnitude (ROM) Cost Estimates

For the preferred development scenario, a ROM cost estimate was prepared. The areas designated for future tenant facilities coincide with the facility requirements associated with PAL 2 and formed the basis for generating the ROM estimate. The costs include construction costs and soft costs associated with design, permitting, bidding, and construction and program management. **Table G-1** summarizes the estimated costs that would be incurred by MDAD and projected funding sources associated with the facilities and infrastructure.

G.1 Development Projects Completed since Last Airport Layout Plan

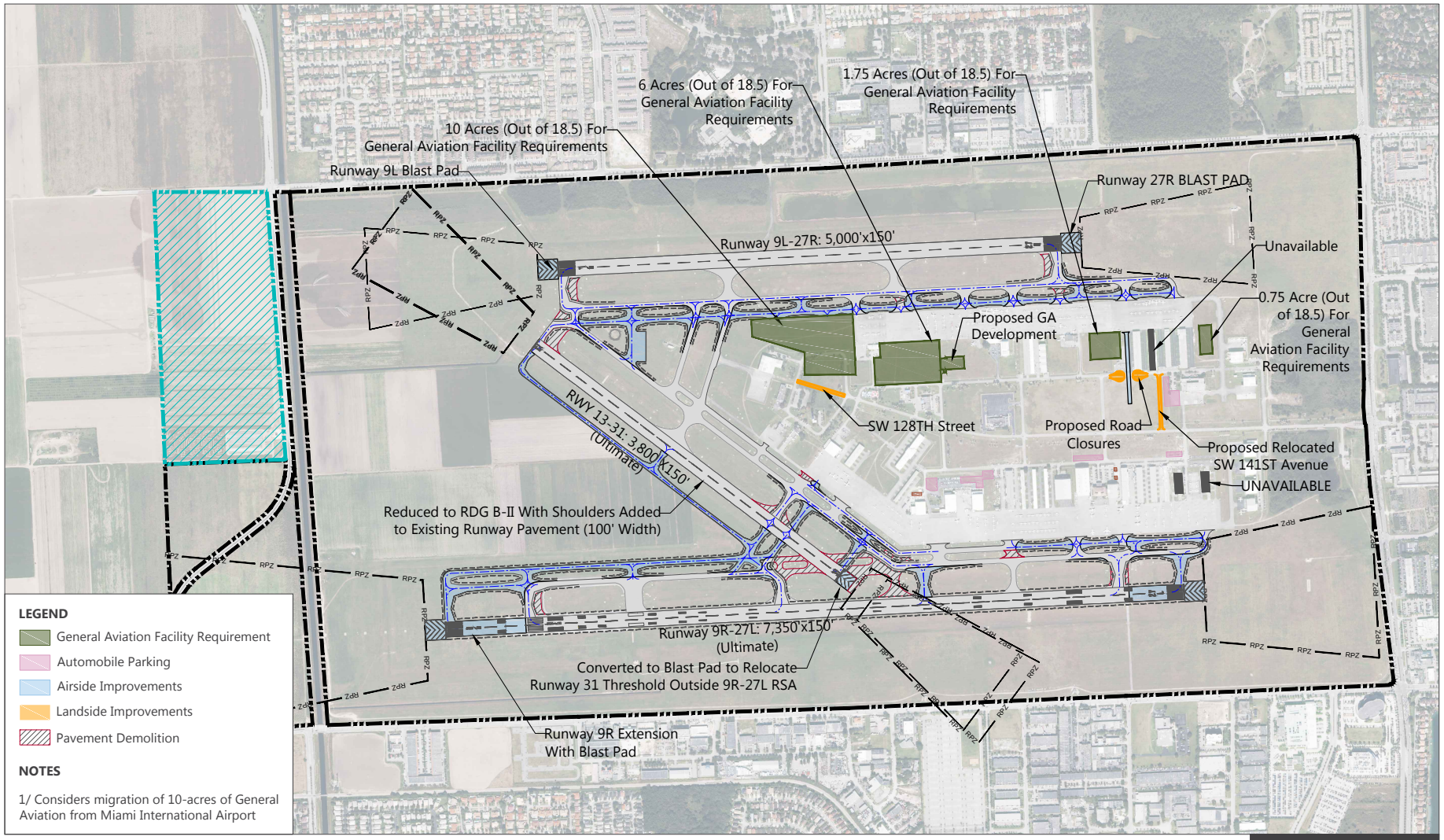
The following development projects at TMB have been completed since the existing ALP dated June 2007 was approved:

- Extension of Runway 9R-27L to 6,000 feet
- Expansion of the U.S. Customs and Border Protection apron
- Construction of a new FBO terminal along SW 129th Street
- Construction of two new aircraft storage hangars along SW 138th Avenue

G.2 Implementation Plan

For capital improvement planning considerations, the facility and infrastructure development initiatives associated with the preferred development scenario was categorized into one of four development phases. Each phase reflects a 5-year period, as follows:

- Phase 1 (2016 - 2020)
- Phase 2 (2021 – 2025)
- Phase 3 (2026 – 2030)
- Phase 4 (2031 – 2035)



SOURCES: Miami-Dade Aviation Department, TMB 2018 Aerial Photography, January 2018; Ricondo & Associates, Inc., and Jacobsen-Daniels Associates, LLC, Land Use Development Alternatives April 2014.
PREPARED BY: Jacobsen/Daniels Associates, LLC, May 2014

EXHIBIT G-1

Miami Executive Airport Development Scenario

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Table G-1: Preliminary Capital Funding Plan

Project Description	FAA AIRPORT IMPROVEMENT PROGRAM	FDOT GRANT	MIAMI-DADE COUNTY	TOTAL
Phase 1				
Mitigate Hot Spot #1	$16,722,000	$929,000	$929,000	$18,580,000
Extend Taxiway H East/Decommission H4	$8,098,000	$450,000	$450,000	$8,998,000
Subtotal (Phase 1)	**$17,146,000**	**$953,000**	**$953,000**	**$19,052,000**
Phase 2				
Construct Future Parallel Taxiway (South of Taxiway A – Phase I)	$13,927,000	$774,000	$774,9000	$15,475,000
Subtotal (Phase 2)	**$13,927,000**	**$774,000**	**$774,000**	**$15,475,000**
Phase 3				
Construct Runway 9R-27L Blast Pads	$1,313,000	$73,000	$73,000	$1,459,000
Construct Future Parallel Taxiway (South of Taxiway A – Phase II)	$7,867,000	$437,000	$437,000	$8,741,000
Subtotal (Phase 3)	**$9,180,000**	**$510,000**	**$510,000**	**$10,200,000**
Phase 4				
Modify East Side Roadway	$4,221,000	$234,000	$234,000	$4,689,000
Extend Runway 9R-27L	$27,063,000	$1,503,000	$1,503,000	$30,069,000
Extend Taxiway H (West)	$10,625,000	$ 590,000	$590,000	$3,279,000
Reconfigure Runway 9L and 13 Entrance Taxiways and Construct Run-up Pad	$6,108,000	$339,000	$339,000	$6,786,000
Subtotal (Phase 4)	**$48,017,000**	**$2,666,000**	**$2,666,000**	**$53,349,000**
Grand Total	**$88,270,000**	**$4,903,000**	**$4,903,000**	**$98,076,000**

NOTES:

1/ Project funding sources were established in accordance with current funding eligibility guidelines and do not reflect a commitment by the FAA or FDOT to provide funds at this time.

2/ Costs include consideration for both hard costs (construction) and soft costs (design, permitting, and construction administration) are reflective of projected costs at the time of construction using an annual escalation rate of 3 percent.

3/ The costs associated with potential construction of a replacement Airport traffic control tower and extension of Runway 9L-27R are excluded.

4/ Assuming that construction of all tenant facilities (hangars, aprons, terminals, automobile parking, fuel farms, etc.) would be funded by others.

SOURCES: URS Corporation, Construction Costs, April 2014; RIB US Cost, *Order of Magnitude Cost Estimate, FAA Runway Incursion Mitigation Program, Miami Executive Airport*, July 30, 2015; Ricondo & Associates, Inc., *SMP Technical Analyses*, August 2014.

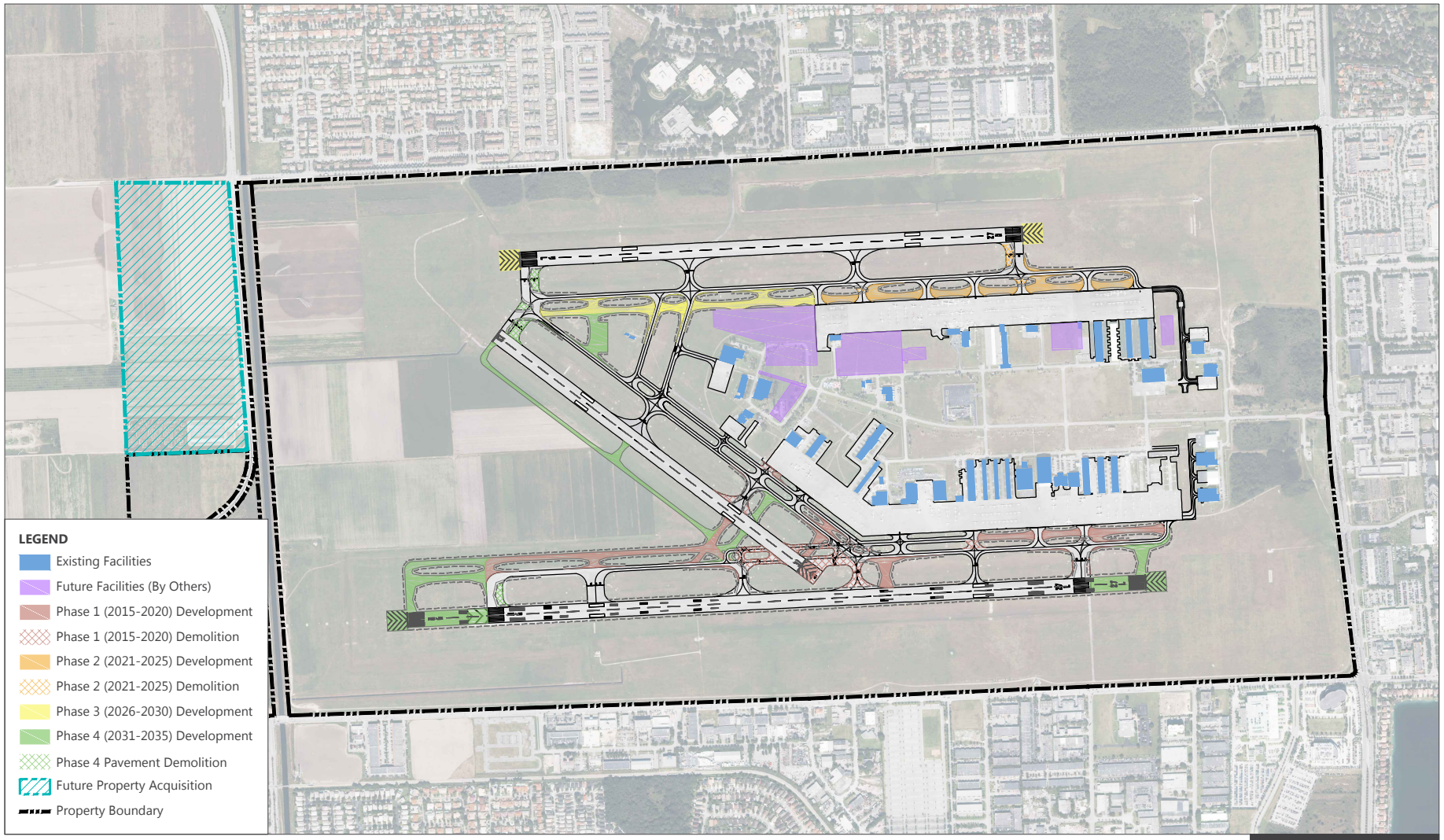
PREPARED BY: Ricondo & Associates, Inc., November 2015.

The sequencing of proposed capital development projects included in the SMP is summarized in **Table G-2**. **Exhibit G-2** illustrates the sequencing of facility development for TMB in accordance with the four development phases listed above.

Table G-2: Capital Development Needs by Phase

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
Airfield				
Mitigate Hot Spot #1	X			
Extend Taxiway H East/Taxiway H4 Closure	X			
Construct Future Parallel Taxiway (South of Taxiway A – Phase II)		X		
Construct Runway 9L-27R Blast Pads			X	
Construct Future Parallel Taxiway (South of Taxiway A – Phase II)			X	
Extend Runway 9R-27L				X
Extend Taxiway H (West)				X
Reconfigure Runway 9L and 13 Entrance Taxiways Modifications				X
Extend Runway 9L-27R		To Be Determined		
Construct Parallel Taxiway J West of Runway 13-31		To Be Determined		
Landside Modifications				
Modify East Side Roadway				X
Roadway Access to West Side of Airport		To Be Determined		
Federal Aviation Administration Facilities				
Replace Airport Traffic Control Tower		To Be Determined		
Tenant Facilities				
Conventional Hangars	X	X	X	X
Automobile Parking	X	X	X	X
Aviation (Jet A) Fuel Facility			X	

SOURCE: Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *SMP Technical Analyses*, March 2013.
PREPARED BY: Ricondo & Associates, Inc., November 2015.



SOURCES: Miami-Dade Aviation Department, *TMB 2018 Aerial Photogrammetry*, January 2018; *Land Use Development Alternatives*, Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, April 2014.
PREPARED BY: Ricondo & Associates, Inc., November 2014.

EXHIBIT G-2

NORTH 0 1,500 ft.

Implementation Sequencing
Preferred TMB Development Scenario

Drawing: P:\Project-Miami\MDAD\Strategic MP\Phase 4 Tasks\4K - Update GA Airport Layout Plans\CAD\TMB\$Narrative Report Exhibits\Exhibit 6-2 Implementation Sequencing - Preferred TMB for JS.dwgLayout: 8.5x11L Plotted: Jun 6, 2018, 10:17AM

H. Shadow or Line-of-Sight Study

The Airport has two parallel runways and one crosswind runway, and is served by an Air Traffic Control (ATC) tower that is operational 16 hours per day. No line-of-sight issues were identified based on discussions with ATCT staff. However, future facility development at the Airport will be evaluated for line-of sight capabilities. The extension of Taxiway H to the east is expected to create a line-of-site issue. The Airport intends design and construct the extension as a non-movement area. Should Runways 9R-27L or 9L-27R be extended, a new ATC tower would be required to meet the minimum angle of incidence prescribed in FAA Order 6480.4A, *Air Traffic Control Tower Siting Process*.

I. Letters of Coordination

This section does not apply to this ALP Set Narrative Report as no coordination with outside agencies was conducted.

J. Wildlife Hazard Management

A Wildlife Hazard Assessment was initiated, in part, pursuant to Safety Recommendation A-09-073, issued by the National Transportation Safety Board to the FAA on April 29, 2009. The Wildlife Hazard Assessment for TMB was completed in April 2015. Baseline conditions at the Airport were assessed and implementing actions to reduce the likelihood of future wildlife strikes and create a safer operating environment were recommended. The recommendations were identified at various points throughout the assessment process and documented in the Wildlife Hazard Assessment report.

In accordance with the Wildlife Hazard Assessment for TMB, the following wildlife hazard concerns were identified:[4]

- Small flocking birds - Grackles, starlings, doves and pigeons, meadowlarks, swallows
- Large wading birds - Wood storks, great blue herons
- Medium-sized wading birds - Cattle egrets, white ibises
- Medium to large raptors - American kestrels, bald eagles, hawks, osprey, vultures
- Large/medium-sized mammals - Dogs, cats, foxes, raccoons
- Medium to large reptiles - Iguanas, turtles, alligators

[4] Environmental Science Associates, *Miami Executive Airport Wildlife Hazard Assessment*, April 2015.

K. Preliminary Identification of Environmental Features

Exhibits K-1 through **K-7** illustrate the various environmental features at TMB and within the Airport environs. **Table K-1** summarizes the potential environmental impacts associated with the proposed development depicted on the Future ALP and the proposed mitigation approach for those areas that may be directly affected. As shown, these impacts are limited to construction within flood Zone AH if Runway 9L-27R or 9R-27L is extended. The proposed development of non-aeronautical facilities along SW 137th Avenue would also encroach upon flood Zone AH.

Table K-1: Summary of Potential Environmental Impacts

ENVIRONMENTAL FEATURE	POTENTIAL IMPACTS	MITIGATION APPROACH
Major Drainage Ditches	No Direct Impacts	N/A
Wetlands	No Direct Impacts	N/A
Flood Zones	Potential Runway Extensions (Zone AH) Nonaeronautical Development (Zone AH)	Grading and drainage (as required)
Historic or Cultural Resources	No Direct Impacts	N/A
DOT Section 4(f) Lands	No Direct Impacts	N/A
Flora/Fauna	No Direct Impacts	N/A
Natural Resources	No Direct Impacts	N/A
Other Features	None Identified	N/A

NOTES:

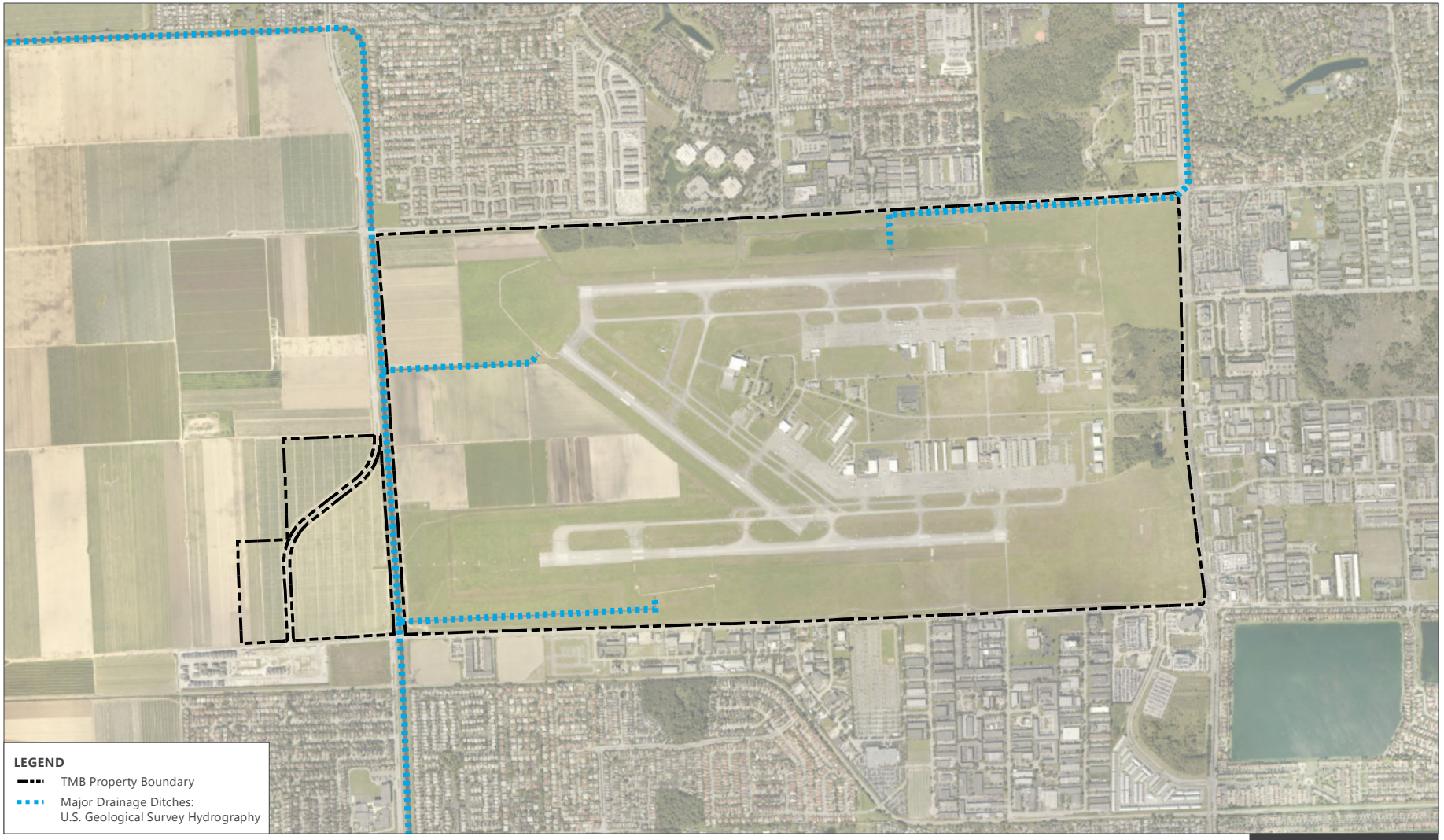
DOT = Department of Transportation

N/A = Not Applicable

Flood Zone AH corresponds to the areas of the 100-year shallow flooding with a constant water-surface elevation where average depths are between 1 foot and 3 feet. Mandatory flood insurance purchase requirements apply.

SOURCES: Miami-Dade Aviation Department; ESRI Database: ESRI, DigitalGlobe, GeoEYE, i-cubed, United States Department of Agriculture, AEX, Getmapping, Aerogrid, IGN, swisstopo, and the Geographic Information System (GIS) User Community (Aerial Photography), 2015; Florida Geographic Data Library, GIS Metadata Explorer; GIS Data, http://www.fgdl.org/metadataexplorer/explorer.jsp (accessed September 29, 2015); United States Geological Survey, GIS Data: Hydrography, http://nhd.usgs.gov/data.html (accessed September 25, 2015); Miami-Dade County GIS Data September 2015.

PREPARED BY: Ricondo & Associates, Inc., November 2015.



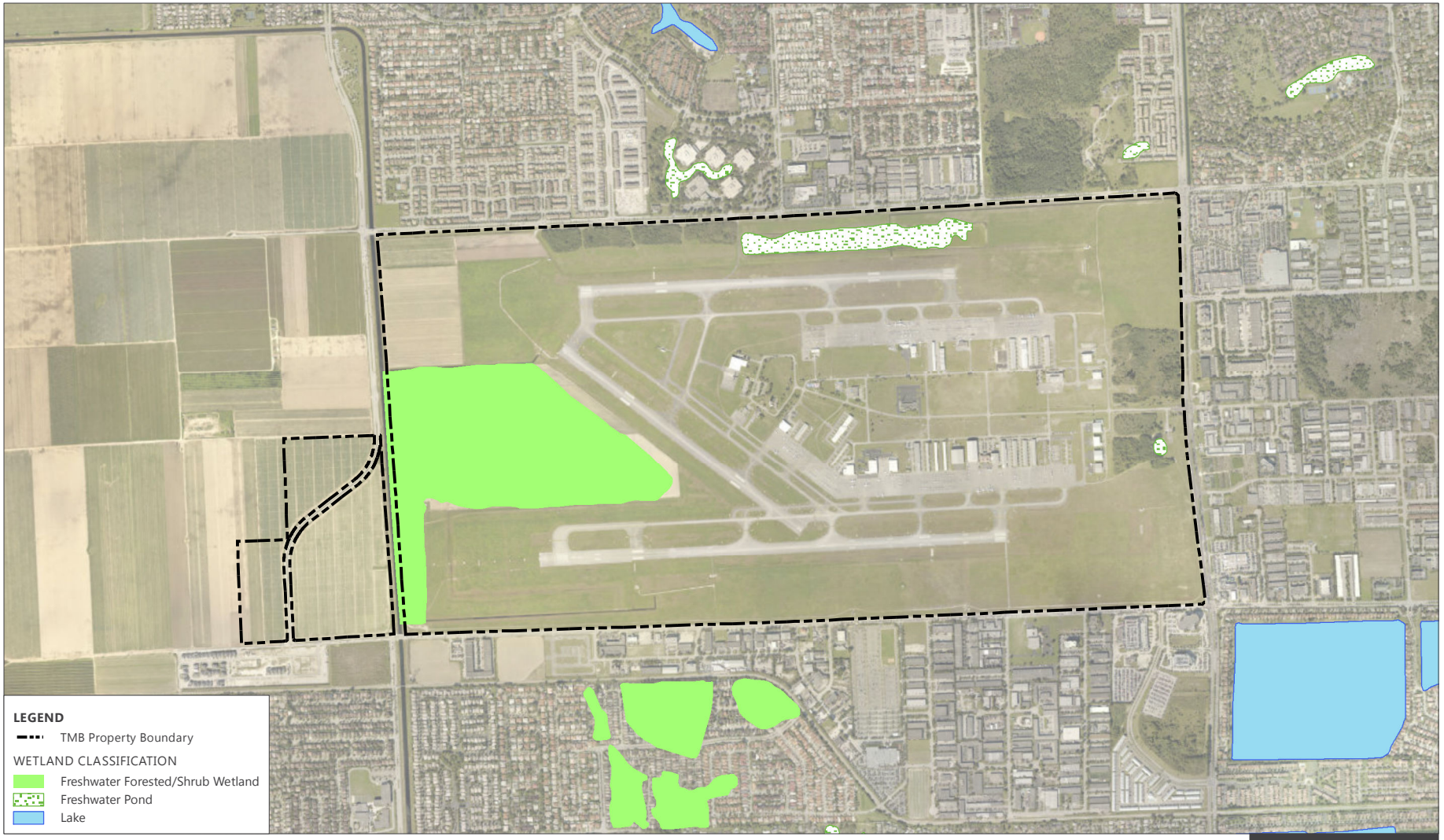
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); U.S. Geological Survey, GIS Data: Hydrography, http://nhd.usgs.gov/data.html, (accessed: September 25, 2015).
PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-1

NORTH 0 2,000 ft.

Major Drainage Ditches

P:\GIS\Projects\MIA\Environmental Analysis\MXD\TMB_Environmental_Analysis_01_Drainage_20180530.mxd



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); U.S. Geological Survey, GIS Data: Hydrography, http://nhd.usgs.gov/data.html, (accessed: September 25, 2015).
PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-2

NORTH 0 2,000 ft.

Wetlands

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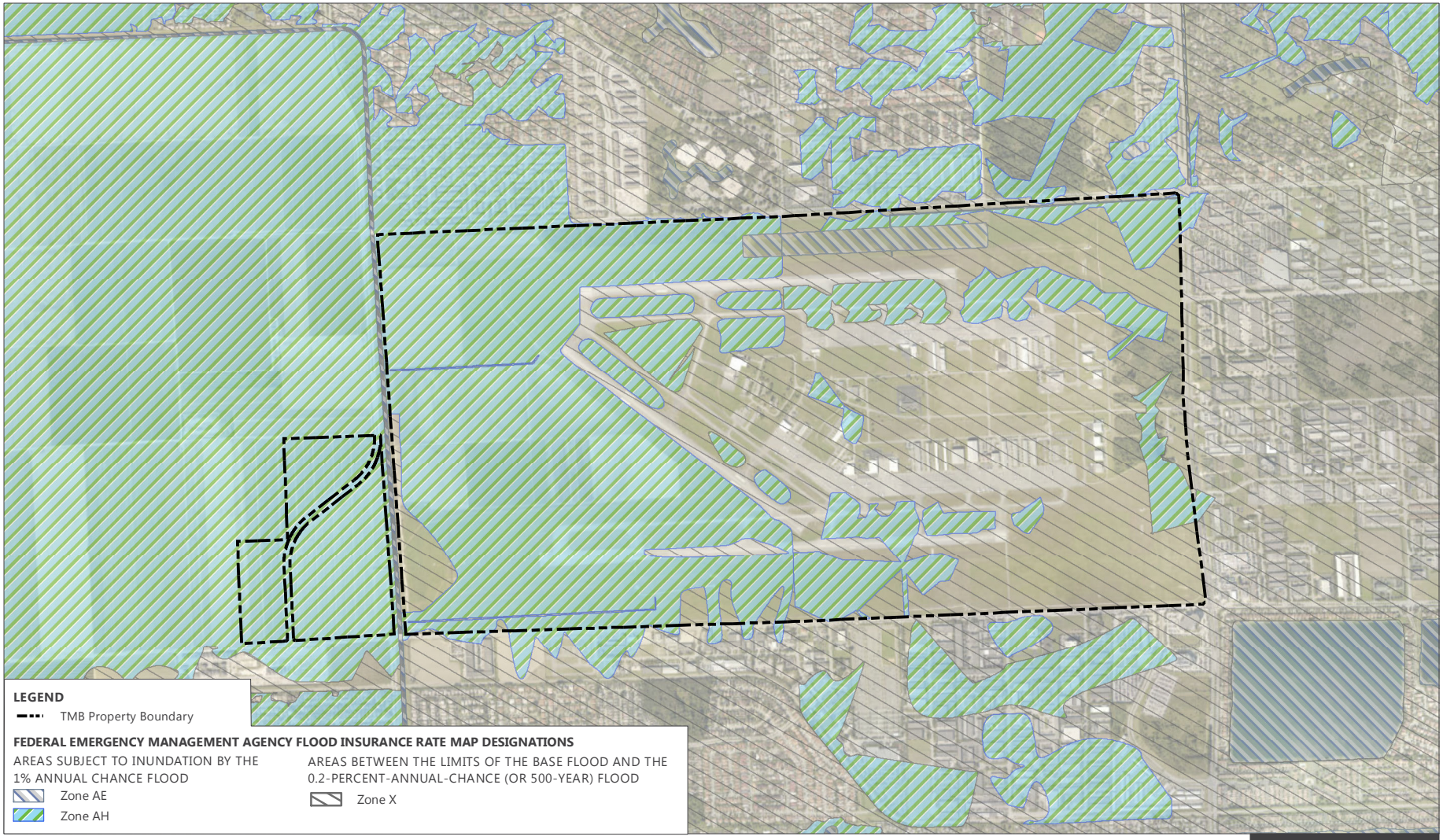
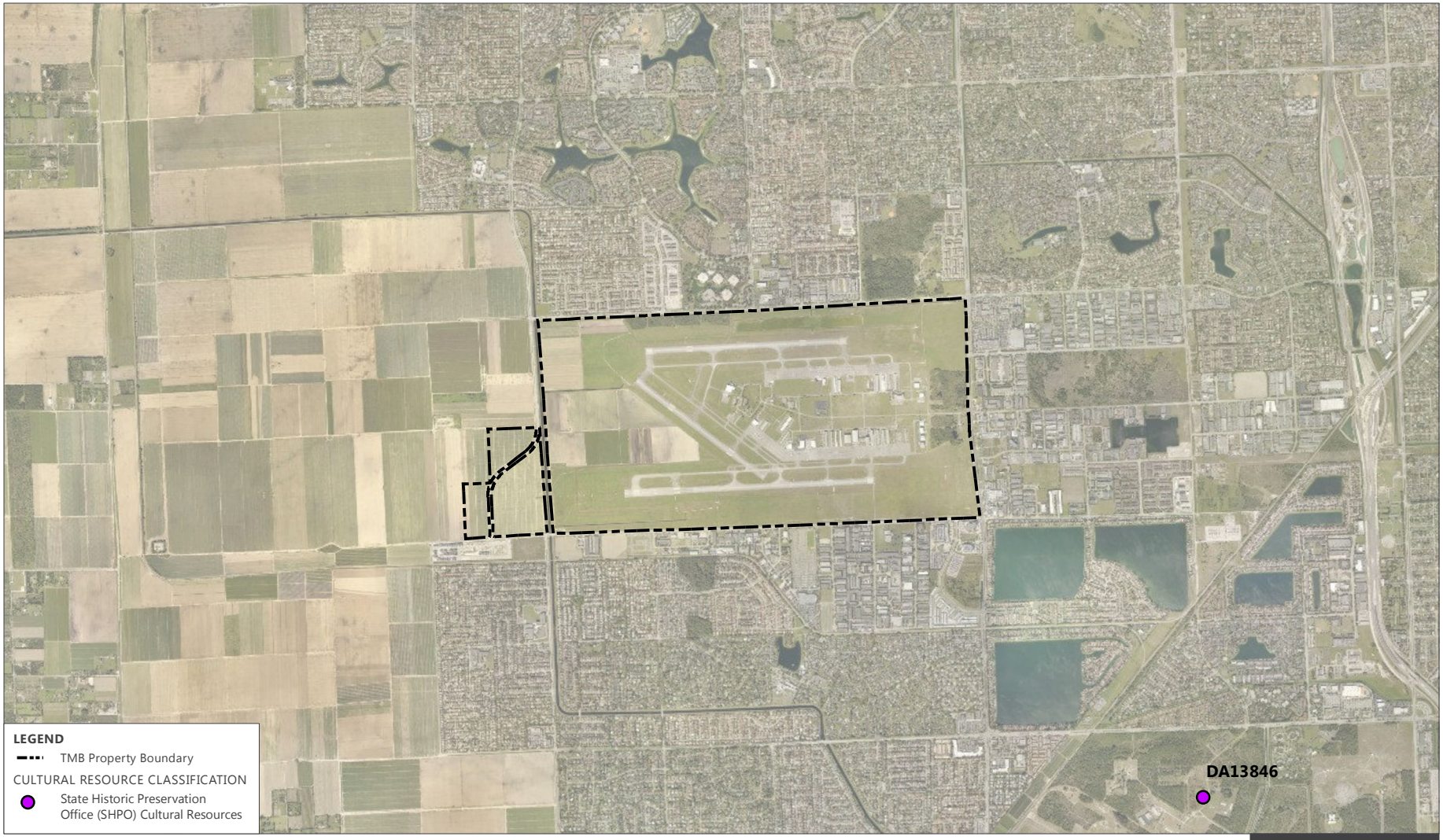


SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, http://www.fgdl.org/metadataexplorer/explorer.jsp, (accessed, September 29, 2015).
PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-3

Flood Zones

P:\GIS\Projects\MIA\Environmental Analysis\MXD\TMB_Environmental_Analysis_03_Floodzones_20180530.mxd



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, http://www.fgdl.org/metadataexplorer/explorer.jsp, (accessed, September 29, 2015).
PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-4

Cultural Resources

P:\GIS\Projects\MIA\Environmental Analysis\MXD\TMB_Environmental_Analysis_04_Cultural_20180530.mxd

SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Miami-Dade County, GIS Data.
PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-5

NORTH 0 2,000 ft.

Department of Transportation (DOT) Section 4(f) Features

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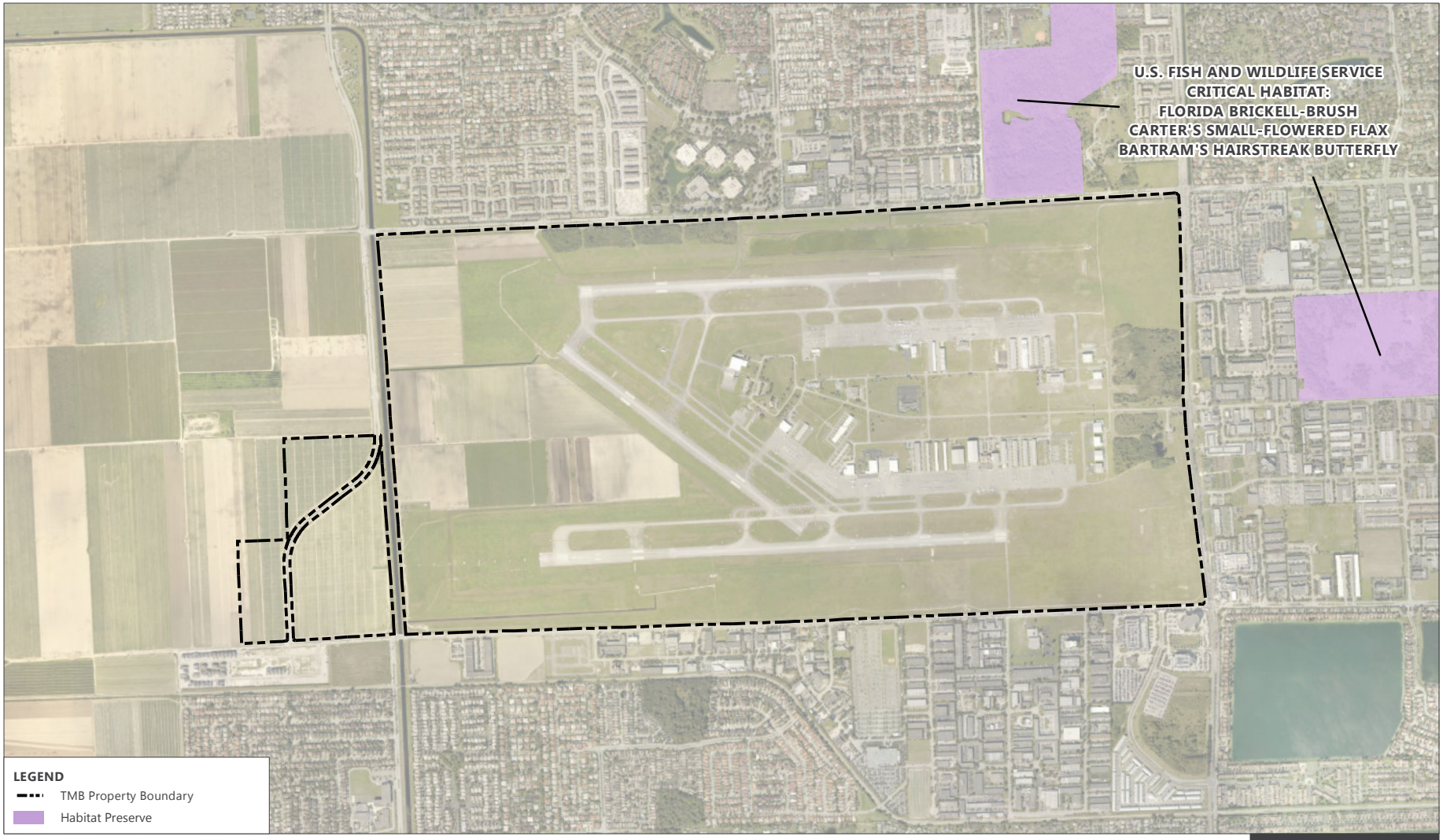


SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, http://www.fgdl.org/metadataexplorer/explorer.jsp, (accessed, September 29, 2015); U.S. Fish and Wildlife Service, GIS Data: Critical Habitat, http://ecos.fws.gov/crithab/, (accessed: September 29, 2015).

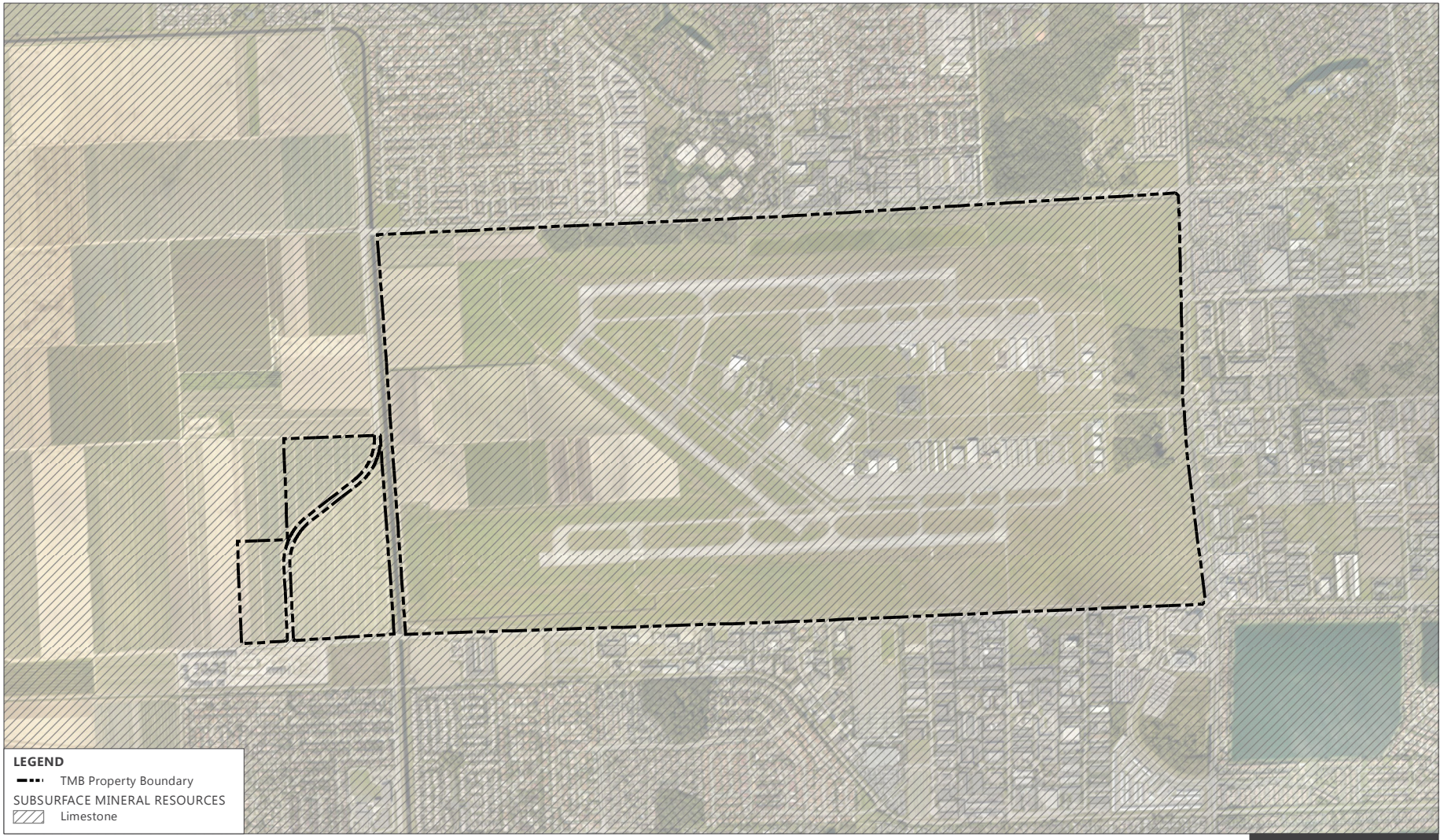
PREPARED BY: Ricondo & Associates, Inc., September 2015.

NORTH 0 2,000 ft.

P:\GIS\Projects\MIA\Environmental Analysis\MXD\TMB_Environmental_Analysis_06_flora_fauna_20180530.mxd

EXHIBIT K-6

Flora and Fauna



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, http://www.fgdl.org/metadataexplorer/explorer.jsp, (accessed, September 29, 2015).
PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-7

NORTH 0 2,000 ft.

P:\GIS\Projects\MIA\Environmental Analysis\MXD\TMB_Environmental_Analysis_07_Nat_Resources_20180530.mxd

Natural Resources

L. Action Items from FAA Runway Safety Program Office

The FAA Runway Safety Program Office identified Hot Spot #1 after experiencing several incursions to Runway 13-31 where Taxiways E and H serve as the primary aircraft crossing point for operations that taxi to/from Runway 9R/27L. As part of the SMP, several alternatives to mitigate Hot Spot #1 were identified. The alternatives were then reevaluated in the *Runway Incursion Mitigation Hot Spot #1 Reevaluation* report, with the preferred alternative included in this ALP update. The RIM reevaluation report is included in **Appendix D**.

M. Declared Distances

The declared distances table below is used to aid in identifying the maximum distances available and suitable for satisfying takeoff, rejected takeoff, and landing distance performance requirements for turbine-powered aircraft. The takeoff run available (TORA), takeoff distance available (TODA), accelerate-stop distance available (ASDA), and landing distance available (LDA) are listed in **Table M-1**.

Table M-1: Declared Distances (in linear feet)

	TORA		TODA		ASDA		LDA	
RUNWAY	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
9L	5,003	7,900	5,003	8,300	5,003	8,300	5,003	7,700
27R	5,003	8,300	5,003	8,300	5,003	7,900	5,003	6,700
9R	6,000	7,350	6,000	7,350	6,000	7,350	6,000	7,350
27L	6,000	7,350	6,000	7,350	6,000	7,350	6,000	7,350
13	4,001	3,801	4,001	3,801	4,001	3,801	4,001	3,801
31	4,001	3,801	4,001	3,801	4,001	3,801	4,001	3,801

SOURCES: Jacobsen/Daniels Associates, LLC, November 2015; Ricondo & Associates, Inc., November 2015.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

N. Airport Layout Plan Drawings

This section provides a brief description of the information specific to each drawing sheet in the ALP set. These drawings were developed and produced as a set on 36 inch by 24 inch sheets using AutoCAD MAP 3D 2013 software. The coordinates, elevations, and aerial photogrammetry are in U.S. survey feet. The horizontal datum is the Florida State Plane Coordinate System, East Zone, North American Datum of 1983/1990 adjustment (NAD 83/90). The vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Reduced reproductions of these drawings are included in Appendix B to this report for illustration purposes. A full-size set of the drawings is being submitted along with this report to the FAA and FDOT for review and acceptance.

N.1 Cover Sheet

Sheet 1, the Cover Sheet, lists the drawings in the ALP set. It also provides a location and vicinity map. The location map is a scaled representation of the location of the Airport in the State of Florida, and the vicinity map shows the approximate location of the Airport, its boundaries, and major on-Airport roadways. The vicinity map also depicts the roadway system serving the Airport and the local community.

N.2 Data Sheet

Sheet 2, the Data Sheet, contains six data tables used in the ALP set.

- **Airport Data Table** - This table lists existing and future information specific to the Airport, such as elevation, service level, role, reference code, critical aircraft, owner, reference point, temperature information, and available navigational aids.
- **Runway Data Table** - This table is a compiled tabulation of information relating specifically to the three runways at the Airport. Various specifications are listed for each runway, including, but not limited to, runway location, dimensions, ADG, available lighting and navigational aids, declared distances, and safety areas as defined in FAA AC 150/5300-13A (Change 1), *Airport Design*.
- **Declared Distances Table** - Existing and future declared distances for each runway end are shown.
- **Taxiway Data Table** - This table provides information associated with the existing and future taxiways at the Airport, including, but not limited to, taxiway width, shoulder width, and taxiway safety area and object free area sizes.

- **Modifications of Standards (MOS) Table** - This table list any approved modifications to applicable design standards or any non-standard conditions that may be depicted on the ALP or present at the Airport.
- **Wind Rose and Wind Coverage Table** - The sheet also includes the Airport wind roses. The wind data depicted on this sheet were obtained from the National Oceanic and Atmospheric Administration's National Climatic Data Center. Wind data are provided for all weather conditions, visual meteorological conditions (ceiling at or above 1,000 feet and visibility greater than or equal to 3 miles), and instrument meteorological conditions (ceiling below 1,000 feet and/or visibility less than 3 miles). These components provide information on the percentage of time a runway end or a combination of runway ends or runways are available for aircraft arrivals. When combined, the coverage is intended to be as near as possible to 100 percent. Wind coverage is summarized for each runway end and combination of runway ends. Historical wind data were obtained for TMB for the 10-year period beginning January 1, 2004, and ending December 31, 2013.

N.3 Existing Airport Layout Plan

Sheet 3 provides the Existing ALP, which depicts existing conditions at the Airport. The ALP sheet illustrates the Airport in its entirety at a scale of 1 inch = 400 feet. Major features on the ALP include runways, taxiways, aprons, navigational aids, existing facilities, the roadway system, and non-Airport facilities surrounding Airport property. This drawing sheet also includes information from the data sheet on runway approaches, runway end elevations, runway high and low points, true azimuths for each runway, and the angle of declination (magnetic north), including the annual rate of change for the magnetic declination. The Existing ALP also includes pertinent clearance and dimensional information associated with the runways and taxiways, such as RSAs and RPZs. Imaginary elements are also included on the drawing sheet, including the Airport reference point (existing/future), ground contours, and other dimensional data recommended by the FAA. The Existing ALP demonstrates the Airport's compliance with standards set forth in FAA AC 150/5300-13A (Change 1), *Airport Design,* or necessary modifications of those standards.

N.4 Future Airport Layout Plan

Sheet 4 provides the Future ALP, which depicts the recommended Airport development projects necessary to accommodate forecast demand over the 20-year planning horizon. The recommended development presented graphically on the Future ALP is consistent with those projects discussed in Section C of this document. Future facility and infrastructure improvements depicted on the Future ALP include:

- Extension of Runway 9L-27R by 1,400 feet to the east and 1,900 feet to the west for a total length of 8,003 feet. Also included are extension and reconstruction of parallel Taxiway A and construction of a second inboard parallel taxiway.

- Extension of Runway 9R-27L by 550 feet to the east and 800 feet to the west for a total length of 7,350 feet. Also included are the extension of parallel Taxiway E and the extension of Taxiway H to a full-length inboard parallel taxiway.
- Reduction of Runway 31 for the addition of a blast pad that is 200 feet long.
- Runway exit modifications to satisfy new FAA design standards and widen the pavement to serve the aircraft fleet mix.
- Taxiway enhancement for circulation improvements and to conform with FAA design standards
- Conventional hangars to accommodate the larger aircraft anticipated to use the Airport.
- General aviation facilities surrounding the conventional and other hangars, to include apron, parking, circulation, landscaping areas, and stormwater detention areas for new GA development.
- Apron and ramp improvements to support general aviation development.
- Automobile parking in various locations around the Airport to support the use of existing GA facilities.
- Aviation (Jet A) fuel facility expansion (1 acre) to serve GA activity.

In accordance with the Activity Forecasts for TMB and resulting fleet mix, the extensions of Runways 9L-27R and/or 9R-27L are not anticipated within the 20-year planning horizon. However, MDAD has elected to depict these potential runway extensions, should future demand warrant, even if it occurs beyond the 20-year planning horizon.

N.5 Airport Airspace Plan Drawings

Sheets 5 through 8 present the Airport Airspace Plan Drawings depicting the 14 CFR Part 77 imaginary airspace surfaces for the Airport. These include the Airport Airspace Drawing (Sheet 5), the Runway 9L and 9R Outer Approach Airspace Drawing (Sheet 6), the Runway 27R Outer Approach Airspace Drawing (Sheet 7), and the Airport Airspace Plan and Profile (Sheet 8). To enhance the safe operation of aircraft in the airspace around an airport, the FAA has adopted 14 CFR Part 77 "Safe, Efficient Use, and Preservation of the Navigable Airspace." Subpart C of 14 CFR Part 77 establishes imaginary surfaces for determining obstructions to air navigation, which are illustrated on the Airport Airspace Plan Drawings.

The Airport Airspace Plan Drawings also illustrate physical features on and around the Airport, including any existing obstructions that penetrate the 14 CFR Part 77 imaginary surfaces.

14 CFR Part 77 surfaces correspond to available navigational aids and types of approaches available to a runway end. **Table N-1** summarizes the 14 CFR Part 77 dimensions associated with each runway end at the Airport. The specific imaginary surfaces depicted on these drawing include:

Table N-1: CFR Part 77 Approach Surface Characteristics

RUNWAY END	OVERALL LENGTH (IN FEET)	OUTERMOST WIDTH (IN FEET)	SLOPE
9L	50,000	16,000	50:1/40:1
27R	50,000	16,000	50:1/40:1
9R	50,000	16,000	50:1/40:1
27L	10,000	4,000	34:1
13	5,000	1,500	20:1
31	5,000	1,500	20:1

SOURCE: Federal Aviation Administration, 14 CFR Part 77, "Safe, Efficient Use, and Preservation of the Navigable Airspace," September 2008.
PREPARED BY: Ricondo & Associates, Inc., November 2015.

- **Primary Surfaces** - Longitudinally centered on each runway, this surface extends 200 feet beyond each end of the runway and has an elevation equal to that of the runway centerline. The width of the primary surface is that prescribed for the most precise instrument approach procedure, existing or planned, for either end of the runway. The primary surfaces for TMB's runways are 1,000 feet wide for Runway 9L-27R and 9R-27L and 500 feet wide for Runway 13-31.
- **Approach Surfaces** - These surfaces are longitudinally centered along the extended runway centerline and extend outward and upward from each end of the primary surface. The size and slope of the approach surface are based on the type of approach, existing or planned, for that runway end. The inner edge of the approach surface is the same width as the primary surface. However, its overall length, slope, and outermost width may vary.
- **Transitional Surfaces** - These surfaces extend outward and upward from the lateral edges of all primary and approach surfaces with a slope of 7 to 1. The overall width of the transitional surfaces for the portions of the precision approach surfaces is 5,000 feet, which is measured perpendicularly from the runway centerline.
- **Horizontal Surface** - This surface is a plane located 150 feet above the established Airport elevation. Its perimeter is composed of arcs of specific radii connected by lines tangent to the arcs. The arcs are centered on the midpoint of the ends of all the primary surfaces.
- **Conical Surface** - This surface extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1, for a horizontal distance of 4,000 feet.

Navigational aids that have frangible mounts are fixed-by-function and were not included in the obstruction analysis for TMB, in accordance with 14 CFR Part 77. Obstacle and obstruction data from the 2007 ALP were used. The obstruction data were obtained from the National Aeronautical Charting Office in August 2005.

N.6 Existing and Future Inner Portions of the Approach Surface Drawings

Sheets 9 through 19 of the ALP set provide the Inner Portions of the Approach Surface Drawings for each runway approach. These sheets consist of scaled drawings of the areas immediately beyond the existing and proposed runway ends at TMB, including, but not limited to, the RPZs off each runway end. The FAA recommends that the area within each RPZ be kept free of obstacles that could constitute a hazard to aircraft approaching or departing an airport. These drawings depict the location of roadways, structures, natural ground elevations, and other manmade or natural features within the limits of each RPZ or out to where the ultimate approach surface slope is 100 feet above the threshold elevation of the runway, whichever is further. The drawings also depict objects that penetrate existing and proposed approach surfaces or violate the primary surface criteria. Obstruction tables detail objects, surface penetrations, object top elevation, and disposition. Departure surface penetrations were identified for Runways 9L (existing and future), 27R (future), 9R (future), and 27L (existing and future).

Obstacle and obstruction data were taken from the 2007 ALP. The obstacle and obstruction survey in the previous ALP was conducted in the National Geodetic Vertical Datum of 1929 (NGVD29). This causes a discrepancy in runway end elevations between the published runway elevations and what is depicted on the airspace sheets included in the ALP set. All obstructions have been reviewed and analyzed in the NGVD 29 datum.

The obstruction data were obtained from the National Aeronautical Charting Office in August 2005, and all obstacle data were obtained from the National Oceanic and Atmospheric Administration and the National Geodetic Survey in February 2005. No additional obstruction surveying was performed for this ALP update.

N.7 Departure Surface Drawings

Sheets 20 through 22 of the ALP set provide the Departure Surface Drawings for each runway end with an existing and future instrument departure procedure. The sheets consist of scaled plan and profile drawings of the area within the 40 to 1 departure surface. The drawing sheets depict the locations of potential obstructions. The sheets also provide obstruction tables listing objects, departure surface penetrations, object top elevations, and disposition. Departure surface penetrating obstructions were identified for Runways 9L, 9R, 27L, and 31.

Obstacle and obstruction data were taken from the 2007 ALP. The obstacle and obstruction survey in the previous ALP was conducted in the National Geodetic Vertical Datum of 1929 (NGVD29). This causes a discrepancy in runway end elevations between the published runway elevations and what is depicted on the airspace sheets included in the ALP set. All obstructions have been reviewed and analyzed in the NGVD 29 datum.

The obstruction data were obtained from the National Aeronautical Charting Office in August 2005, and all obstacle data were obtained from the National Oceanic and Atmospheric Administration and the National Geodetic Survey in February 2005. No additional obstruction surveying was performed for this ALP update.

N.8 Airport Land Use Drawings

Sheets 23 and 24 present the On and Off-Airport Land Use Drawings for TMB. Land use planning allows the coordinated use of airport property in a manner compatible with the functional design of the airport facility and its environs. There are two primary considerations for airport land use planning: first, to secure those areas essential for the safe and efficient operation of the airport; and second, to determine compatible land uses that would be most advantageous to the airport and community for the balance of the property.

The On-Airport Land Use Drawing (Sheet 23) illustrates the recommended use of property within the existing boundary of the Airport. This drawing identifies various land use designations for County-owned Airport property ranging from Airport Support Functions/Airside Equipment (Non-tenant Area), Commercial/Industrial, Aeronautical, Government (FAA, U.S. Customs and Border Protection, MDAD, Police, Fire), Other Uses/Flexible, Archaeological/Historical/Environmental Preservation, Historic Buildings, Avigation Easements (On-/Off-Airport) and Air Operations Area (AOA). The land use areas, and their locations on and around the airfield, are described below and are depicted using various patterns of hatching on Sheet 23.

- **Airport Support Functions/Airside Equipment (Non-tenant Area)** - This land use area is intended to represent areas that cannot be developed because they provide for Airport support (within the runway visibility zone) or areas intended for airside equipment that does not require routine airfield access.
- **Commercial/Industrial** - This land use area represents development that is compatible with and may encourage aviation growth. Development may or may not be directly related to the aviation industry.
- **Aeronautical** - This land use area is intended for existing and future general/corporate aviation-related development, such as aircraft hangars, FBOs, and aprons. This land use area encompasses those portions of the Airport that are undeveloped or underdeveloped with potential for the development of one or more forms of aviation.
- **Government (FAA, U.S. Customs and Border Protection, MDAD, Police, Fire)** - This land use area is for government facilities that rely on the airfield for operations (U.S. Coast Guard) or is required for Airport support (MDAD offices, ARFF)
- **Other Uses/Flexible** - This land use area consists of land that has not been reserved for any other purpose and is or could be populated by aviation-related or non-aviation-related developments.
- **Archaeological/Historical /Environmental Preservation** - This land use area is reserved for the preservation of various resources.
- **Historic Buildings** - This land use area is for buildings listed in or eligible for the National Register of Historic Places.

- **Avigation Easements (On-/Off-Airport)** - This land use area consists of property where the right of overflight in the airspace above or in the vicinity of a particular property, or the right to remove any obstructions to such overflights, has been conveyed.
- **Air Operations Area (AOA)** - This land use area consists of the land reserved for activities supporting and sustaining the safe and efficient operation of aircraft, including land devoted to airfield facilities, such as runways and taxiways and property within the limits of the RPZ, runway object free area, and taxiway object free area.

The Off-Airport Land Use Drawing (Sheet 24) illustrates the property outside the existing boundary of the Airport. This drawing identifies various land use designations for the area surrounding the County-owned Airport property, including the following zoning districts: Single Family Residential District, Two Family Residential District, Townhome District, Four Unit Apartment House District, High Density Apartment House District, Industrial/Commercial District, Special Business District, Interim District, Agricultural District, and Recreational Park. The land use areas, and their locations around the Airport boundary, are described below and are depicted using various patterns of hatching on the drawing sheet.

- **Single Family Residential District** - This zoning district allows single family residences and every customary use associated with them, including pools, sheds, private garages, carports, etc.
- **Two Family Residential District** - This zoning district is for the use of two families in one duplex building or in two separate houses and every associated customary use, including pools, sheds, carports, etc.
- **Townhome District** - This zoning district is for the use of townhomes (8.5 units/net acre)
- **Four Unit Apartment House District** - This zoning district is associated with up to four families in one building on one lot.
- **High Density Apartment House District** - This zoning district is associated with one building that accommodates more than four families.
- **Industrial/Commercial District** - This zoning district permits industrial manufacturing, warehouse facilities, and commercial facilities open to the public.
- **Special Business District** - This zoning district permits retail large-scale commercial developments, such as regional malls and office parks that serve the needs of large urban areas. Includes all uses permitted in the BU-1 and BU-1A Districts, except residential uses.
- **Interim District** - This zoning district allows single family residences on 5-acre lots and every associated customary use, including pools, sheds, private garages, carports, etc.
- **Agricultural District** - This zoning district allows agricultural uses and single family residences on 5-acre lots and every associated customary use, including pools, sheds, private garages, carports, etc.
- **Recreational Park** - This zoning district is designed for community involvement, to promote active lifestyles.

N.9 Airport Property Map

Sheet 25 of the ALP set provides the Airport Property Map for TMB. The Airport Property Map presents the existing and ultimate relevant property tracts, including the acreage of each parcel, location description, how the Airport property was acquired (i.e., federal Airport Improvement Program funds, military/government surplus, local funding), the date each tract of land was acquired, and the existing ownership status of proposed property acquisitions. The Airport Property Map serves as a guide for MDAD to analyze the current and future use of land acquired with federal grant funds. TMB's property consists of approximately 1,330 acres that were initially conveyed to Miami-Dade County between 1958 and 1966. Approximately 102 acres were also acquired by the Airport between 1970 and 1972. The Airport Property Map also shows 31 acres of land that were released/disposed of along with the 0.07 acre of right-of-way land released by the Airport.

Appendix A ALP Narrative Report Checklist from Airport Layout Plan Checklist-ARP SOP 2.0

APPENDIX A. ALP REVIEW CHECKLIST

The following checklist shall be used in lieu of FAA AC 150/5070-6B, Appendix F, Airport Layout Plan Drawing set. This checklist is intended for use when submitting a new or updated ALP to the FAA for review and approval. Consultants and/or sponsors should indicate "Yes," "No" or "N/A" (not applicable) for every item on the checklist. The same checklist shall be provided to FAA for review and verification. For all reviewers: It is important that each item listed be shown on the respective plan.

Airport Identification (to be completed by Sponsor or Consultant)			
Airport	Miami Executive Airport		
City and State	Miami, Florida	Location Identifier	TMB
Airport Owner	Miami-Dade County		

ALP Submission Information (to be completed by Sponsor or Consultant)		
ALP Prepared by	Jacobsen Daniels	
	Name of Consulting Firm	
	Chris Johnson / Robert Tykoski	05/2018
	Name of Individual	Date
	(734) 961-3200	
	Telephone	
	robertt@jacobsendaniels.com	
	Email address	
Consulting QA/QC Review	David Ramacorti, C.M. (Director)	05/2018
	Name and Title of Individual	Date
Sponsor Review	Ammad Riaz P.E. (Chief Aviation Planning Division)	
	Name and Title of Individual	Date

FAA Review (to be completed by FAA)		
	Name and Title of Individual	Date

Critical Design Aircraft or Family of Aircraft:

	Make	Model	Annual Itinerant Operations
Existing	Cessna	Citation V	1,054
Future	Bombardier	Global 5000	500

Forecasted Year: 2012

Airport Reference Code (ARC): C-II, C-III (Future)

Runway Design Code (RDC) & Runway Reference (RRC):

Runway	RDC	RRC
9L, 27R, 27L	C/III/4000	D/IV/4000, D/V/4000
9R	C/III/2400	D/IV/4000, D/V/4000

Approach Minimums:

Rwy End	Minimum	Rwy End	Minimum
9L	3/4	27R	3/4
9R	1/2	27L	3/4
13	Visual	31	Visual

Runways (Existing and Future):

Runway	Existing		Future		Departure Surface (Y or N/A)
	Length (ft)	Width (ft)	Length (ft)	Width (ft)	
9L-27R	5003	150	8303	150	Y
9R-27L	6000	150	7350	150	Y
13-31	4001	150	3801	150	Y

For the balance of the checklist, enter a mark (✔ or X) to confirm inclusion.

A.1. Narrative Report

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Executive Summary – A concise summary of the findings/ recommendations of the master planning effort or changes to the ALP. This should include a description of planned projects, an implementation plan/timeline, and identification of benchmarks or actions that will be conducted to either verify the original planning assumptions or proceed with project implementation.	From AC 150/5070-6, Section 202: An accompanying ALP Narrative Report should explain and document those changes and contain at least the following elements: – Basic aeronautical forecasts. – Basis for the proposed items of development. – Rationale for unusual design features and/or modifications to FAA Airport Design Standards. – Summary of the various stages of airport development and layout sketches of the major items of development in each stage. – An environmental overview to document environmental conditions that should be considered in the identification and analysis of airport development alternatives and proposed projects.	✕			
1. Identify Projects along with description		✕			
2. Create a Timeline for each Project		✕			
3. Identify and List:		✕			
a. Proposed Projects (e.g., Hangar development)		✕			
b. Milestones/ Triggering Events (e.g., 1. All hangars are full, 2. There is a waiting list long enough to fill a new development, 3. Hangars have reached their useful life, etc.)		✕			
c. Action items/Next Steps (e.g., 1. Maintain log and gather data, 2. Discuss plan with ADO, 3. Coordinate with ADO regarding potential for inclusion in FAA ACIP (Airports Capital Improvement Program), 4. Identify funding sources.)					
d. Funding Plan	Capital Improvement Plan for the forecast horizons. See AC 150/5070-6, Chapter 11. Only a rough, order-of-magnitude report is needed in the executive summary.	✕			

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
B. Basic aeronautical forecasts (0-5, 6-10, 11-20 years): Basic aeronautical forecasts (0-5, 6-10, 11-20 years):	Forecasts of future levels of aviation activity as approved by the FAA. These projections are used to determine the need for new or expanded facilities. See AC 150/5070-6, Chapter 7.	×			
1. Total annual operations	Total local and itinerant aircraft operations at the airport.	×			
2. Annual itinerant operations by all aircraft	Itinerant operations by aircraft that leaves the local airspace, generally 25 miles or more from the airport. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.	×			
3. Annual itinerant operations by current critical aircraft		×			
4. Annual itinerant operations by future critical aircraft		×			
5. Number of based aircraft	Aircraft that use the subject airport as a home base, i.e., have hangar or tie-down space agreements. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.	×			
6. Annual instrument approaches	Number of instrument approaches expected to be executed during a 12-month period. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.	×			
7. Number of enplanements	See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.			×	

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
8. Critical Aircraft (also referred as “design aircraft” or “critical design aircraft)	The critical aircraft is the most demanding aircraft identified in the forecast that will use the airport. Federally funded projects require that the critical aircraft will make substantial use of the airport in the planning period. Substantial use means either 500 or more annual itinerant operations or scheduled service. The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. Provide the aircraft, AAC, and ADG. (e.g. Boeing 737-400, C-III) See AC 150/5300-13A, Paragraph 105(b) and FAA Order 5090.3C, 3-4.	×			
9. Runway Design Code (RDC)	Describe the RDC for each runway. For the purpose of airport geometric design, each runway will contain a RDC which signifies the design standards to which the runway is to be built. The RDC consists of three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG) and the approach visibility minimums. These parameters represent the aircraft that are intended to be accommodated by the airport, regardless of substantial use. See AC 150/5300-13A, Paragraph 105(c).	×			
10. Runway Reference Code (RRC)	Describe the RRC for each runway. The RRC describes the current operational capabilities of a runway where no special operating procedures are necessary. The RRC consists of the same three components as the RDC, but is based on planned development and has no operational application. See AC 150/5300-13A, Paragraph 318.	×			
C. Alternatives/Proposed Development		×			

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
11. Explanation of proposed development items	Specific projects can be described as project listings on a master table, on individual project data sheets, or in projects booklets.	×			
12. Discuss near-term and future Approach Procedure Requirements or effects (e.g., LPV, Circling, etc.)	Based on existing or forecast usage. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	×			
13. Navigational Aids or Other Equipment Needs (e.g., Approach Lights, Wind Cones, AWOS, etc.)	The need for new or additional navigational aids is a function of the fleet mix, the percentage of time that poor weather conditions are present, and the cost to the users of not being able to use the airport while it is not accessible.	×			
14. Wind coverage. Is it adequate for existing and future runway layouts? Has wind data been updated?	This analysis determines if additional runways are needed to provide the necessary wind coverage. Reference AC 150/5300-13A, Appendix 2 for guidance on wind coverage analysis techniques.	×			
D. Modification to Standards.	Any approved nonconformance to FAA standards, other than dimensional standards for RSAs and OFZs, require FAA approval. A description of all approved modification to standards shall be provided. See AC 150/5300-13A, Paragraph 106(b) and FAA Order 5300.1.			×	
E. Obstruction Surfaces (14 CFR Part 77 and Threshold Siting Surface)	Reference 14 CFR Part 77 and AC 150/5300-13A, Paragraph 303.	×			
F. Runway Protection Zone	A description of any incompatible land uses inside the RPZ shall be provided. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	×			

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
G. Development summary (including sketches, schedules, and cost estimates) for stages of construction for: Development summary (including sketches, schedules, and cost estimates) for stages of construction for:	Documentation provided should include any electronic spreadsheets and files to facilitate in modifying the financial plan on an as-needed basis.	×			
15. Development Projects Completed Since Last ALP		×			
16. 0-5 years					
17. 6-10 years					
18. 11-20 years					
H. Shadow or line-of-sight study for towered airports (negative or positive statements are required).	Reference FAA Order 6480.4. This can be from the Airway Facilities Tower Integration Laboratory (AFTIL) or simpler GIS-generated studies.			×	
I. Letters of coordination with all levels of government, as needed.	Affected private and/or governmental groups, agencies, commissions, etc., that may have input on the plans. See AC 150/5070-6, Chapter 3.			×	
J. Wildlife Hazard Management Issues Review (in narrative).	Reference AC 150/5200-33.	×			
K. Preliminary Identification of Environmental Features	Potential or known features only. Further environmental analysis will be necessary. Reference FAA Order 5050.4B. Begin framework for NEPA analysis.			×	
19. Major airport drainage ditches				×	
20. Wetlands				×	
21. Flood Zones				×	
22. Historic or Cultural features				×	
23. Section 4(f) features				×	
24. Flora/Fauna				×	

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
25. Natural Resources				✕	
26. Etc. (other features identified in Order 5050.4B)				✕	
L. Note Action Items from Runway Safety Program Office	List and note status of items from Runway Safety Program Office or Runway Safety Action Plan.			✕	
M. Declared Distance (DD)	The narrative on declared distances is used to aid in understanding the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft. The narrative shall also provide clarification on why declared distances have been implemented. Declared distances data must be listed for all runway ends. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearway, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.	✕			
Remarks					

A.2. Title Sheet

- The scale of the Title Sheet should be developed to include the items listed below.
- The minimum size for the final drawing set is 22" X 34" (ANSI D) and 24" X 36" (ARCH D). Coordinate use of 34" x 44" (ANSI E) and 26" X 48" (ARCH E) with FAA. Color drawings may be acceptable if they are still usable if reproduced in grey scale.

Title Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and revision blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Airport sponsor approval block	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.		×		
C. Date of ALP (date the airport sponsor signs the ALP)	The month and year of signature prominently shown near the title.	×			
D. Index of sheets (including revision date column)	Airport Layout Drawing, Airport Airspace Drawing, Inner Portion of the Approach Surface Drawing, Terminal Area Drawing, Land Use Drawing, Airport Property Map, Airport Departure Surface, etc.	×			
E. State Aeronautics Agency Approval Block (as needed)	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.		×		
F. State outline with county boundaries. County in which airport is located should be highlighted.	Provide as needed.			×	
G. Location map (general area)		×			
H. Vicinity map (specific airport area)		×			
Remarks					

A.3. Airport Data Sheet

- For smaller airports, some of the ALP sheets may be combined if practical and approved FAA.

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Wind Rose (all weather and IFR) with appropriate airport reference code and runway orientation depicted, crosswind coverage, and combined coverage, source of wind information and time period covered (for IFR runways applicable minimums should be included):	Assembly and analysis of wind data to determine ultimate runway orientation and also provides the operational impact of winds on existing runways. If instrument procedures are present or will be requested then both all-weather and instrument meteorological condition wind roses are required. See AC 150/5300-13A, Appendix 2.	×			
1. 10.5, 13, 16, 20 knots wind rose (based on appropriate airport reference code)	When a runway orientation provides less than 95 percent wind coverage for any aircraft forecasted to use the airport on a regular basis, a crosswind runway is recommended. The 95 percent wind coverage is computed on the basis of the crosswind not exceeding 10.5 knots for Airport Reference Codes A-I and B-I, 13 knots for Airport Reference Codes A-II and B-II, 16 knots for Airport Reference Codes A-III, B-III, and C-I through D-III, and 20 knots for Airport Reference Codes A-IV through D-VI. See also AC 150/5300-13A, Paragraph 302(c)(3) and AC 150/5300-13A, Appendix 2.	×			
2. Percentage of wind coverage/crosswind		×			
3. Source of data	Wind data may be obtained from NOAA at http://www.ncdc.noaa.gov/ Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5 and A2-6.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Age of data (last 10 consecutive years of data with most current data no older than 10 years)	Data must be from the latest 10-year period from the reporting station closest to the airport. Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5.	×			
C. Airport Data Table					
1. ARC for Airport	List the Airport Reference Code (ARC) for airport. 5300-13AARC is an airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. Reference AC 150/5300-13A.	×			
2. Mean maximum temperature of hottest month	List the mean maximum temperature and the hottest month for the airport location as listed in "Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree-Days" (Climatography of the United States No. 81). See AC 150/5325-4, 506.b.	×			
3. Airport elevation (highest point of the landing areas, nearest 0.1 foot) – using North American Vertical Datum of 1988 (NAVD88)	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88. Reference AC 150/5300-13A, Paragraph 102(g) All elevations shall be in NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	×			
4. Airport Navigational Aids, including ownership (NDB, TVOR, ASR, Beacon, etc.)	List the electronic aids available at the airport.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
5. Airport reference point coordinates, nearest second (existing, future if appropriate, and ultimate) - NAD83	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the North American Datum of 1983 (NAD83) coordinate system. See AC 150/5300-13A, Paragraph 207. All latitude/longitude coordinates shall be in NAD83. A note shall be put on the Airport Layout Drawing that denotes that the NAD83 coordinate system was used.	×			
6. Miscellaneous facilities (taxiway lighting, lighted wind cone(s), AWOS, etc.) [Including type/model and any facility critical areas]	List any other facilities available at the airport.	×			
7. Airport Reference Code and Critical Aircraft (existing & future)	List the existing and ultimate Airport Reference Code and Critical Aircraft, the most demanding aircraft identified in the forecast that will use the airport. Federally funded projects require that critical design airplanes have at least 500 or more annual itinerant operations at the airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes. See AC 150/5325-4, 102.a.(8) and AC 150/5070-6, 702.a. Indicated dimensions for wingspan and undercarriage, along with approach speed.	×			
8. Airport magnetic variation, date and source	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	×			
9. NPIAS service level (GA, RL, P, CS, etc.)	See FAA Order 5090.3C.	×			

Airport Data Sheet					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
10. State equivalent service role	As applicable pursuant to State Aviation Department System Plan.	✕			
D. Runway Data Table	The Runway Data Table should show information for both existing and ultimate runways.				
1. Runway identification (Include identifying runways that are “utility”)	A column for each runway end should be present. List the runway end number and if pavement strength is less than 12,500 pounds (single-wheel), then note as utility.	✕			
2. Runway Design Code (RDC)	5300-13AThe first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics); whichever is more restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1200, 1600, 2400, and 4000. List the RDC for each runway. See AC 150/5300-13A, Paragraph 105(c).	✕			
3. Runway Reference Code (RRC)	The RRC describes the current operational capabilities of a runway where no special operating procedures are necessary. Like the RDC, it is composed of three components: AAC, ADG, and visibility minimums. List the RRC for each Runway. See AC 150/5300-13A, Paragraph 318.	✕			
4. Pavement Strength & Material Type	Indicate the runway surface material type, e.g., turf, asphalt, concrete, water, etc.	✕			
a. Strength by wheel loading	List the existing and ultimate design strength of the landing surface. See AC 150/5320-6, Chapter 3.	✕			
b. Strength by PCN	See AC 150/5335-5.	✕			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
c. Surface treatment	Note any surface treatment: grooved, PFC, etc.	×			
5. Effective Runway Gradient (%) Author to note maximum grade within runway length. Note to included statement that the runway meets line of sight requirements	List the maximum longitudinal grade of each runway centerline. See AC 150/5300-13A, Paragraph 313.	×			
6. Percent (%) Wind Coverage (each runway)	List the percent wind coverage for each runway for each Aircraft Approach Category. See AC 150/5300-13A, Appendix 2.	×			
7. Runway dimensions (length and width)	Dimensions determined for the Critical Design Aircraft by using graphical information in AC 150/5325-4.	×			
8. Displaced Threshold	Provide the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(2).	×			
9. Runway safety area dimensions (actual existing and design standard)	List the existing and ultimate dimensions of the Runway Safety Area (RSA). See AC 150/5300-13A, Paragraph 307.	×			
10. Runway end coordinates (NAD83) (include displaced threshold coordinates, if applicable) to the nearest 0.01 second and 0.1 foot of elevation.	Show the latitude and longitude of the threshold center and end of pavement (if different) to the nearest .01 of a second and 0.1 foot of elevation.	×			
11. Runway lighting type (LIRL, MIRL, HIRL)	List the existing and ultimate type of runway lighting system for each runway, e.g., Reflectors, Low Intensity Runway Lighting (LIRL), Medium Intensity Runway Lighting (MIRL), or High Intensity Runway Lighting (HIRL). LIRLs will typically not be shown for new systems. See AC 150/5340-30, Ch. 2.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
12. Runway Protection Zone (RPZ) Dimensions	List the existing and ultimate Runway Protection Zone (RPZ) dimensions. See AC 150/5300-13A, Paragraph 310. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	×			
13. Runway marking type (visual or basic, non-precision, precision)	Indicate the existing and ultimate pavement markings for each runway. See AC 150/5340-1, Section 2.	×			
14. 14 CFR Part 77 approach category (50:1; 34:1; 20:1) Existing and Future	List the existing and ultimate approach surface slope. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	×			
15. Approach Type (precision, non-precision, visual)	List the existing and ultimate Part 77 Approach Use Types. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	×			
16. Visibility minimums (existing and future)	List the existing and ultimate visibility minimums for each runway. See AC 150/5300-13A, Table 1-3.	×			
17. Type of Aeronautical Survey Required for Approach (Vertically Guided, not Vert. Guided)	List the type of aeronautical survey required for the visibility minimums given. See AC 150/5300-18, Section 2.7 and AC 150/5300-13A, Table 3-4 and Table 3-5.	×			
18. Runway Departure Surface (Yes or N/A)"	Determine applicability of 40:1 Departure Obstacle Clearance Surface (OCS) as defined in Paragraph 303(c) of AC 150/5300-13A.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
19. Runway Object Free Area	List the existing and ultimate dimensions of the Runway Object Free Area (OFA). See AC 150/5300-13A, Paragraph 309. Objects non-essential for air navigation or aircraft ground maneuvering purposes must not be placed in the ROFA, unless a modification to standard has been approved.	×			
20. Obstacle Free Zone	The OFZ clearing standard precludes aircraft and other object penetrations, except for frangible NAVAIDs that need to be located in the OFZ because of their function. Modification to standards does not apply to the OFZ.	×			
	List the Runway OFZ, Inner-approach OFZ, Inner-transitional OFZ, and Precision OFZ if applicable.				
21. Threshold siting surface (TSS)	List the existing and ultimate threshold siting surface (i.e. approach and departure surfaces). Identify any objects penetrating the surface. If none, state “No TSS Penetrations”. Reference AC 150/5300-13A, Paragraph 303.	×			
22. Visual and instrument NAVAIDs (Localizer, GS, PAPI, etc.)	List the existing and ultimate visual navigational aids serving each runway.	×			
23. Touchdown Zone Elevation	List the highest runway centerline elevation in the existing and ultimate first 3000 feet from landing threshold. See FAA Order 8260.3, Appendix 1.	×			
23. Taxiway and Taxilane width	List the existing and ultimate width of the taxiways and taxilane. Reference AC 150/5300-13A, Paragraph 403 and Table 4-2.	×			
24. Taxiway and Taxilane Safety Area dimensions	List the existing and ultimate taxiway and taxilane safety area dimensions. Reference AC 150/5300-13A, Paragraph 404(c) and Table 4-1.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
25. Taxiway and Taxilane Object Free Area	List the existing and ultimate taxiway and taxilane object free area dimensions. Reference AC 150/5300-13A, Paragraph 404(b) and Table 4-1.	✕			
26. Taxiway and Taxilane Separation	List any objects located inside the Taxiway/Taxilane Safety Area and Taxiway/Taxilane Object Free Area. Also provide the distance from the taxiway/taxilane centerline to the fixed or movable object. Reference Paragraph 404(a) and Table 4-1.	✕			
27. Taxiway/Taxilane lighting	List the existing and ultimate type of taxiway lighting system, e.g., Reflectors, Low Intensity Taxiway Lighting (LITL), Medium Intensity Taxiway Lighting (MITL), or High Intensity Taxiway Lighting (HITL). LITLs will typically not be shown for new systems. See AC 150/5340-30, Chapter 4.	✕			
28. Identify the vertical and horizontal datum	All latitude/longitude coordinates shall be in North American Datum of 1983 (NAD 83). A note shall be put on the Airport Layout Drawing that denotes that the NAD 83 coordinate system was used. All elevations shall be NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	✕			
E. Modification to Standards Approval Table (if applicable, a separate written request, including justification, should accompany the modification to standards). Show: Approval Date/ Airspace Case No. / Standard to be Modified / Description	Provide a table to list all FAA approved Modifications to Standards. See AC 150/5300-13A, Paragraph 106(b), and FAA Order 5300.1. List "None Required" on the table if no Modifications have yet been proposed or approved.	✕			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
F. Declared Distances Table	Required even if Declared Distances are not in effect. Declared distances are only to be used for runways with turbine-powered aircraft. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearways, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.	×			
1. Take Off Run Available (TORA)	List the runway length declared available and suitable for the ground run of an airplane taking off, i.e., Take Off Run Available (TORA). The TORA may be reduced such that it ends prior to the runway to resolve incompatible land uses in the departure RPZ, and/or to mitigate environmental effects. Reference AC 150/5300-13A, Paragraph 323(d)(1).	×			
2. Take Off Distance Available (TODA)	List the length of remaining runway or clearway (CWY) beyond the far end of the TORA ADDED TO the TORA. The resulting sum is the Take Off Distance Available (TODA) for the runway. The TODA may be reduced to mitigate penetrations to the 40:1 instrument departure surface, if applicable. The TODA may also extend beyond the runway end through the use of a clearway Reference AC 150/5300-13A, Paragraph 323(d)(2).	×			
3. Accelerate Stop Distance Available (ASDA)	5300-13A List the length the length of runway plus stopway (if any) declared available and suitable for satisfying accelerate-stop distance requirements for a rejected takeoff. Additional RSA and ROFA can be obtained by reducing the ASDA. Reference AC 150/5300-13A, Paragraph 323(d)(3).	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Landing Distance Available (LDA)	5300-13A List the length of runway declared available and suitable for satisfying landing distance requirements. The LDA may be reduced to satisfy the approach RPZ, RSA, and ROFA requirements. Reference AC 150/5300-13A, Paragraph 323(e).	×			
G. Legend	Provide a Legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.			×	
Remarks - Although there are no existing TSS penetrations, there are future TSS penetrations that should be called out.					

A.4. Airport Layout Plan Drawing

- For smaller airports, some of the ALP sheets may be combined if practical and approved by FAA.
- Two, or more, sheets may be necessary for clarity, existing and proposed. The reviewer should be able to differentiate between existing, future, and ultimate development. If clarity is an issue, some features of this drawing may be placed in tabular format. North should be pointed towards the top of the page or to the left. (scale 1"=200' to 1"=600')

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Space for the FAA approval stamp	Leave a blank four-inch by four-inch area for the FAA approval stamp.	×			
C. Layout of existing and proposed facilities and features:	To assure full consideration of future airport development in 14 CFR Part 77 studies, airport owners must have their plans on file with the FAA. The necessary plan data includes, as a minimum, planned runway end coordinates, elevation, and type of approach for any new runway or runway extension. See AC 150/5300-13A, Paragraph 106.	×			
1. True and magnetic North arrow with year of magnetic declination	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	×			
2. Airport reference point – locate by symbol a Lat./Long. To nearest second (existing, future, and ultimate) NAD 83	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the NAD 83 coordinate system. See AC 150/5300-13A, Paragraph 207.	×			
3. Wind cones, segmented circle, beacon, AWOS, etc.	Show as applicable pursuant to AC 150/5300-13A, Chapter 6.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Contours (showing only significant terrain differences)	Topography, budget, and future uses of the base mapping, will dictate what intervals of topographical contours to use on the maps. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. See AC 150/5070-6, 1005.	×			
5. Elevations: All NAVD88	All latitude/longitude coordinates shall be in NAD83/NAVD88.	×			
a. Runway – existing, future, and ultimate ends (nearest 0.1 ft.)	Show the latitude and longitude of the threshold center and end of pavement.	×			
b. Touchdown Zone Elevation (highest point in first 3,000 ft. of runway)	List the highest runway centerline elevation in the existing and ultimate first 3000 feet from landing threshold. See FAA Order 8260.3, Appendix 1.		×		
c. Runway high/low points (existing and future)	For all runways identify high and low points (centerline) and provide elevation information.		×		
d. Label runway/runway intersection elevations	Label the pavement elevation of runway intersections where the centerlines cross.			×	
e. Displaced Thresholds (if any)	Label the pavement elevation and coordinates of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(a)(2).	×			
f. Roadways & Railroads (where they intersect Approach surfaces, the extended runway centerline, and at the most critical points)	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverseway elevation plus the traverseway adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
g. Structures, Buildings, and Facilities	All buildings on the Airport Layout Drawing should be identified by an alphanumeric character. List these identifiers in a table and give a description of the building. If no Terminal Area drawing is done, also include the top of structure elevation in MSL. If any of the structures violate any airport or approach surfaces give an ultimate disposition to remedy the violation. Don't forget navigation aid shelters, AWOS/ASOS, RVRs, PAPIs, Fueling systems, REILs, etc. Also identify the structure use (hangar, FBO, crew quarters, etc.), as needed. Some lesser objects may be identified by symbols in the legend.	×			
h. Define features to include: trees streams, water bodies, etc.	Provide information and delineate trees, streams, water bodies, etc., on or near airport property and approach surfaces.	×			
6. Runway Details					
a. Runway Design – runway length, runway width, shoulder width, blast pad width, blast pad length, and cross wind component. (existing, future, and ultimate)	AC 150/5325-4 describes procedures for establishing the appropriate runway length. AC 150/5300-13A, Table 3-4 and Table 3-5 provides the minimum runway length. AC 150/5300-13A, Table 3-8 provides the standard dimensions of the runway width, shoulder width, blast pad width, blast pad length, and crosswind component based on RDC. Clearly denote the runway numbers at the thresholds. Show location of existing and future threshold lights.	×			
b. Orientation – true bearing to nearest 0.01 second (and runway numbers)	Show the true bearing to the nearest .01 of a degree of the runway centerline.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
c. End Coordinates – existing, future, and ultimate degrees, minutes, seconds (to the nearest 0.01 second)	Show the latitude and longitude of the threshold center and end of pavement (if different) to the nearest .01 of a second.	×			
d. Runway Safety Areas (RSA) – actual, existing, future, and ultimate (including dimensions)	Show the extents of the existing and ultimate RSA 5300-13A. Reference AC 150/5300-13A, Paragraph 307.	×			
e. Runway Object Free Areas (ROFA)	Show the extents of the existing and ultimate ROFA. Reference AC 150/5300-13A, Paragraph 309.	×			
f. Precision Obstacle Free Zone (POFZ)	Show the extents of the existing and ultimate POFZ. Reference AC 150/5300-13A, Paragraph 308(d).	×			
g. Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ. Reference AC 150/5300-13A, Paragraph 308.	×			
h. Clearways and Stopways	Show any/all clearways and stopways/overruns and the markings used to denote these areas. See AC 150/5300-13A, Paragraph 311 and 312; and AC 150/5340-1, Section 2, Paragraph 14.	×			
i. Runway Protection Zone (RPZ) - Dimensions (existing, future, and ultimate)	Show existing and ultimate RPZ. See AC 150/5300-13A, Paragraph 310. Show the existing and ultimate protective area/zone type of ownership. Identify any incompatible objects and activities inside the RPZ. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
j. 14 CFR Part 77 Approach Surfaces	Show the portion of the existing and ultimate approach surfaces that are over airport and adjacent property and identify the approach surface dimensions and slope. See FAA Order 7400.2, Figure 6-3-9.	×			
k. Threshold Siting Criteria: Approach/Departure Surface (existing, future, and ultimate) 5300-13A	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(b) and 303(c).	×			
l. Terminal Instrument Procedures (TERPS)surface and TERPS GQS, if applicable.	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(a)(4)(a), Table 3-4, and Table 3-5. Reference FAA Order 8260.3.			×	
m. Navigation Aids (NAVAIDS) – PAPI, ILS, GS, LOC, ALS, MALSR, REIL, etc., (plus facility critical area's)	Show all NAVAIDS and provide clearance distances from runways, taxiways, etc. Reference AC 150/5300-13A, Chapter 6.	×			
n. Marking – thresholds, hold lines, etc.	Show on the runway the type and location of markings, existing and ultimate. See AC 150/5340-1, Section 2.	×			
o. Displaced threshold coordinates and elevation	Show the latitude, longitude, and the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(a)(2).5300-13A.	×			
p. Runway centerline separation distances	Show the runway centerline separation distances to parallel runway centerline, holding position, parallel taxiway/taxilane centerline, aircraft parking area, and helicopter touchdown pad, if applicable. Reference AC 150/5300-13A, Paragraph 321 and Table 3-8.	×			
7. Taxiway Details	Show the taxiway centerline separation distances to parallel taxiway/taxilane centerlines, fixed or movable objects.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
a. Dimensions – width (existing & ultimate)	Taxiway width based on Taxiway Design Group (TDG). See AC 150/5300-13A, Table 4-2.	×			
b. Taxiway Edge Safety Margin (TESM)	TESM dimension based on TDG. See AC 150/5300-13A, Table 4-2.	×			
c. Taxiway Shoulder Width	Taxiway shoulder width based on TDG. See AC 150/5300-13A, Table 4-2.	×			
b. Taxiway/Taxilane Object Free Area (TOFA)	TOFA width based on Taxiway Design Group (TDG). TOFA extend the entire length of taxiway. See AC 150/5300-13A, Table 4-1.	×			
c. Taxiway/Taxilane Safety Area (TSA)	TSA width based on TDG. TSA extend the entire length of taxiway. See AC 150/5300-13A, Table 4-1.	×			
d. Taxiway/Taxilane Centerline Separation from:					
i. Runway centerline	Show the distance from centerline of runway to centerline of taxiway. See AC 150/5300-13A, Table 4-1.	×			
ii. Parallel taxiway	Show the distance from centerline of taxiway to centerline of parallel taxiway. See AC 150/5300-13A, Table 4-1.	×			
iii. Aircraft parking	Show the distance from centerline of taxiway to marked aircraft parking/tie downs. See AC 150/5300-13A, Table 4-1.		×		
iv. Fixed or Movable Objects	Show the distance from centerline of taxiway to airport objects such as buildings, facilities, poles, etc. See AC 150/5300-13A, Table 4-1.		×		
8. Fences (identify height)	Show the location of existing and ultimate fences and identify height.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
9. Aprons					
a. Dimensions (square footage, dimension, or length and width)	Include dimensions of apron and distance from runway and taxiway centerlines. Apron should be sized using activity forecast and the apron design spreadsheet. See AC 150/5300-13A, Chapter 5 and FAA Engineering Brief No. 75.		×		
b. Identify aircraft tie-down layout	Show proposed tie-down layout on the apron area. See AC 150/5300-13A, Figure A5-1, AC 20-35, and AC 150/5340-1.	×			
c. Identify Special Use Areas (e.g., deicing or aerial application areas on or near apron)	Show as applicable and pursuant to representative ACs.	×			
10. Roads	Label all roads.				
11. Legend	Provide a Legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	×			
12. Items to be identified with distinct line types	Use distinct line types to identify different items and differentiate between existing and ultimate.				
a. NAVAID Critical Areas (Glide Slope, Localizer, AWOS, ASOS, VOR, RVR, etc.)	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.	×			
b. Building Restriction Lines 5300-13A(BRL)	The BRL is the line indicating where airport buildings must not be located, limiting building proximity to aircraft movement areas. See AC 150/5300-13A, Paragraph 213(a).	×			
c. Runway Visibility Zone (RVZ)	Show the RVZ for the existing and ultimate airport configurations. See AC 150/5300-13A, 305(c).	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
d. Airport Property Lines and Easements (existing, future, and ultimate)	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations.	×			
13. Survey Documentation					
a. Survey Monuments (PACS/SACS, see AC 150/5300-16)	Show the location of all established survey monuments located on or near the airport property. Identify Primary and Secondary Airport Control Stations (PACS/SACS) if they exist. See AC 150/5300-16.	×			
	Show the location of all section corners on or near the airport property.				
b. Offsets, stations, etc.	Show as applicable.				
14. Any Air Traffic Control Tower (ATCT) line of sight/shadow study areas (use separate sheet if necessary)	Reference FAA Order 6480.4.			×	
15. General Aviation development area (e.g., fuel facilities, FBO, hangars, etc.) – greater detail can be shown on the terminal area drawing	Show as applicable.	×			
16. Facilities and movement areas that are to be phased out, if any, are described	Show as applicable.	×			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	

Remarks

- Callout TDZE Points.
- Place dimensions on the Future ALD on future parallel taxiways, and from future taxiways to aircraft parking areas.
- Show acreage for existing aprons.
- Are runway high/low points listed on the ALDs? If not, label them. Elevation contours can help.
- Is the ATCT called out? If not, label the ATCT. Consult with MDAD if a Line of Sight analysis is needed for this ALP.
- For Taxiways, check the dimensions within the CAD files for the Taxiway Edge Safety Margin and Taxiway Shoulders to ensure that they abide by this checklist. MDAD may ask that dimensions be shown.

Other comments refer to the taxiway object free areas, safety areas and width. Because this information is provided in detail on the Data Sheet, safety areas and dimensions were not included on the ALDs to avoid clutter to the drawing.

A.5. Airport Airspace Drawing

- A required drawing.
- Scale 1" = 2000' plan view, 1" = 1000' approach profiles, 1"=100' (vertical) for approach profiles.
- 14 CFR Part 77, Objects Affecting Navigable Airspace, defines this as a drawing depicting obstacle identification surfaces for the full extent of all airport development. It should also depict airspace obstructions for the portions of the surfaces excluded from the Inner Portion of the Approach Surface Drawing.

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Block	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Plan view (based on ultimate runway lengths) Include location of water or sewage facilities if inside horizontal surface.					
1. U.S. Geological Survey (USGS) Quad Sheet for base map	Use the most current USGS Quadrangle(s) as a base map for the airspace drawing.	×			
2. Runway end numbers	Show the ultimate runways and runway numbers. Contact the FAA before renumbering existing runways.	×			
3. Part 77 Surfaces (Horizontal, Conical, Transition, based on ultimate). Including elevations at the point where surfaces change.	Show the extents of the Part 77 imaginary surfaces. For airports that have precision approach runways show balance of the 40,000' approach on a second sheet, if necessary. See 14 CFR Part 77.19.	×			
4. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on all sloping Part 77 imaginary surfaces. See 14 CFR Part 77.19.	×			
5. Top elevations of penetrating objects for the inner portion of the approach surface drawing	Identify by unique alphanumeric symbol all objects beyond the Runway Protection Zones that penetrate any of the Part 77 surfaces. See 14 CFR Part 77.	×			
6. Note specifying height restriction (ordinances/statutes)	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.			×	

Airport Airspace Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
7. North Arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	X			
C. Profile view					
1. Airport Elevation	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88 datum. See AC 150/5300-13A, Chapter 1, Paragraph 102(g).	X			
2. Composite Ground Profile along extended Runway Centerline (Representing the composite profile, based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.	X			
3. Significant objects (bluffs, rivers, roads, schools, towers, etc.) and elevations	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects' same alphanumeric identifier that was used on the plan view. Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.		X		
4. Existing, future, and ultimate runway ends and approach slopes	Show existing and ultimate runway ends and FAR Part 77 approach surface slopes. See 14 CFR Part 77.19.	X			

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
D. Obstruction Data Tables (identify obstacles not depicted on the Inner Portion of the Approach Surface Drawing)					
1. Object identification number	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects alphanumeric identifier that was used on the plan view.	×			
	Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.				
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	×			
3. Date of Obstruction Survey	Provide the date of latest obstruction survey.	×			
4. Ground Surface Elevation	Provide the ground surface elevation (MSL) at the base of each object.	×			
5. Object Elevation	List the above ground level (AGL) height and the top of object elevation (above mean sea level / AMSL / MSL) for each object.	×			
6. Amount of surface penetration	List the surface that is penetrated and the amount the object protrudes above the surface. See 14 CFR Part 77.	×			
7. Proposed or existing disposition of the obstruction	Provide a proposed or existing disposition of the object to remedy the penetration. See AC 70/7460-1.				
a. Proposed Disposition (existing)				×	
b. Proposed Disposition (future)		×			

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
Remarks - Identify significant objects, such as schools, streams, roads etc. Can get information from other sheets. - Though ground elevation contours are drawn on the Airspace Plan and Profile Sheet, they're no obstacles shown under the inner approach surfaces. A note should be added which states that a more comprehensive analysis of obstacles under the P77 inner approach surfaces is on the inner approach plan and profile sheets.					

A.6. Inner Portion of the Approach Surface Drawing

- A required drawing.
- Scale 1"=200' Horizontal, 1"=20' Vertical, two sheets may be necessary for clarity. Typically, the plan view is on the top half of the drawing and the profile view is on the bottom half. Views should be drawn from the runway threshold to a point on the approach slope 100 feet above the runway threshold elevation, at a minimum, or the limits of the RPZ, whichever is further.
- Drawings containing the plan and profile view of the inner portion of the approach surface to the runway and a tabular listing of all surface penetrations. The drawing will depict the obstacle identification approach surfaces contained in 14 CFR Part 77, Objects Affecting Navigable Airspace. The drawing may also depict other surfaces, including the threshold-siting surface, Glideslope Qualification Surface (GQS), those surfaces associated with United States Standards for Instrument Procedures (TERPS), or those required by the local FAA office or state agency. The extent of the approach surface and the number of airspace obstructions shown may restrict each sheet to only one runway end or approach.

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Block	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Plan View (existing, future, and ultimate)					
1. Inner portion of approach surface	Show the area from the runway threshold out to where the ultimate approach surface slope is 100 feet above the threshold elevation.	×			
2. Aerial photo for base map	Use an aerial photograph for the base map.	×			
3. Objects (identified by numbers)	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions using an alphanumeric character.	×			
4. Property line within approaches	Show the property lines that are within the area/portion of airport shown.	×			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
5. Road & railroad elevations, plus movable object heights	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverse way elevation plus the traverse way adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	×			
6. Part 77 Approach Surface clearance over Roads and Railroads at the most critical points, the Centerline and Edge of the surface.	Provide elevation information for the traverse ways where they intersect the edges and centerline of the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverseway elevation plus the traverseway adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	×			
7. Physical end of runway, end number, elevation (NAVD88) Nearest 0.1 foot	Show the existing and ultimate runway end, runway number, and the elevation of the threshold center.	×			
8. Airport Design Surfaces					
a. Runway Safety Area	Show the extents of the existing and ultimate Runway Safety Area (RSA). See AC 150/5300-13A, Paragraph 307 and Table 3-8.	×			
b. Runway Object Free Area	Show the extents of the existing and ultimate Object Free Area (OFA). See AC 150/5300-13A, Paragraph 309 and Table 3-8.	×			
c. Runway Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ which includes the inner-approach OFZ, inner-transitional OFZ, and the Precision OFZ (POFZ), if applicable. See AC 150/5300-13A, Paragraph 308.	×			

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
d. Runway Protection Zone (RPZ)	Show the extents of the existing and ultimate RPZ. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310, Table 3-5 and FAA memorandum dated September 27, 2012.	✕			
e. NAVAID critical area	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.	✕			
9. Ground contours	Show ground contour lines in 2', 5', or 10' intervals. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. See AC 150/5070-6, Paragraph 1005.	✕			
10. North arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, Chapter 2, Section 5, for further information.	✕			
C. Profile view					
1. Existing and proposed runway centerline ground profile (list elevations at runway ends & at all points of grade changes) (representing the composite profile based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface to where the ultimate approach surface slope is 100 feet above the threshold elevation. A more effective presentation may be a rendering of a composite critical profile.	✕			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Future development from plan view	Identify future development using same alphanumeric identifier that was used on the plan view.	✕			
3. Part 77 Approach/transition surface; existing and future VASI/PAPI siting surface	Show the boundaries of the existing and ultimate Part 77 Approach Surface. See FAA Order 7400.2, Figure 6-3-9, See also 14 CFR Part 77.	✕			
4. Threshold Siting Surface	Depict any applicable siting requirements pursuant to Table 3-2 of FAA AC 150/5300-13A.	✕			
5. Terrain in approach area (fences, streams, etc.)	Show all significant terrain(fences, streams, mountains, etc.) within the approach surfaces, regardless of whether or not they are obstructions	✕			
6. Objects – identify the controlling object (same numbers as plan view)	Show all significant objects (roads, rivers, railroads, towers, sign and power poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.	✕			
	Identify the objects using same alphanumeric identifier that was used on the plan view.				
7. Cross section of road & railroad	Show the cross-section of any roads and/or railroads that cross the area shown. Indicate cross section elevations of roads and railroads at edges and extended centerlines that cross the area shown.	✕			
8. Existing and proposed property and easement lines	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations. AC 5300-13A Note easements for pipelines and residential through the fence gateways.		✕	✕	
D. Obstruction tables for each approach surface (surface should be identified)	A separate table for each runway end must be used to enhance information clarity.				
1. Object identification number	List each object by the same alphanumeric symbol used in the plan view.	✕			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	✕			
3. Date of Obstruction Survey and Survey Accuracy	Provide the date of latest obstruction survey.	✕			
4. Surface Penetrations	5300-13A For any object that penetrates the Part 77 surface, the approach surface, or the obstacle free zone, describe the vertical length the object protrudes.		✕		
5. Proposed disposition of surface penetrations	Provide a proposed disposition of the object to remedy the penetration as described in item 4 above. See AC 70/7460-1 for Part 77 violations. "Removal" and/or "Lower" should be listed for any Airports safety area/zone violations. See AC 150/5300-13A, Paragraph 303 and 308.	✕			
6. Object elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.	✕			
7. Triggering Event (e.g., a runway extension) – Timeframe/expected date for removal	List the surface that is penetrated and the amount the object protrudes above the surface. See 14 CFR Part 77 and AC 150/5300-13A, Paragraphs 303 and 308.	✕			
8. Allowable approach surface elevation (if applicable)				✕	
9. Amount of approach surface penetration (if applicable)		✕			
10. Proposed disposition of approach surface obstruction (if applicable)	Provide a proposed disposition of the object to remedy the penetration. See AC 70/7460-1 for Part 77 violations. "Removal" and/or "Lower" should be listed for any Airports safety area/zone violations. See AC 150/5300-13A, Paragraph 303.	✕			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
11. Obstacle Free Zone (OFZ)	Determine and depict the applicable OFZ surfaces, see AC 150/5300-13A, Paragraph 308. Provide a proposed disposition of the object to remedy the penetration. Note: Modification to the OFZ standard is not permitted.	×			
E. Runway Centerline Profile	This may be shown on the Inner Portion of the Approach Surface drawing if there is space to show the runway and Runway Safety Area in sufficient detail otherwise a separate sheet may be necessary. At a minimum this drawing is to show the full length of the runway and Runway Safety Area including: runway elevations, runway and Runway Safety Area gradients, all vertical curves, and a line representing the 5' line-of-sight. See AC 150/5300-13A, Paragraph 305.	×			
1. Scale	The vertical scale of this drawing must be able to show the separation of the runway surface and the 5' Line-of-Sight line. See AC 150/5300-13A, Paragraph 305.	×			
2. Elevation	Show runway elevations, runway and Runway Safety Area gradients, and all vertical curve data. See AC 150/5300-13A, Paragraph 318.	×			
3. Line of Sight	The vertical scale of this drawing must be able to show the separation of the runway surface and the 5' Line-of-Sight line. See AC 150/5300-13A, Section 305.		×		

Remarks

- Create another table for the obstacles that penetrate the future TSS surfaces.
- Check with R & A to see if they're any existing and/or future easements.
- Place a 5' line of sight on all Inner Approach Pland and Profile sheets.
- Additional traverse analysis may be needed for the relocation of SW 175 Avenue.

A.7. Runway Departure Surface Drawing

- Required where applicable. For each runway that is designated for instrument departures.
- This drawing depicts the applicable departure surfaces as defined in Paragraph 303 of FAA AC 150/5300-13A. The surfaces are shown for runway end(s) designated for instrument departures.
- 40:1 for Instrument Procedure Runways (Scale, 1" = 1000' Horizontal, 1" = 100' Vertical, Out to 10,200' beyond Runway threshold) 62.5:1 for Commercial Service Runways (Scale, 1" = 2000' Horizontal, 1" = 100' Vertical, Out to 50,000' beyond Runway threshold).
- Contact the FAA if the scale does not allow the entire area to fit on a single sheet. The depiction of the One Engine Inoperative (OEI) surface is optional; it is not currently required.

Runway Departure Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Plan view (existing & future)	See AC 150/5300-13A, Paragraph 303(c).				
1. Aerial Photo for base map	Use an aerial photograph for the base map. A USGS 7.5 minute series map is also acceptable.	×			
2. Runway end numbers and elevations (nearest 1/10 of a foot)	Show the existing and ultimate runway end, runway number, and the elevation of the threshold center. For runways that have a clearway, depict this surface and the relocated departure surface. Reference AC 150/5300-13A, Paragraph 303(c)(1).	×			
3. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on the Part 77 imaginary surfaces. See 14 CFR Part 77.19.		×	×	
4. Depict property line, including easements	Show the property line(s) that are within the area/portion of airport shown.	×			
5. Identify, by numbers, all traverse ways with elevations and computed vertical clearance in the departure surface	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters.		×		

Runway Departure Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
6. Ground contours	Show ground contour lines in 2', 5', or 10' intervals. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used.		×		
C. Profile view (existing & future)					
1. Ground profile	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the departure surface to extents of the surface dimensions.	×			
2. Significant objects (bluffs, rivers, roads, buildings, fences, structures, etc.)	Show all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions using an alphanumeric character.		×		
3. Identify obstructions with numbers on the plan view	Identify the objects using same alphanumeric identifier that was used on the plan view.	×			
4. Show roads and railroads with dashed lines at edge of the departure surface	Show the cross-section of any roads and/or railroads that cross the area shown.		×		
D. Obstruction Data Tables					
1. Object identification number	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters. List each object by the same alphanumeric symbol used in the plan view.		×		
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Tree, Natural Gas Flare, etc.	×			
3. Object Elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.	×			

Runway Departure Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Amount of surface penetration	List the object protrudes above the departure surface. See AC 150/5300-13A, Paragraph 303(c).	✕			
5. Proposed or existing disposition of the obstruction	Provide a proposed disposition of the object to remedy the penetration. See AC 150/5300-13A, Paragraph 303(c).	✕			
6. Separate table for each departure surface	A separate table for each runway end must be used to enhance information clarity.		✕		

Remarks

- Check CFR Part 77.19 for 50’ contour requirement. May have to put a note that analysis was based off of AC 150 5300-13A Departure OCS requirement.
- New numbers need to be added for road traverse points, and additional analysis needs to be performed.
- Significant objects need to be identified.
- Because the plan and profile views show the entire runways, it may not be necessary to show separate tables for each runway end; however, it is a requirement on this checklist so the obstacles may need to be separated by runway end.
- Additional traverse analysis may be needed for the relocation of SW 175th Avenue.

A.8. Terminal Area Drawing

- Scale 1"=50' or 1"=100'. Plan view of aprons, buildings, hangars, parking lots, roads.
- This plan consists of one or more drawings that present a large-scale depiction of areas with significant terminal facility development. Such a drawing is typically an enlargement of a portion of the ALP. At a commercial service airport, the drawing would include the passenger terminal area, but might also include general aviation facilities and cargo facilities. See AC 150/5300-13A, Appendix 5.
- Use scale that allows the extent of the terminal/FBO apron area to best fit the chosen sheet size, e.g., typical GA airports may be able to use 1"=50' scale on a 22" X 34" sheet, but a complex hub airport with multiple terminal areas may require a 1"=100' scale on a 36" X 48" sheet. Contact FAA if an airport layout requires scaling or sheet sizing other than what is listed.
- This drawing is not needed at every airport type and is therefore optional.

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.		×	×	
B. Building data table	All buildings on the Airport Layout Drawing should be identified by an alphanumeric character. List these identifiers in a table and give a description of the building. If no Terminal Area drawing is done, also include the top of structure elevation in MSL.		×	×	
1. Structure identification number			×	×	
2. Top elevation of structures (AMSL)			×	×	
3. Obstruction marking/lighting (existing/future)	Show the location of existing and ultimate hangars. Include dimensions of apron and distance from runway and taxiway centerlines. See AC 150/5300-13A, Appendix 5. Show the elevation of the highest point of each structure.		×	×	
C. Buildings to be removed or relocated noted	If any of the structures violate any airport or approach surfaces give an ultimate disposition to remedy the violation.		×	×	
D. Fueling facilities, existing and future	Show the location of existing and ultimate fueling facilities. Include dimensions of apron and distance from runway and taxiway centerlines.		×	×	

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
E. Air carrier gates positions shown (existing/future)	Show the existing and ultimate air carrier gate positions. See AC 150/5300-13A, Chapter 5.		×	×	
F. Existing and future security fencing with gates	Show the existing and ultimate security fencing and gates. See AC 150/5300-13A, Paragraph 606.		×	×	
G. Building restriction line (BRL)	Show the Building Restriction Line (BRL) that is within the area/portion of airport shown. The BRL identifies suitable building area locations on airports. This should be located where the Part 77 surfaces are at 35' above the airport elevation unless a different height is coordinated with the FAA. See AC 150/5300-13A, Paragraph 213(a).		×	×	
H. Taxiway or Taxilane centerlines designated	Show centerlines of all taxiway and taxilanes within the area/portion of airport shown.		×	×	
I. Dimensions					
1. Clearance Dimensions between runway, taxiway, and taxilane centerlines and hangars, buildings, aircraft parking, and other objects. 2. Dimensions of aprons, taxiways, etc.	Show the location of existing and ultimate apron. Include dimensions of apron and distance from runway and taxiway centerlines. Apron should be sized using activity forecast and the apron design spreadsheet. See AC 150/5300-13A, Chapter 5 and FAA Engineering Brief No. 75.		×	×	
Apron/Hangar areas that do not meet dimensional standards of the critical aircraft should be identified and the wingspan/design group of the aircraft that can use that area depicted. Include tie down location with clearances	Show the dimensions between existing and ultimate runway, taxiway, and taxilane centerlines and existing and ultimate hangars, buildings, aircraft parking, and other fixed or movable objects. See AC 150/5300-13A, Chapter 3 and Chapter 4. Show proposed tie-down layout on the apron area as well as taxilane marking plan. See AC 150/5300-13A, Appendix 5, AC 20-35, and AC 150/5340-1.		×	×	
J. Property Line	Show the property line(s) that are within the area/portion of airport shown.		×	×	

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
K. Auto parking (existing & ultimate)	Show the existing and ultimate auto parking areas. See AC 150/5300-13A, Appendix 5.		×	×	
L. Major airport drainage ditches or storm sewers	Show any significant airport drainage ditches or storm sewers within the area/portion of airport shown.		×	×	
M. Special Use Area (e.g., Agricultural spraying support, Deicing, or Containment)	Show any special use areas within the area/portion of airport shown.		×	×	
N. North Arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.		×	×	
O. Fence	Show the existing and ultimate perimeter fencing or general area fencing.		×	×	
P. Entrance Road	Show the existing and ultimate entrance road. See 5300-13AFAA Order 5100.38, Chapter 6, Section 2.		×	×	

Remarks

- A Terminal Area Drawing was not completed. Was this in J|D's ALP Scope? If so, an additional sheet needs to be added to the ALP package.

A.9. Land Use Drawing

- Scale 1"=200' to 1"=600'.
- A drawing depicting on- and off-airport land uses and zoning in the area around the airport. At a minimum, the drawing must contain land within the 65 DNL noise contour. For medium or high activity commercial service airports, on-airport land use and off-airport land use may be on separate drawings. The Airport Layout Drawing should be used as a base map.
- Drawing optional. Need based on scope of work.

Land Use Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Airport boundaries/property, existing & future (fee and easement)	Show the existing and ultimate property lines. If known, show property lines for parcels surrounding the airport.	×			
C. Plan view of land uses by category (Agricultural, Aeronautical, Commercial, Residential, etc.). Use local land use categories.					
1. On-Airport (existing & future)	Label existing and ultimate on-airport property by usage, e.g., Terminal Area, Air Cargo, Public Ramp, Airfield - Movement, Airfield - Non-movement, etc. Include existing and future airport features (e.g., runways, taxiways, aprons, safety areas/zones, terminal buildings and navigational aids).	×			
2. Off-Airport (existing & future) [to the 65 DNL Contour at a minimum, if contour known]	Label existing and ultimate off-airport property by usage and zoning, e.g., Agricultural, Industrial, Residential, Commercial, etc.	×	×		
D. Boundaries of local government	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.		×	×	
E. Land use legend	Provide a legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	×			

Land Use Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
F. Public facilities (schools, hospitals, parks, churches etc.)	Identify public facilities, e.g., schools, parks, etc.		×		
G. Runway visibility zone for intersecting runways	Show the Runway Visibility Zone(s) for the existing and ultimate airport configurations. See AC 150/5300-13A, Section 305.	×			
H. Show off-airport property out to 65 DNL if available	Label existing and ultimate off-airport property by usage and zoning, e.g., Agricultural, Industrial, Residential, Commercial, etc.		×		
I. Airport Overlay Zoning or Zoning Restrictions	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.		×	×	
J. North arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	×			
K. Drawing details to include runways, taxiways, aprons, RPZ, terminal buildings and NAVAIDS	Show existing and future airport features (e.g., runways, taxiways, aprons, safety areas/zones, terminal buildings and navigational aids, etc.). See AC 150/5300-13A.	×			
L. Crop Restrictions	Show the Crop Restriction Line (CRL). See AC 150/5300-13A, Paragraph 322 and AC 150/5200-33.		×	×	

Remarks

- A noise model needs to be included that shows contours out to the 65 dNL noise range.
- Public facilities need to be identified.
- Research if they’re any existing zoning restrictions such as overlay zoning (government, airport or municipality).

A.10. Airport Property Map / Exhibit A

- Scale 1”=200’ to 1”=600’.

Airport Property Map / Exhibit A					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Will Property Map serve as Exhibit A? – **If YES,** follow the directions to the right. – **If NO,** go to item B below.	If prepared in accordance with AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, use ARP SOP no. 3.00 Exhibit A guidance instead of below checklist.			×	
If Property Map *will not* serve as Exhibit A:				×	
B. Title and Revision Blocks					
C. Plan view showing parcels of land (existing, future, and ultimate)				×	
1. Fee land interests (existing and future)				×	
2. Easement interests (existing and future)				×	
a. Part 77 protection				×	
b. Compatible Land Use				×	
c. RPZ protection				×	
3. Airport Property Line				×	
D. Legend – shading/cross hatching, survey monuments, etc.				×	
E. Data Table				×	
1. Depiction of various tracts of land acquired to develop airport	If any obligations were incurred as a result of obtaining property, or an interest therein, they should be noted. Obligations that stem from Federal grant or an FAA-administered land transfer program, such as surplus property programs, should also be noted. The drawing should also depict easements beyond the airport boundary.			×	

Airport Property Map / Exhibit A					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Method of acquisition or property status (fee simple, easement, etc.)				✕	
3. Type of Acquisition Indicated	(e.g., AIP-noise, AIP-entitlement, PFC, surplus property, local purchase, local donation, condemnation, other)			✕	
4. Acreage					
F. Access point(s) for through-the-fence arrangements including residential				✕	
Remarks - Will be completed once the Property Map/Exhibit A is received from R & A.					

Appendix B Airport Layout Plan Set

AIRPORT LAYOUT PLAN

FOR

MIAMI EXECUTIVE AIRPORT (TMB)

CITY OF MIAMI, FLORIDA

MIAMI-DADE AVIATION DEPARTMENT

MAY 2018

LOCATION MAP
NTS

VICINITY MAP
NTS

Emilio González, Aviation Director

Miami-Dade Board of County Commissioners

http://www.miamidade.gov/commission/

District 1 - Barbara J. Jordan
District 2 - Jean Monestime
District 3 - Audrey Edmonson
District 4 - Sally A. Heyman
District 5 - Bruno A. Barreiro
District 6 - Rebeca Sosa
District 7 - Xavier L. Suarez
District 8 - Daniella Levine Cava
District 9 - Dennis C. Moss
District 10 - Javier D. Souto
District 11 - Joe A. Martinez
District 12 - José "Pepe" Diaz
District 13 - Esteban Bovo, Jr

Sheet List Table

FDOT Approval

Florida Department of Transportation — Date

Airport Approval

Miami Executive Airport

On behalf of Miami-Dade Aviation Department, I hereby certify that the TMB Airport Layout Plans Package was prepared according to the FAA Region Checklist as provided by the FAA Airport District Office.

Jose Ramos, RA LEED AP
Division Director, Aviation Planning, Land Use & Grants — Date

Revision Description	Date	Name

jacobsendaniels associates, llc
121 Pearl St.
Ypsilanti, MI 48197
(734) 961-3200

RICONDO & ASSOCIATES
1000 N.W. 57th Court
Suite 920
Miami, Florida 33126-3511
(305) 260-2727

MIAMI-DADE COUNTY

Airport Data

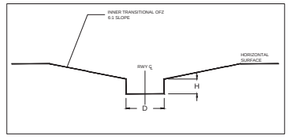
Item		Existing	Future
Airport Reference Code		C-II	C-III
Mean Max Temperature of Hottest Month		90.0° (August)	Same
Airport Elevation (NAVD 88)		10.0 ft.	Same
Airport Reference Point	Latitude	N 25° 38' 51.2294'	N 25° 38' 53.5200'
	Longitude	W 80° 25' 59.6086'	W 80° 26' 00.6100'
	Datums	NAD 83, NAVD 88	Same
Airport Navigational Aids		Beacon, ILS, GPS	Same
Miscellaneous Facilities		Lighted Wind Cone, Taxiway Lights	Same
Critical Aircraft		Challenger 600	Global 5000
Airport Magnetic Variation	Declination	6° 18' (W)	Same
	Annual Change	0° 6' (W)	Same
	Date	Aug-15	Same
	Source	NGS Data Center NOAA	Same
NPIAS Service Level		Reliever	Same
State Service Level		Reliever	Same

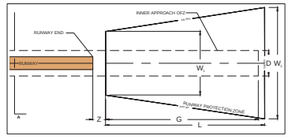
All Dimensions are in feet.

All Elevations are in feet above mean sea level (AMSL)

1 Distance is measured prior to the physical end of pavement in the direction of travel

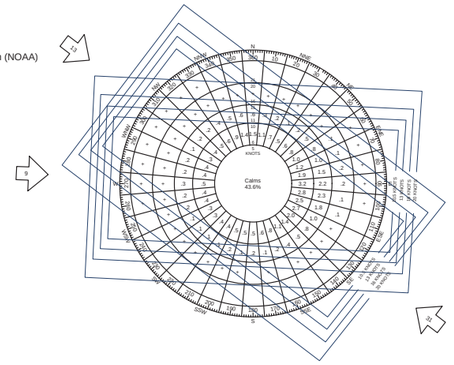
2 Distance is measured 200' prior to the runway threshold and extends 200' beyond the last light unit in the ALS





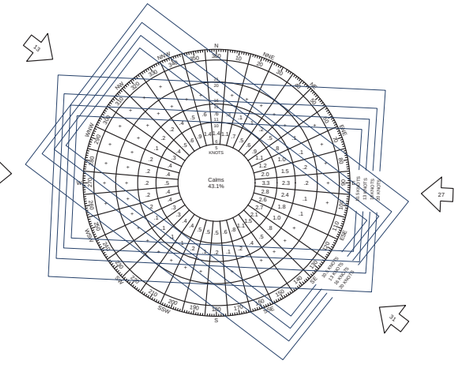
Notes:
Source:
National Oceanic And Atmospheric Administration (NOAA)
National Climatic Data Center (NCDC)
U.S. Department of Commerce
Asheville, North Carolina

Observation Station: 722029
Period of Record: 10 years (2004 - 2013)
Number of Observations: 85,701



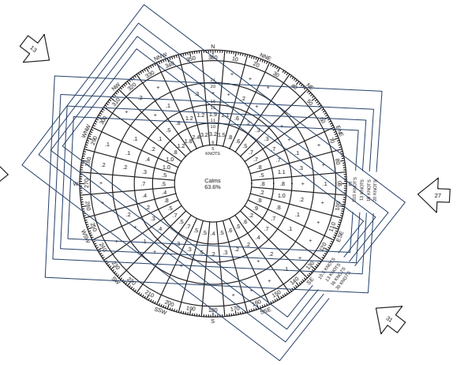
WIND COVERAGE ALL WEATHER CONDITIONS

CROSSWIND COMPONENT	RWY 9 L/R	RWY 27 L/R	RWY 13	RWY 31	COMBINED
10.5 KTS	90.54%	64.42%	86.57%	67.13%	98.90%
	95.89%		95.18%		
13 KTS	93.34%	67.27%	89.58%	69.21%	99.80%
	99.14%		98.76%		
16 KTS	93.79%	67.78%	90.33%	69.65%	99.96%
	99.73%		99.64%		
20 KTS	93.95%	68.00%	90.64%	69.84%	100.00%
	99.98%		99.98%		



WIND COVERAGE VFR CONDITIONS

CROSSWIND COMPONENT	RWY 9 L/R	RWY 27 L/R	RWY 13	RWY 31	COMBINED
10.5 KTS	90.64%	63.94%	86.69%	66.65%	98.94%
	95.96%		95.19%		
13 KTS	93.40%	66.74%	89.72%	68.72%	99.81%
	99.17%		98.78%		
16 KTS	93.84%	67.25%	90.48%	69.16%	99.97%
	99.75%		99.65%		
20 KTS	93.98%	67.46%	90.77%	69.33%	100.00%
	99.99%		99.98%		



WIND COVERAGE IFR CONDITIONS

CROSSWIND COMPONENT	RWY 9 L/R	RWY 27 L/R	RWY 13	RWY 31	COMBINED
10.5 KTS	86.85%	83.80%	82.03%	86.23%	97.56%
	93.16%		94.69%		
13 KTS	90.92%	88.24%	84.03%	88.81%	99.33%
	97.80%		97.94%		
16 KTS	91.83%	88.96%	84.70%	89.53%	99.52%
	98.85%		99.00%		
20 KTS	92.40%	89.53%	85.28%	90.01%	99.95%
	99.71%		99.81%		

RUNWAY DATA

ITEM		Runway 9L		Runway 27R		Runway 9R		Runway 27L		Runway 13		Runway 31	
		Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
Runway Design Code (RDC)		C/III/4000	C/III/2400	C/III/4000	C/III/2400	C/III/2400	Same	C/III/4000	Same	C/III/VIS	B/II/VIS	C/III/VIS	B/II/VIS
Approach Reference Code (APRC)		D/IV/4000 D/V/4000	D/IV/2400 D/V/2400	D/IV/4000 D/V/4000	D/IV/2400 D/V/2400	D/IV/2400 D/V/2400	Same	D/IV/4000 D/V/4000	Same	D/IV/VIS D/V/VIS	Same	D/IV/VIS D/V/VIS	Same
Departure Reference Code (DRC)		D/IV D/V	Same	D/IV D/V	Same	D/IV D/V	Same	D/IV D/V	Same	D/IV D/V	Same	D/IV D/V	Same
Runway End Coordinates	Latitude	N 25° 39' 09.4872"	N 25° 39' 08.6053"	N 25° 39' 11.8051"	N 25° 39' 12.4530"	N 25° 38' 34.4430"	N 25° 38' 34.0713"	N 25° 38' 37.2256"	N 25° 38' 37.4804"	N 25° 39 02.0539"	Same	N 25° 38' 38.0122"	N 25° 38' 39.2106"
	Longitude	W 080° 26' 24.3015"	W 080° 26' 45.0424"	W 080° 25' 29.6936"	W 080° 25' 14.4049"	W 080° 26' 27.9430"	W 080° 26' 36.6752"	W 080° 25' 22.4640"	W 080° 25' 16.4577"	W 080° 26' 26.8558"	Same	W 080° 25' 52.1011"	W 080° 25' 53.8285"
Runway End Elevations		7.8	Same	7.8	Same	10	Same	7.9	Same	8	Same	7.8	Same
Runway Length		5,003	8,300	5,003	8,300	6,000	7,350	6,000	7,350	4,001	3,801	4,001	3,801
Runway Width		150	Same	150	Same	150	Same	150	Same	150	Same	150	Same
Runway Bearing (True)		87° 18' 36"	Same	267° 19' 11.99"	Same	867° 18' 43.19"	Same	267° 19' 11.99"	Same	127° 20' 24"	Same	307° 21' 0"	Same
Displaced Threshold Coordinates	Latitude	N/A	N 25° 39' 08.8839"	N/A	N 25° 39' 11.8979"	N/A	Same	N/A	Same	N/A	Same	N/A	Same
	Longitude	N/A	W 080° 26' 38.4927"	N/A	W 080° 25' 27.5044"	N/A	Same	N/A	Same	N/A	Same	N/A	Same
	Elevation	N/A	TBD	N/A	TBD	N/A	Same	N/A	Same	N/A	Same	N/A	Same
Touchdown Zone Elevation (TDZE)		8.2	Same	8.1	Same	10	Same	8.1	Same	8.1	Same	8.1	Same
Pavement Material / Treatment		ASPH-GRVD	Same	ASPH-GRVD	Same	ASPH-GRVD	Same	ASPH-GRVD	Same	ASPH-GRVD	Same	ASPH-GRVD	Same
Runway Pavement Strength (x 1,000 LBS)		S - 87 / D - 135 / DT - 195	Same	S - 87 / D - 135 / DT - 195	Same	S - 87 / D - 135 / DT - 195	Same	S - 87 / D - 135 / DT - 195	Same	S - 87 / D - 135 / DT - 195	Same	S - 87 / D - 135 / DT - 195	Same
Runway Pavement Strength By PCN		32/F/A/Y/T	N/A	32/F/A/Y/T	N/A	32/F/A/Y/T	N/A	32/F/A/Y/T	N/A	32/F/A/Y/T	N/A	32/F/A/Y/T	N/A
Maximum Effective Gradient (%)		0.00%	Same	0.00%	Same	0.00%	Same	0.00%	Same	0.00%	Same	0.00%	Same
Percent Wind Coverage	10.5 Knots	90.54%	Same	64.42%	Same	90.54%	Same	64.42%	Same	86.57%	Same	67.13%	Same
	13 Knots	93.34%	Same	67.27%	Same	93.34%	Same	67.27%	Same	89.58%	Same	69.21%	Same
	16 Knots	93.79%	Same	67.78%	Same	93.79%	Same	67.78%	Same	90.33%	Same	69.65%	Same
	20 Knots	93.95%	Same	68.00%	Same	93.95%	Same	68.00%	Same	90.64%	Same	69.84%	Same
Visibility Minimums		3/4-MILE	1/2-MILE	3/4-MILE	1/2-MILE	1/2-MILE	Same	VISUAL	Same	VISUAL	Same	VISUAL	Same
FAR Part 77 Approach Type		NPI	PIR	NPI	PIR	PIR	Same	NPI	Same	VIS-B	Same	VIS-B	Same
FAR Part 77 Approach Category		34:01:00	50:01:00	34:01:00	50:01:00	50:01:00	Same	34:01:00	Same	20:01	Same	20:01	Same
TERPS Departure Surface / OCS		40:01:00	Same	40:01:00	Same	40:01:00	Same	40:01:00	Same	N/A	Same	N/A	Same
Threshold Siting Surface		20:01	34:01:00	20:01	34:01:00	34:01:00	Same	20:01	Same	20:01	Same	20:01	Same
Runway Safety Area Length 1		1,000	Same	1,000	Same	1,000	Same	1,000	Same	1,000	300	1,000	300
Runway Safety Area Width		500	Same	500	Same	500	Same	500	Same	500	150	500	150
Runway Object Free Area Length 1		1,000	Same	1,000	Same	1,000	Same	1,000	Same	1,000	300	1,000	300
Runway Object Free Area Width		800	Same	800	Same	800	Same	800	Same	800	500	800	500
Approach Runway Protection Zone (W1 x W2 x L)		1000 x 1510 x 1700	1000 x 1750 x 2500	1000 x 1510 x 1700	1000 x 1750 x 2500	1000 x 1750 x 2500	Same	1000 x 1510 x 1700	Same	500 x 1010 x 1700	500 x 700 x 1000	500 x 1010 x 1700	500 x 700 x 1000
Departure Runway Protection Zone (W1 x W2 x L)		N/A	500 x 700 x 1000	N/A	500 x 700 x 1000	N/A	Same	N/A	Same	N/A	Same	N/A	Same
Runway Object Free Zone Length (G)1		200	Same	200	Same	200	Same	200	Same	200	Same	200	Same
Runway Object Free Zone Width (D)		400	Same	400	Same	400	Same	400	Same	400	Same	400	Same
Precision Obstacle Free Zone Length 1		N/A	200	N/A	200	200	Same	N/A	Same	N/A	Same	N/A	Same
Precision Obstacle Free Zone Width		N/A	800	N/A	800	800	Same	N/A	Same	N/A	Same	N/A	Same
Inner-Approach Obstacle Free Zone Length (G)2		N/A	2400	N/A	2400	2400	Same	N/A	Same	N/A	Same	N/A	Same
Inner-Approach Obstacle Free Zone Width (D)		N/A	400	N/A	400	400	Same	N/A	Same	N/A	Same	N/A	Same
Inner-Transitional Obstacle Free Zone Horizontal Surface Elevation		N/A	160	N/A	160	160	Same	N/A	Same	N/A	Same	N/A	Same
Inner-Transitional Obstacle Free Zone (H)		N/A	TBD	N/A	TBD	49.9	Same	N/A	Same	N/A	Same	N/A	Same
Inner-Transitional Obstacle Free Zone (Y)		N/A	TBD	N/A	TBD	N/A	Same	N/A	Same	N/A	Same	N/A	Same
Runway Lighting		MIRL	HIRL	MIRL	HIRL	HIRL	Same	HIRL	Same	MIRL	Same	MIRL	Same
Runway Marking		NON-PRECISION	PRECISION	NON-PRECISION	PRECISION	PRECISION	Same	PRECISION	Same	VISUAL	Same	VISUAL	Same
Visual Approach Aids		PAPI-4L	PAPI-4L, MALSR	PAPI-2L	PAPI-4L, MALSR	PAPI-4R, MALSR	Same	PAPI-P4L	Same	PAPI-P4L, REIL	Same	N/A	Same
Instrument Approach Aids		N/A	LOC, GS	N/A	LOC, GS	LOC, GS	Same	N/A	Same	N/A	Same	N/A	Same
Aeronautical Survey Required for Approach		VGS (PA & APV) NVGS	VGS	VGS (PA & APV) NVGS	VGS	VGS	Same	VGS (PA & APV) NVGS	Same	NVGS	Same	NVGS	Same

TAXIWAY DATA

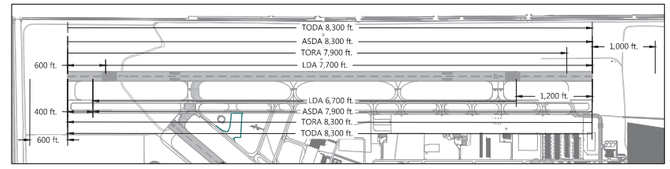
Name	Width				Objects Inside TSA and TOFA	Separation From TWY CL to Fixed/Movable Object	Taxiway / Taxilane Lighting
	Taxiway	Shoulder	TSA	OFA			
A	50	N/A	118	186	None	93	MITL
A1	75	N/A	118	186	None	93	MITL
A2	75	N/A	118	186	None	93	MITL
A3	175	N/A	118	186	None	93	MITL
C	50	N/A	118	186	None	93	MITL
CC	50	N/A	118	186	None	93	MITL
C1	75	N/A	118	186	None	93	MITL
C2	75	N/A	118	186	None	93	MITL
D	50	N/A	118	186	None	93	MITL
D1	75	N/A	118	186	None	93	MITL
D2	75	N/A	118	186	None	93	MITL
E	50	N/A	118	186	None	93	MITL
E1	175	N/A	118	186	None	93	MITL
E2	75	N/A	118	186	None	93	MITL
E3	75	N/A	118	186	None	93	MITL
E4	50	N/A	118	186	None	93	MITL
E5	175	N/A	118	186	None	93	MITL
F	50	N/A	118	186	None	93	MITL
G	50	N/A	118	186	None	93	MITL
H	50	N/A	118	186	None	93	MITL
H1	50	N/A	118	186	None	93	MITL
H3	100	N/A	118	186	None	93	MITL
H4	100	N/A	118	186	None	93	MITL

Future Taxiways

A	50	20	118	186	None	93	MITL
E	50	20	118	186	None	93	MITL
H	50	20	118	186	None	93	MITL
Taxilane H	50	20	118	162	None	81	MITL
1	50	20	118	186	None	93	MITL
2	35	N/A	79	131	None	65.5	MITL
3	50	20	118	186	None	93	MITL
4	50	20	118	186	None	93	MITL

DECLARED DISTANCE

ITEM	RUNWAY	9L		27R	
		Existing	Future	Existing	Future
Take Off Run Available (TORA)		5,003	7,900	5,003	8,300
Take Off Distance Available (TODA)		5,003	8,300	5,003	8,300
Accelerate Stop Distance Available (ASDA)		5,003	8,300	5,003	7,900
Landing Distance Available (LDA)		5,003	7,700	5,003	6,700



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MIAMI-DADE COUNTY

Notes:

1. Approach Visibility Minimums are based upon the latest Approach Procedure charts published on the U.S. Terminal Procedure Publications website. http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/
2. Future Airport Reference Point (ARP) was calculated using runway end latitude, and longitude points from the FAA AVNIS database, along with approximate latitude and longitude points at the proposed runway ends on 9L-27R, 9R-27L and runway 31. The NGS ARP Computation program was used in calculating the future ARP.

Revision and Description	Date	Name

AIRPORT DATA SHEET

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 2 OF 25

Existing Facilities Identification Key		
BLDG No.	Tenant/ Descriptopn	Top Elevation
102	Silver Express	26'-0"
103-105	Numbers Res.	-
109	CR Aviation	27'-0"
109A-109B	CR Aviation	44'-0", 35'-0", 0'-0"
110-113	Numbers Res.	-
114	Peninsula Avionics	30'-0"
115-117	Numbers Res.	-
118,120,120A	Air Sat	37'-0", 26'-0", 31'-0"
121	Biscayne Helicopters	46'-0"
122	MDPD	41'-0"
123	MDPD	47'-0"
124-220	Numbers Res.	-
221	International Flight Center	35'-0"
222	International Flight Center	29'-0"
223-224	Numbers Res.	-
225	Reliance Aviation	37'-0"
226	Reliance Aviation	26'-0"
227-229	Reliance Aviation	35',39',39'
230-231	Numbers Res.	-
232-235	Tamiami Air	27',27',27',27'
236-237	Numbers Res.	-
238	Falcon Trust Air	49'-0"
239	Falcon Trust Air	40'-0"
240	Falcon Trust Air	28'-0"
241	Falcon Trust Air	19'-0"
242	Falcon Trust Air	19'-0"
243	Falcon Trust Air	18'-0"
247	International Flight Center	46'-0"
240-245	Numbers Res.	-
248	Numbers Res.	-
249	Reliance Aviation	47'-0"
250-489	Numbers Res.	-
490	MDPD	21'-0"
491	MDAD	66'-0"
492-500	Numbers Res.	-
501	MDCC	31'-0"
502	MDAD	19'-0"
503	FAA	95'-0"
504	International Flight Center	27'-0"
505	Wings Over Miami	39'-0"
506	U.S. Customs	27'-0"
507	MDAD	33'
508	MDAD	23'-0"
509	Numbers Res.	-
510	MDAD	20'-0"
511	MDAD	22'-0"
B1	FAA AFSS	33'-0"

Graphic Legend			
Item	Description	Item	Description
	Property Boundary		Localizer Critical Area
	Building		Glide Slope Critical Area
	Airfield Pavement	100	Ground Contour
	Roads/Dirt Roads		Tree/Bush
	Fence	OFZ	Runway Object Free Zone
	Airport Reference Point	IA-OFZ	Inner Approach Object Free Zone
BRL	Building Restriction Line	RPZ	Runway Protection Zone
ROFA	Runway Object Free Area		Part 77 Approach Surface
RSA	Runway Safety Area		Threshold Siting Surface

1" = 400'
200 0 400
Graphic Scale in Feet

Declination: 06°18' W (2015)
Changing: 0°6' W per Year
6.33°

Revision and Description	Date	Name

NOTES:

1. The building restriction line (BRL) depicted on the ALP is 745' from the centerline of Runways 9L-27R and 9R-27L, which translates to a height of 35' above the runway centerline elevation perpendicular to the runway. For Runway 13-31, the BRL depicted on the ALP is 495' which translates to an elevation of 35' above the runway elevation perpendicular to the runway.
2. Horizontal Datum is in Florida, East, State Plane Coordinate System (FLE3-EF).
3. All elevations are Above Mean Sea Level (AMSL) relative to the North American Vertical Datum of 1988 (NAVD88).
4. Runway ends and elevations shown were taken from the 2007 ALP, except for the runway extensions on 9L, 9R and 27R (FAA AVNIS). Please note that the FAA AVNIS database is showing different runway elevations.
5. Per FAR Part-77.23(b) all traverse ways have been increased by: 15' for a (N)on interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.
6. The PACS and SACS were obtained from the NGS Database. The values were computed from the NAD 83 (2011) positions.
7. 35-foot-right-of-way released from the terms of Grant Agreements between the FAA and MDAD. The executed release has allowed the MDAD to sell and convey title of the depicted property to the Miami- Dade Public Works Department (PWD). his release for the expansion and widening of the S.W. 136th
8. Runway 9L-27R ILS is not a commissioned/operational facility. This ILS is owned and operated by the University of Ohio Avionics Engineering Center for testing purposes only.

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MIAMI-DADE COUNTY

EXISTING AIRPORT LAYOUT PLAN

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 3 OF 25

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121	Biscayne Helicopters	46'-0"
122	MDPD	41'-0"
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Existing Facilities Identification Key

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503	FAA	95'-0"
504	International Flight Center	27'-0"
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BLDG No.	Tenant/ Descriptopn	Top Elevation
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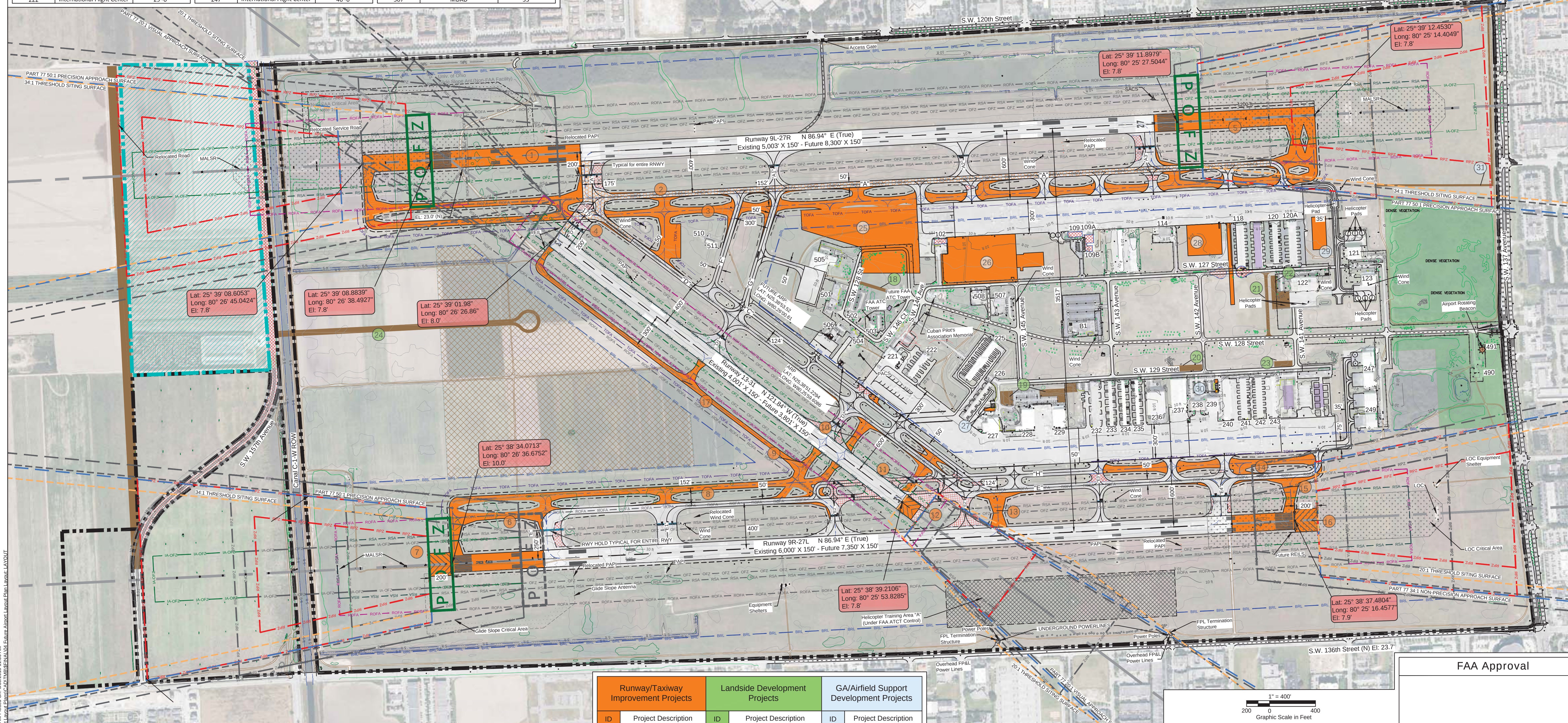
509	Numbers Res.	-
510	MDAD	20'-0"
511	MDAD	22'-0"
B1	FAA	33'-0"



Runway/Taxiway Improvement Projects		Landside Development Projects		GA/Airfield Support Development Projects	
ID	Project Description	ID	Project Description	ID	Project Description
1	RWY 9L Extension	18	SW 128th St. Construction	25	10 Acres of 18.5 for GA Facility
2	TWY A Reconstruction/Extension	19	Parking Lot Construction/ Expansion	26	6 Acres of 18.5 for GA Facility
3	"NEW" TWY Construction	20	Parking Lot Construction	27	.05 Acres of .1 for Jet A Fuel
4	TWY A Reconstruction	21	Proposed Relocation of SW 141 St.	28	1.75 Acres of 18.5 for GA Facility
5	RWY 27R Extension	22	Parking Lot Construction	29	.75 Acres of 18.5 for GA Facility
6	TWY E Extension	23	Parking Lot Construction	30	.05 Acres of .1 for Jet A Fuel
7	RWY 9R Extension	24	Entrance Roadway	31	Service Road
8	"NEW" TWY Construction				
9	"NEW" TWY Construction				
10	"NEW" TWY Construction				
11	"NEW" TWY Construction				
12	RWY 31 Approach End Reconstruction				
13	"NEW" TWY Construction				
14	TWY H Extension				
15	"NEW" TWY Construction				
16	RWY 27L Extension				
17	"NEW" TWY J				

FAA Approval

1" = 400'
200 0 400
Graphic Scale in Feet

Airport Approval

Miami Executive Airport
On behalf of the Miami-Dade Aviation Department, I hereby certify that the TMB Airport Layout Plans Package was prepared according to the FAA Region Checklist as provided by the FAA Airport District Office.

Jose Ramos, RA LEED AP
Division Director, Aviation Planning, Land Use & Grants

Date

Existing				Future			
Item	Description	Item	Description	Item	Description	Item	Description
	Property Boundary		Localizer Critical Area		Airfield Development	RSA	Runway Safety Area
	Building		Glide Slope Critical Area		Pavement Rehabilitation	IA-OFZ	Inner Approach Object Free Zone
	Airfield Pavement	950	Ground Contour		Future Facility	OFZ	Runway Object Free Zone
	Roads/Dirt Roads		Tree/Bush		Pavement Demolition	TOFA	Taxiway/Taxilane Object Free Area
x	Fence	OFZ	Runway Object Free Zone		Landside Development	RPZ	Runway Protection Zone
	Airport Reference Point	IA-OFZ	Inner Approach Object Free Zone		Non-Aeronautical Development		Taxiway Centerline
BRL	Building Restriction Line	RPZ	Runway Protection Zone		Future Property Acquisition		Airfield Shoulder
ROFA	Runway Object Free Area		Part 77 Approach Surface		Property Boundary		Part 77 Approach Surface
RSA	Runway Safety Area		Threshold Siting Surface	ROFA	Runway Object Free Area		Threshold Siting Surface

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NOTES:

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2. Horizontal Datum is in Florida, East, State Plane Coordinate System (FL83-EF).
3. All elevations are Above Mean Sea Level (AMSL) relative to the North American Vertical Datum of 1988 (NAVD88).
4. Runway ends and elevations shown were taken from the 2007 ALP, except for the runway extensions on 9L, 9R and 27R (FAA AVNIS). Please note that the FAA AVNIS database is showing different runway elevations.
5. Per FAR Part-77.23(b) all traverse ways have been increased by: 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.
6. The PACS and SACS were obtained from the NGS Database. The values were computed from the NAD 83 (2011) positions.
7. Action to be taken (disposition) information was provided by Airport.
8. 35-foot-right-of-way released from the terms of Grant Agreements between the FAA and MDAD. The executed release has allowed the MDAD to sell and convey title of the depicted property to the Miami- Dade Public Works Department (PWD). his release for the expansion and widening of the S.W. 136th
9. Runway 9L-27R ILS is not a commissioned/operational facility. This ILS is owned and operated by the University of Ohio Avionics Engineering Center for testing purposes only.
10. Future Airport Reference Point (ARP) was calculated using runway end latitude, and longitude points from the FAA AVNIS database, along with approximate latitude and longitude points at the proposed runway ends on 9L-27R, 9R-27L and runway 31. The NGS ARP Computation program was used in calculating the future ARP.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year

Revision and Description	Date	Name

FUTURE AIRPORT LAYOUT PLAN

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by:	JDA
Checked By:	RFT
Issue Date:	MAY 2018

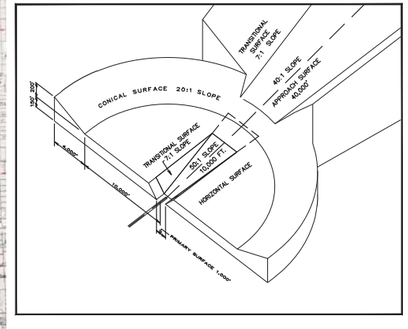
Colortable: Ricondo Plot Size.ctb LTScale: 0.6000 LwDefault: 0.002 Last Saved: 5/30/2018 11:30 AM Plotted On: 5/30/2018 11:30 AM
File: \\ricondo.com\public\Miami\project\MDAD\Strategic MP\Phase 4 Tasks\4K - Update GA Airport Layout Plans\CAD\TMB\

Part 77 Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Surface Affected	Disposition
1	Ant on OL Tower on Building	301.0	46.3	Conical	N/A
3	Rod on OL Radio Tower	323.0	29.7	Conical	N/A
4	Ant on OL Mast	283.0	4.0	Conical	N/A
10	Rod on Glide Slope	51.0	43.0	Transitional	N/A
12	OL Windsock	36.0	28.0	Primary	N/A
14	Sign	11.0	1.4	Primary	Relocate
18	OL on Anemometer	41.0	21.8	Transitional	N/A
24	Ant on OL ATCT	113.0	7.4	Transitional	N/A
27	Ground	10.0	2.0	Primary	Grade
28	OL on Windsock	33.0	3.4	Transitional	N/A

Elevations shown are in feet above mean sea level.
All tree obstructions to be trimmed or removed.

VIEW OF IMAGINARY SURFACES



NOTES:

1. Obstacles within the primary surface are fixed by function and are assumed to be installed with frangible mounts.
2. Obstacles and terrain not considered fixed by function within the Part 77 Primary surfaces of the proposed runway projects will be mitigated.
3. See individual Plan and Profile drawings for obstacles located within the inner approach surfaces of each runway.
4. Obstacle data source was provided by Woolpert based on an FAA 150/5300-18 survey completed in 2011.
5. There are approximately 7000 obstacles to the Part 77 surfaces. Contact the airport for a comprehensive listing.

NOTES:

1. Horizontal Datum is in Florida, East, State Plane Coordinate System (FL83-EF).
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. Airport Elevation = 10.0 Feet Surveyed.
4. Per FAR Part-77.23(b) the following traverse ways must be increased by: 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.
5. Obstruction data source is as follows:
   - The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition.
   - Planimetric Base Map: Miami-Dade Aviation Department, Technical Support Department, November 2003.
   - Federal Communication Commission, Antenna Structure Registration, January 2005
6. Action to be taken (disposition) information was provided by Airport.
7. FAR Part 77 imaginary surfaces are shown on this sheet for Miami Executive Airport.These surfaces are depicted based upon ultimate airport development
8. Refer to the Inner Portion of the Approach Surface Drawings for close-in obstructions. Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
9. Local height zoning is defined under Article XL (Miami Executive Airport Zoning) of the Miami-Dade County Code, codified through Ordinance No. 05-147, enacted July 7, 2005. The establishment of height limitations for zone classification districts in the airport zoning area is further defined in Section 33-393 of Article XL. The sources for this section include Ordinance No. 69-40, Ordinance No. 99-118, and Ordinance. No. 02-169.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year
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Revision and Description	Date	Name

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MIAMI-DADE COUNTY

AIRPORT AIRSPACE DRAWING - PART 77

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 5 OF 25

NOTES:

1. Horizontal Datum is in Florida, East, State Plane Coordinate System (FL83-EF).
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. Airport Elevation = 10.0 Feet Surveyed.
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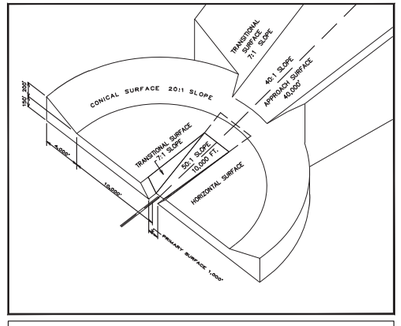
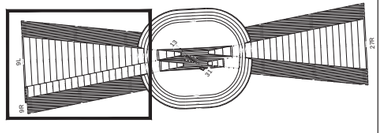
VIEW OF IMAGINARY SURFACES



KEY MAP



1" = 2000'
1000' 0 2000'
Graphic Scale in Feet

Declination: 06°18' W (2015)
Changing: 0°6' W per Year
6.33°

Revision and Description	Date	Name

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MIAMI-DADE COUNTY

RUNWAY 9L & 9R OUTER APPROACH AIRSPACE DRAWING

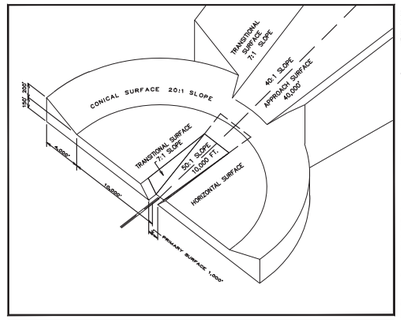
MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 6 OF 25

NOTES:

1. Horizontal Datum is in Florida, East, State Plane Coordinate System (FL83-EF).
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. Airport Elevation = 10.0 Feet Surveyed.
4. Per FAR Part-77.23(b) the following traverse ways must be increased by: 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.
5. Obstruction data source is as follows:
   - The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition.
   - Planimetric Base Map: Miami-Dade Aviation Department, Technical Support Department, November 2003.
   - Federal Communication Commission, Antenna Structure Registration, January 2005
6. Action to be taken (disposition) information was provided by Airport.
7. FAR Part 77 imaginary surfaces are shown on this sheet for Miami Executive Airport.These surfaces are depicted based upon ultimate airport development
8. Refer to the Inner Portion of the Approach Surface Drawings for close-in obstructions. Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
9. Local height zoning is defined under Article XL (Miami Executive Airport Zoning) of the Miami-Dade County Code, codified through Ordinance No. 05-147, enacted July 7, 2005. The establishment of height limitations for zone classification districts in the airport zoning area is further defined in Section 33-393 of Article XL. The sources for this section include Ordinance No. 69-40, Ordinance No. 99-118, and Ordinance. No. 02-169.

VIEW OF IMAGINARY SURFACES



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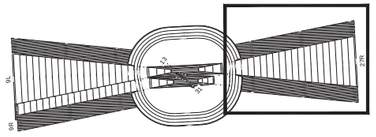


jda jacobsendaniels associates, llc 121 Pearl St. Ypsilanti, MI 48197 (734) 961-3200	RICONDO & ASSOCIATES 1000 N.W. 57th Court Suite 920 Miami, Florida 33126-3511 (305) 260-2727	MIAMI-DADE COUNTY	Declination: 06°18' W (2015) Changing: 0°6' W per Year MAGNETIC NORTH 6.33°

Revision and Description	Date	Name

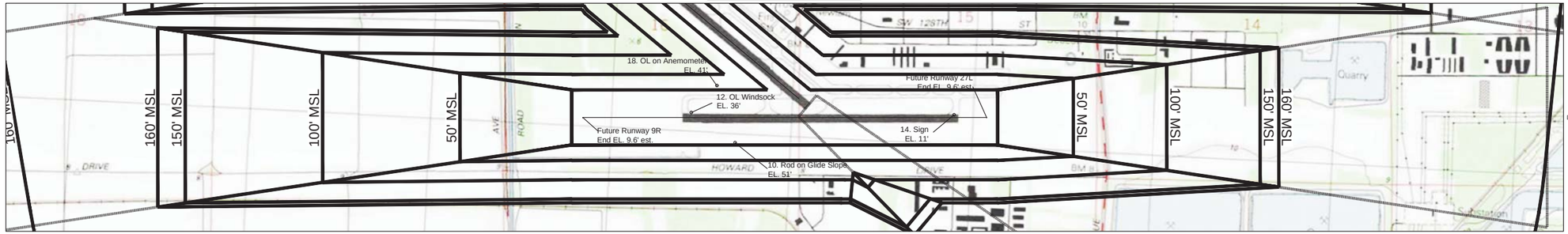
RUNWAY 27R OUTER APPROACH AIRSPACE DRAWING

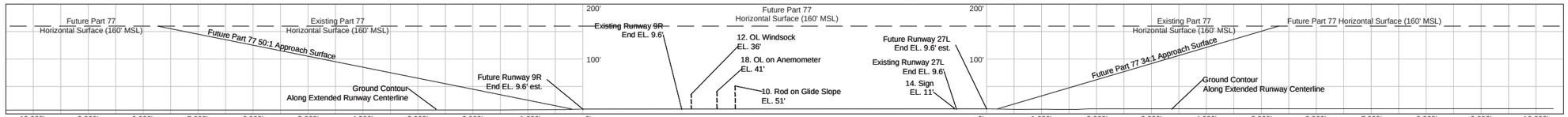
MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

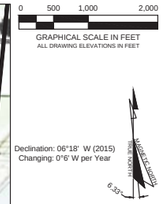
TMB

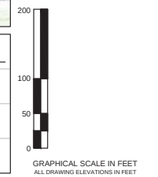
Drawn by:	JDA
Checked By:	RFT
Issue Date:	MAY 2018
Sheet:	7 OF 25

RUNWAY 9R-27L

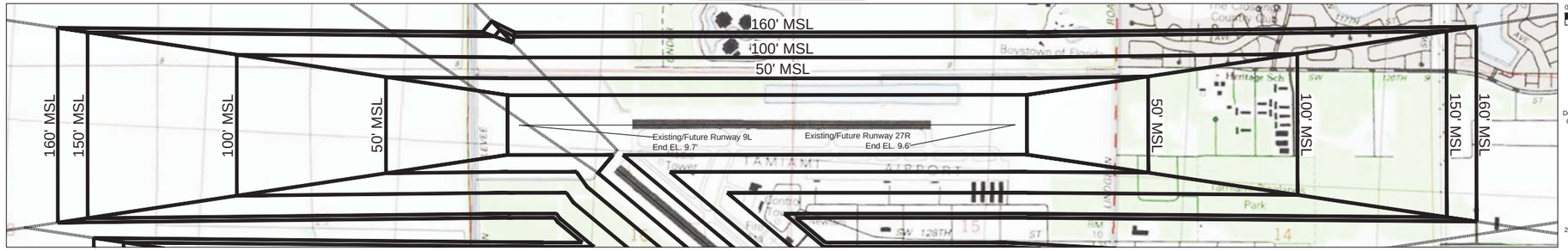


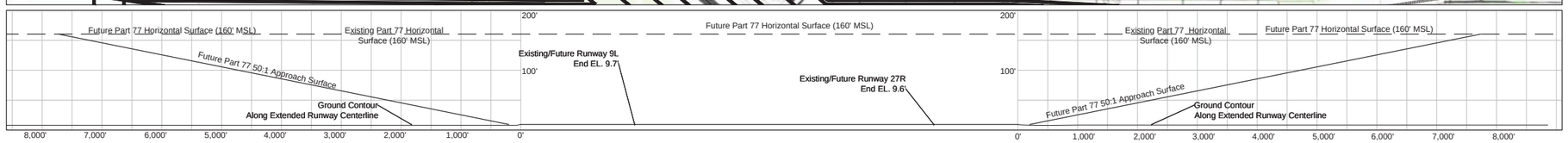


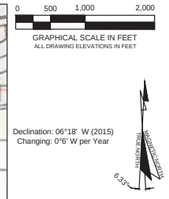


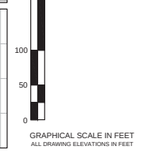


RUNWAY 9L-27R

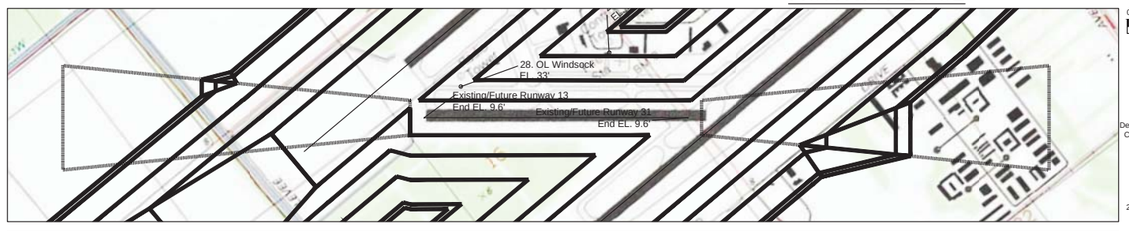


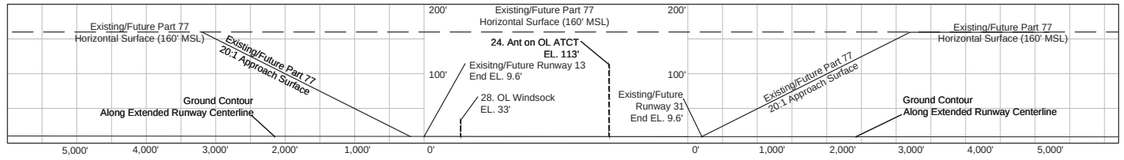


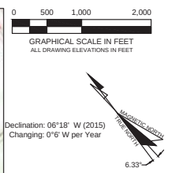


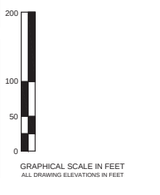


RUNWAY 13-31









Part 77 Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Surface Affected	Disposition
10	Rod on Glide Slope	51.0	43.0	Primary	N/A
12	OL Windsock	36.0	28.0	Primary	N/A
14	Sign	11.0	1.4	Primary	Relocate
18	OL on Anemometer	41.0	20.8	Transitional	N/A
24	Ant on OL ATCT	113.0	7.4	Transitional	N/A
28	OL on Windsock	33.0	3.4	Transitional	N/A

Elevations shown are in feet above mean sea level.
All tree obstructions to be trimmed or removed.

NOTES:

1. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
2. Airport Elevation = 10.0 Feet Surveyed.
3. Per FAR Part-77.23(b) the following traverse ways must be increased by: 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.
4. Obstruction data source is as follows:
   - The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition.
   - Planimetric Base Map: Miami-Dade Aviation Department, Technical Support Department, November 2003.
   - Federal Communication Commission, Antenna Structure Registration, January 2005
5. The composite ground profile is developed using the highest ground elevations within the Part 77 approach surface.
6. Action to be taken (disposition) information was provided by Airport.
7. FAR Part 77 imaginary surfaces are shown on this sheet for Miami Executive Airport.These surfaces are depicted based upon ultimate airport development
8. Refer to the Inner Portion of the Approach Surface Drawings for close-in obstructions. Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
9. Local height zoning is defined under Article XL (Miami Executive Airport Zoning) of the Miami-Dade County Code, codified through Ordinance No. 05-147, enacted July 7, 2005. The establishment of height limitations for zone classification districts in the airport zoning area is further defined in Section 33-393 of Article XL. The sources for this section include Ordinance No. 69-40, Ordinance No. 99-118, and Ordinance. No. 02-169.

NOTES:

1. Obstacles within the primary surface are fixed by function and are assumed to be installed with frangible mounts.
2. Obstacles and terrain not considered fixed by function within the Part 77 Primary surfaces of the proposed runway projects will be mitigated.
3. See individual Plan and Profile drawings for obstacles located within the inner approach surfaces of each runway.
4. Obstacle data source was provided by Woolpert based on an FAA 150/5300-18 survey completed in 2011.
5. Contact the Miami Dade Airport Division for a comprehensive listing of all obstacles.

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MIAMI-DADE COUNTY

Revision and Description	Date	Name

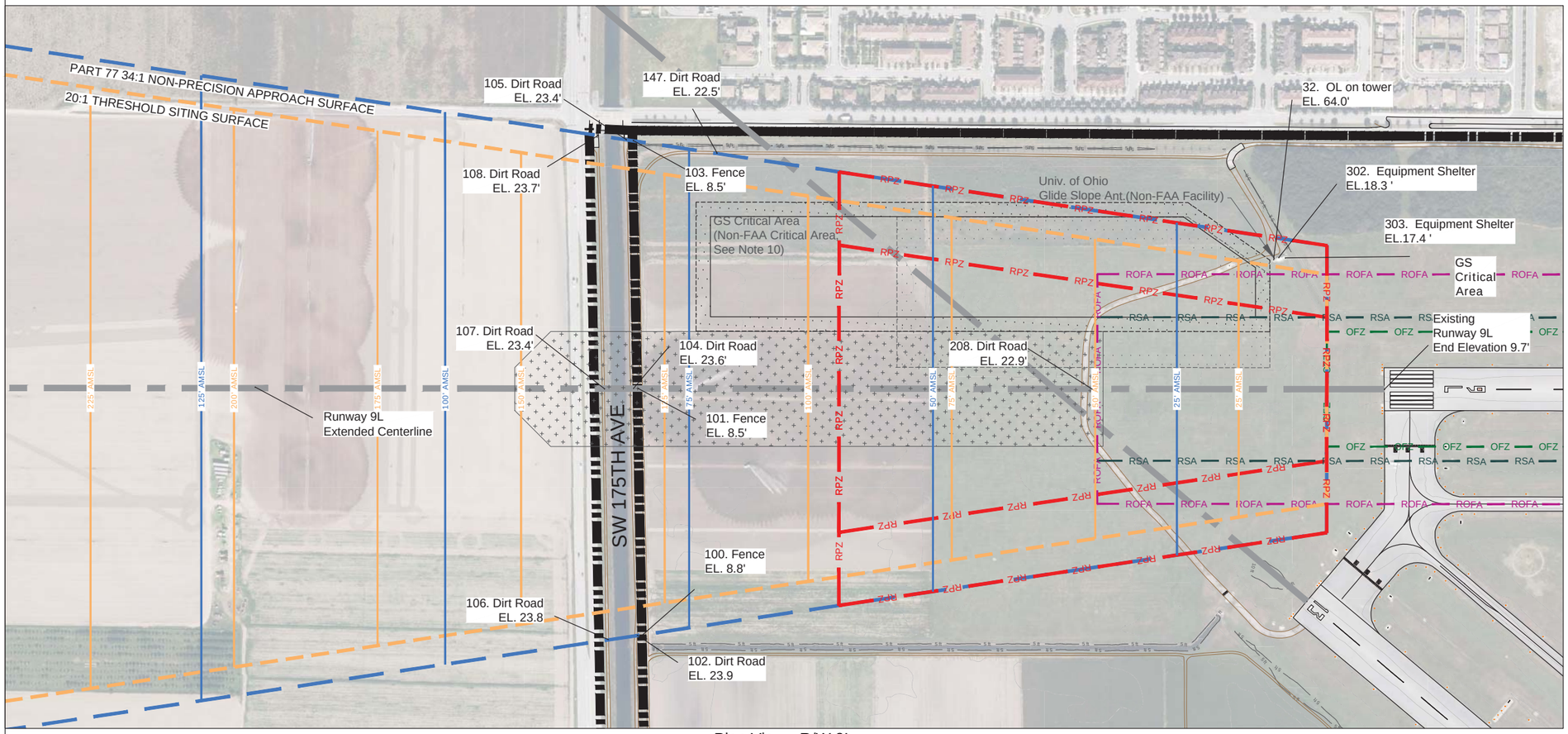
AIRPORT AIRSPACE PLAN & PROFILE

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

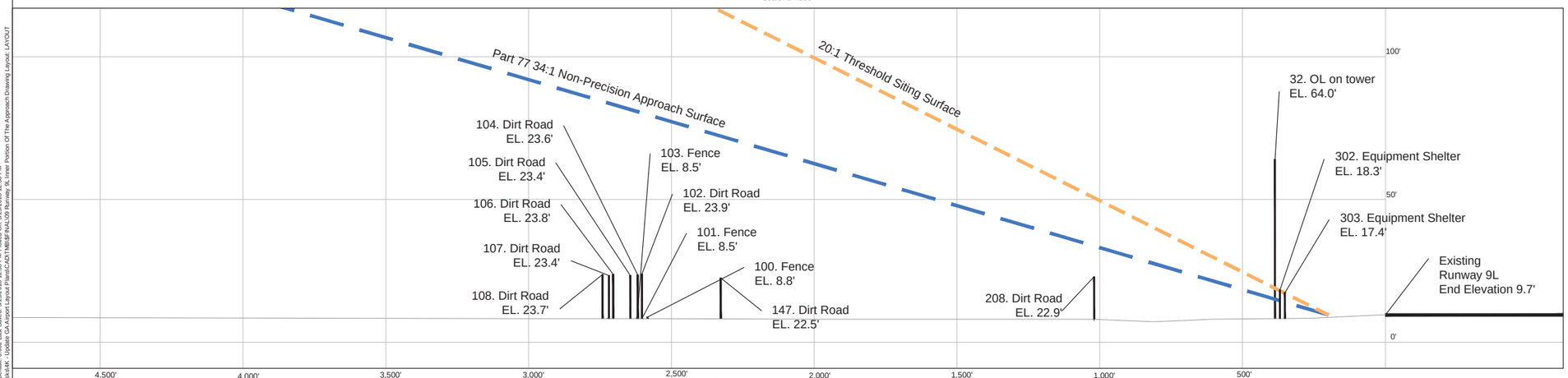
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018

Sheet: 8 OF 25



Plan View - R/W 9L

Scale: 1"=200'



Profile View - R/W 9L

Scale: 1"=200' (H); 1"=20 (V)

Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
32	OL on Tower	64.0'	3.2'	None
100	Fence	8.8'	None	N/A
101	Fence	8.5'	None	N/A
102	Dirt Road	23.9'	None	N/A
103	Fence	8.5'	None	N/A
104	Dirt Road	23.6'	None	N/A
105	Dirt Road	23.4'	None	N/A
106	Dirt Road	23.8'	None	N/A
107	Dirt Road	23.4'	None	N/A
108	Dirt Road	23.7'	None	N/A
147	Dirt Road	22.5'	None	N/A
208	Dirt Road	22.9' est.	None	N/A
302	Equipment Shelter	18.3'	3.7'	Light
303	Equipment Shelter	17.4'	3.3'	Light

Elevations shown are in feet above mean sea level.

Sources:
1. The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition
2. Planimetric Base Map: Miami-Dade Aviation Department, Technical SupportDepartment, November 2003.
3. Federal Communication Commission, Antenna Structure Registration, January 2005

Note: Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.

Graphic Legend	
Item	Description
	Existing Airfield Pavement
	Glide Slope Critical Area
	Localizer Critical Area
950	Ground Contour
	Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone
	Part 77 Approach Surface
	Threshold Siting Surface

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

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MIAMI-DADE COUNTY

NOTES:
1. Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. All tree obstructions to be trimmed or removed.
4. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
5. Planimetric mapping from 01/18/2010Third Party survey
6. Federal Communication Commission, Antenna Structure Registration, July 2006
7. Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (S)ervice Road (VSR), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year

6.33°

Revision and Description	Date	Name

RUNWAY 9L INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 9 OF 25

Crdentials: Ricondo Plot Sizes.stb,LTScale: 0.6000 LwDefault: 0.002 Last Saved: 5/29/2018 12:58 PM Plotted On: 5/29/2018 12:58 PM
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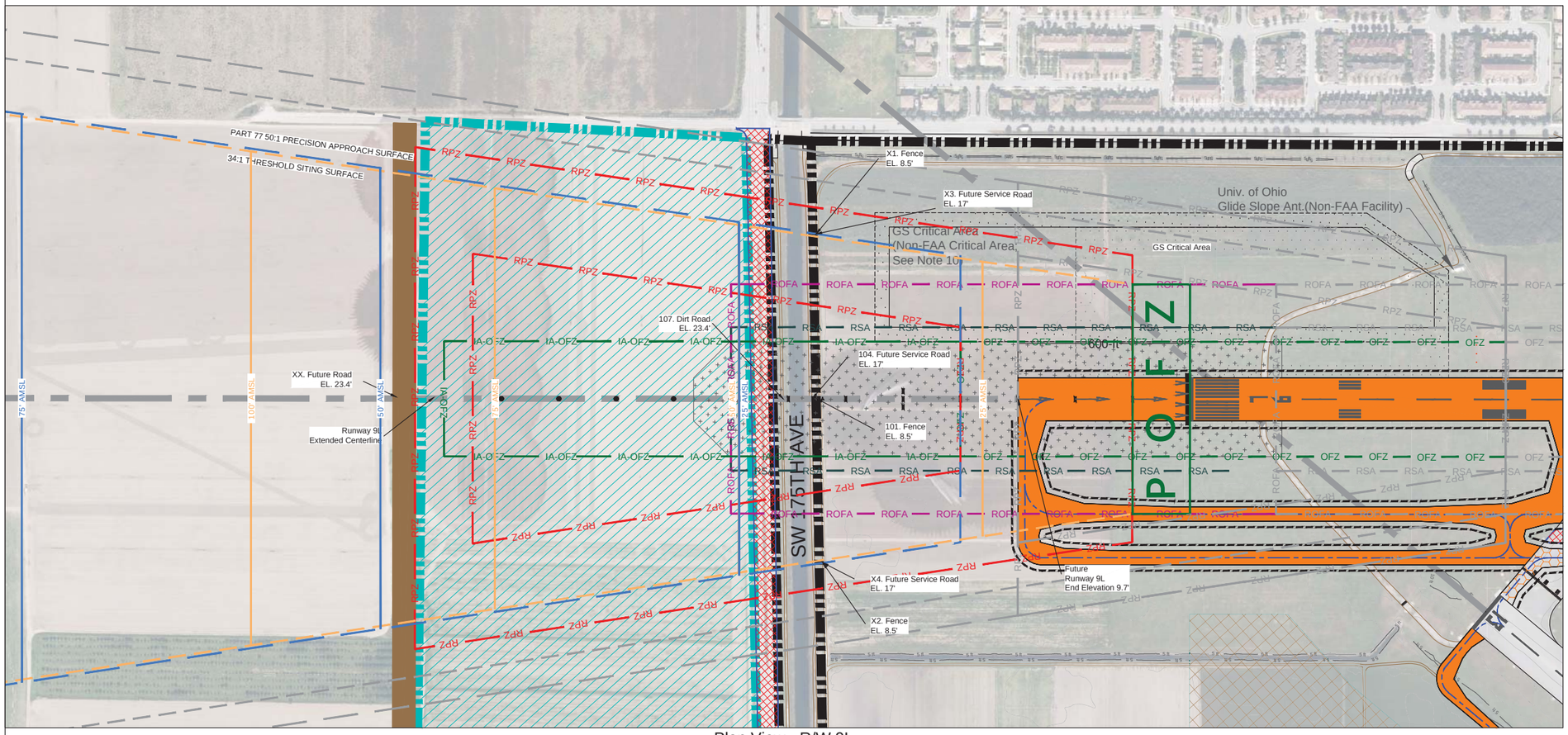


Plan View - R/W 9L

Scale: 1"=200'

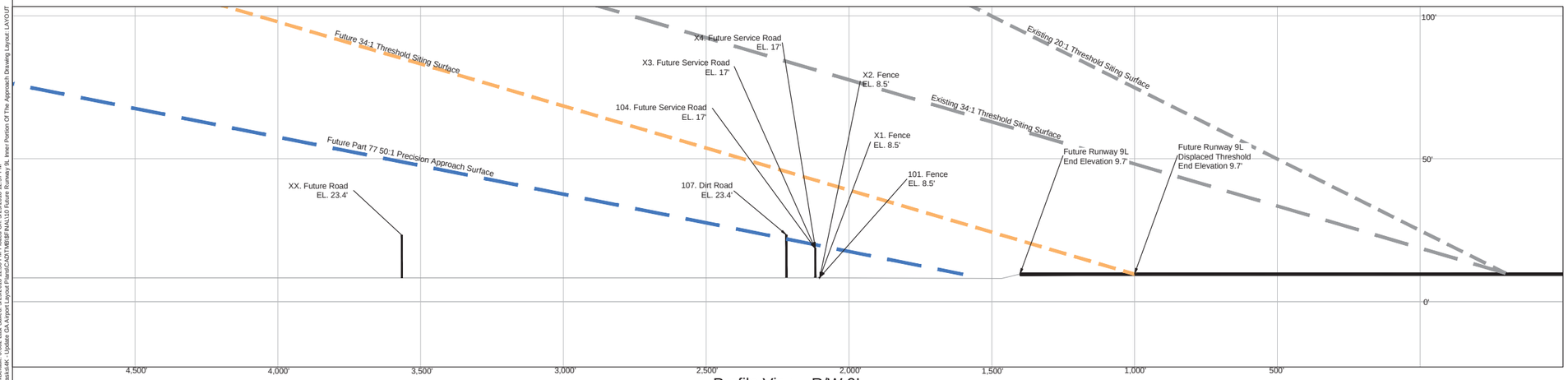
Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
101	Fence	8.5'	None	To Be Relocated
104	Future Service Road	17'	None	None
107	Dirt Road	23.4'	1.4'	To Be Relocated
XX	Future Road	23.4'	1.4'	None
X1	Fence	8.5'	None	To Be Relocated
X2	Fence	8.5'	None	To Be Relocated
X3	Future Service Road	17'	None	None
X4	Future Service Road	17'	None	None

Elevations shown are in feet above mean sea level.

Sources:
1. The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition
2. Planimetric Base Map: Miami-Dade Aviation Department, Technical SupportDepartment, November 2003.
3. Federal Communication Commission, Antenna Structure Registration, January 2005

Note: Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 9L

Scale: 1"=200' (H); 1"=20 (V)

Existing		Future	
Item	Description	Item	Description
	Existing Airfield Pavement		Airfield Development
	Property Boundary		Pavement Rehabilitation
	Glide Slope Critical Area		Pavement Demolition
	Localizer Critical Area		Landside Development
950	Ground Contour		Future Property Acquisition
ROFA	Runway Object Free Area		Property Boundary
RSA	Runway Safety Area		Taxiway Centerline
OFZ	Runway Object Free Zone		Airfield Shoulder
IA-OFZ	Inner Approach Object Free Zone	ROFA	Runway Object Free Area
RPZ	Runway Protection Zone	RSA	Runway Safety Area
	Part 77 Approach Surface	OFZ	Runway Object Free Zone
	Threshold Siting Surface	IA-OFZ	Inner Approach Object Free Zone
		RPZ	Runway Protection Zone
			Part 77 Approach Surface
			Threshold Siting Surface

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

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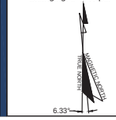
MIAMI-DADE COUNTY

NOTES:
1. Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. All tree obstructions to be trimmed or removed.
4. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
5. Planimetric mapping from 01/18/2010Third Party survey
6. Federal Communication Commission, Antenna Structure Registration, July 2006
7. Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (S)ervice Road (VSR), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year



Revision and Description	Date	Name

FUTURE RUNWAY 9L INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 10 OF 25

Colordate: Ricondo Plot Style.ctb,LTScale: 0.6000 LwDefault: 0.002 Last Saved: 5/29/2018 12:56 PM Plotted On: 5/29/2018 12:57 PM
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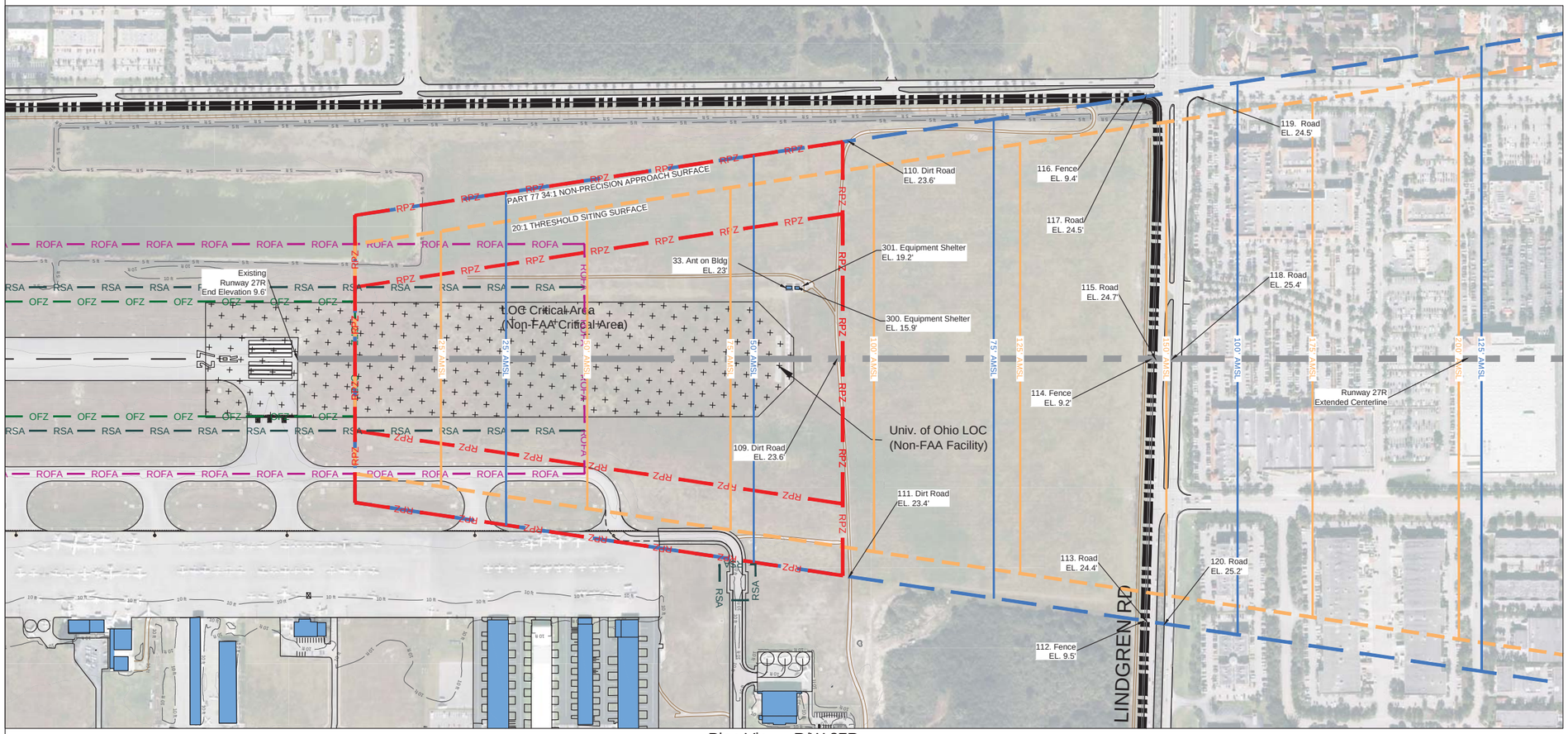
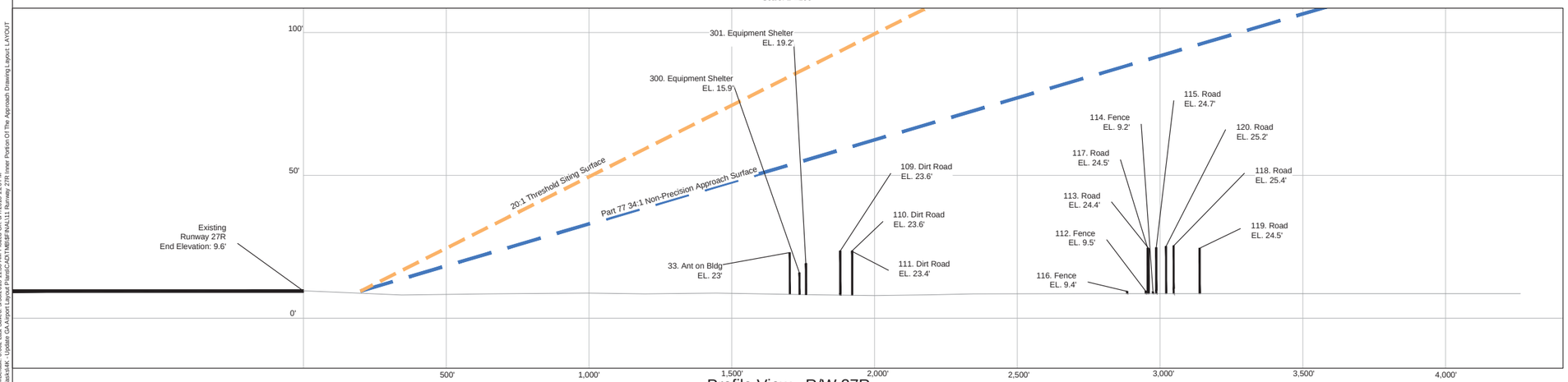


Plan View - R/W 27R

Scale: 1"=200'

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 27R

Scale: 1"=200' (H); 1"=20 (V)

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
33	Ant on Bldg	23.0'	None	N/A
109	Dirt Road	23.6'	None	N/A
110	Dirt Road	23.8'	None	N/A
111	Dirt Road	23.4'	None	N/A
112	Fence	9.5'	None	N/A
113	Road	24.4'	None	N/A
114	Fence	9.2'	None	N/A
115	Road	24.7'	None	N/A
116	Fence	9.4'	None	N/A
117	Road	24.5'	None	N/A
118	Road	25.4'	None	N/A
119	Road	24.5'	None	N/A
120	Road	25.2'	None	N/A
300	Equipment Shelter	15.9'	None	N/A
301	Equipment Shelter	19.2'	None	N/A

Elevations shown are in feet above mean sea level.

Sources:
1. The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition
2. Planimetric Base Map: Miami-Dade Aviation Department, Technical SupportDepartment, November 2003.
3. Federal Communication Commission, Antenna Structure Registration, January 2005

Note: Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphic Legend

Item	Description
	Airfield Pavement
	Building
	Glide Slope Critical Area
	Localizer Critical Area
150	Ground Contour
	Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone
	Part 77 Approach Surface
	Threshold Siting Surface

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MIAMI-DADE COUNTY

NOTES:
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2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
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5. Planimetric mapping from 01/18/2010Third Party survey
6. Federal Communication Commission, Antenna Structure Registration, July 2006
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Declination: 06°18' W (2015)
Changing: 0°6' W per Year

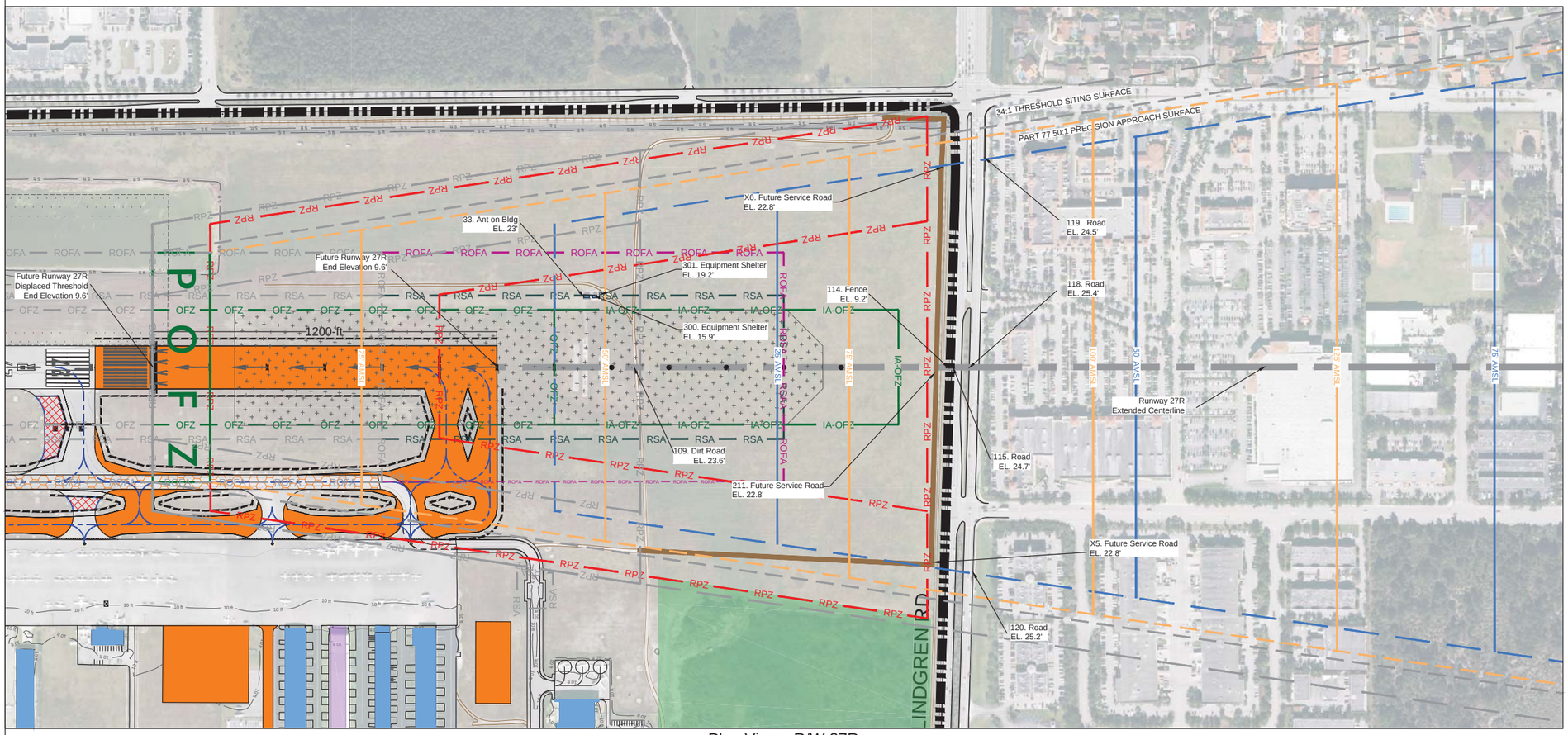
6.33°

Revision and Description	Date	Name

RUNWAY 27R INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 11 OF 25



Plan View - R/W 27R

Scale: 1"=200'

Airspace Obstruction Table

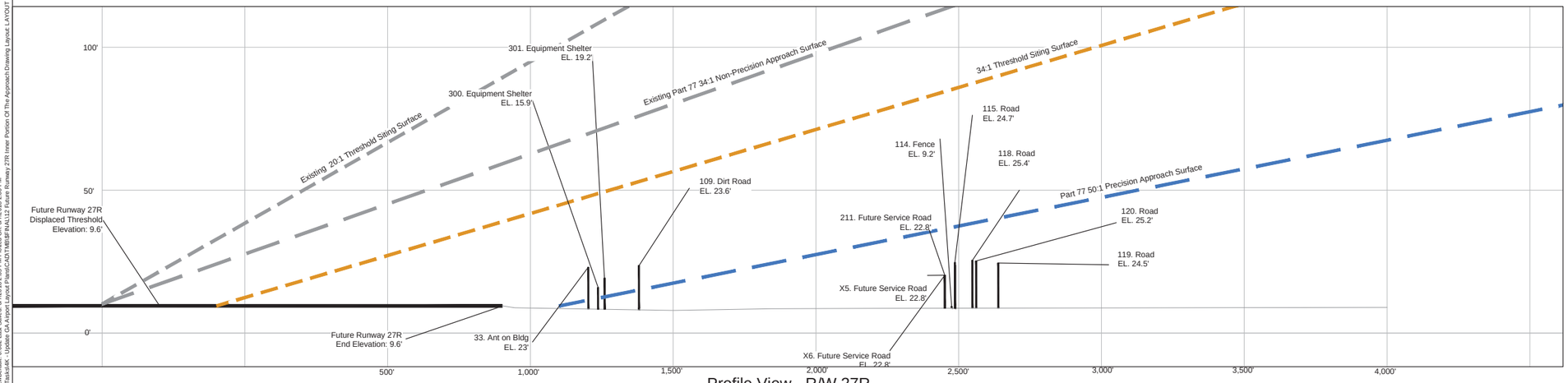
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
33	Ant on Bldg	23.0'	11.4	N/A
109	Dirt Road	23.6'	8.4	N/A
114	Fence	9.2'	None	N/A
115	Road	24.7'	None	N/A
118	Road	25.4'	None	N/A
119	Road	24.5'	None	N/A
120	Road	25.2'	None	N/A
211	Future Service Road	22.8	None	N/A
300	Equipment Shelter	15.9'	3.5	N/A
301	Equipment Shelter	19.2'	6.4	N/A
X5	Future Service Road	22.8'	None	N/A
X6	Future Service Road	22.8'	None	N/A

Elevations shown are in feet above mean sea level.

Sources:
1. The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition
2. Planimetric Base Map: Miami-Dade Aviation Department, Technical SupportDepartment, November 2003.
3. Federal Communication Commission, Antenna Structure Registration, January 2005

Note: Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 27R

Scale: 1"=200' (H); 1"=20 (V)

Existing		Future	
Item	Description	Item	Description
	Existing Airfield Pavement		Airfield Development
	Building		Pavement Rehabilitation
	Property Boundary		Pavement Demolition
	Glide Slope Critical Area		Future Facility
	Localizer Critical Area		Non-Aeronautical Development
950	Ground Contour		Taxiway Centerline
ROFA	Runway Object Free Area		Airfield Shoulder
RSA	Runway Safety Area	ROFA	Runway Object Free Area
OFZ	Runway Object Free Zone	RSA	Runway Safety Area
RPZ	Runway Protection Zone	OFZ	Runway Object Free Zone
	Part 77 Approach Surface	IA-OFZ	Inner Approach Object Free Zone
	Threshold Siting Surface	RPZ	Runway Protection Zone
			Part 77 Approach Surface
			Threshold Siting Surface

40 20 10 0
GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

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MIAMI-DADE COUNTY

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Declination: 06°18' W (2015)
Changing: 0°6' W per Year
TRUE NORTH
MAGNETIC NORTH
6.33°

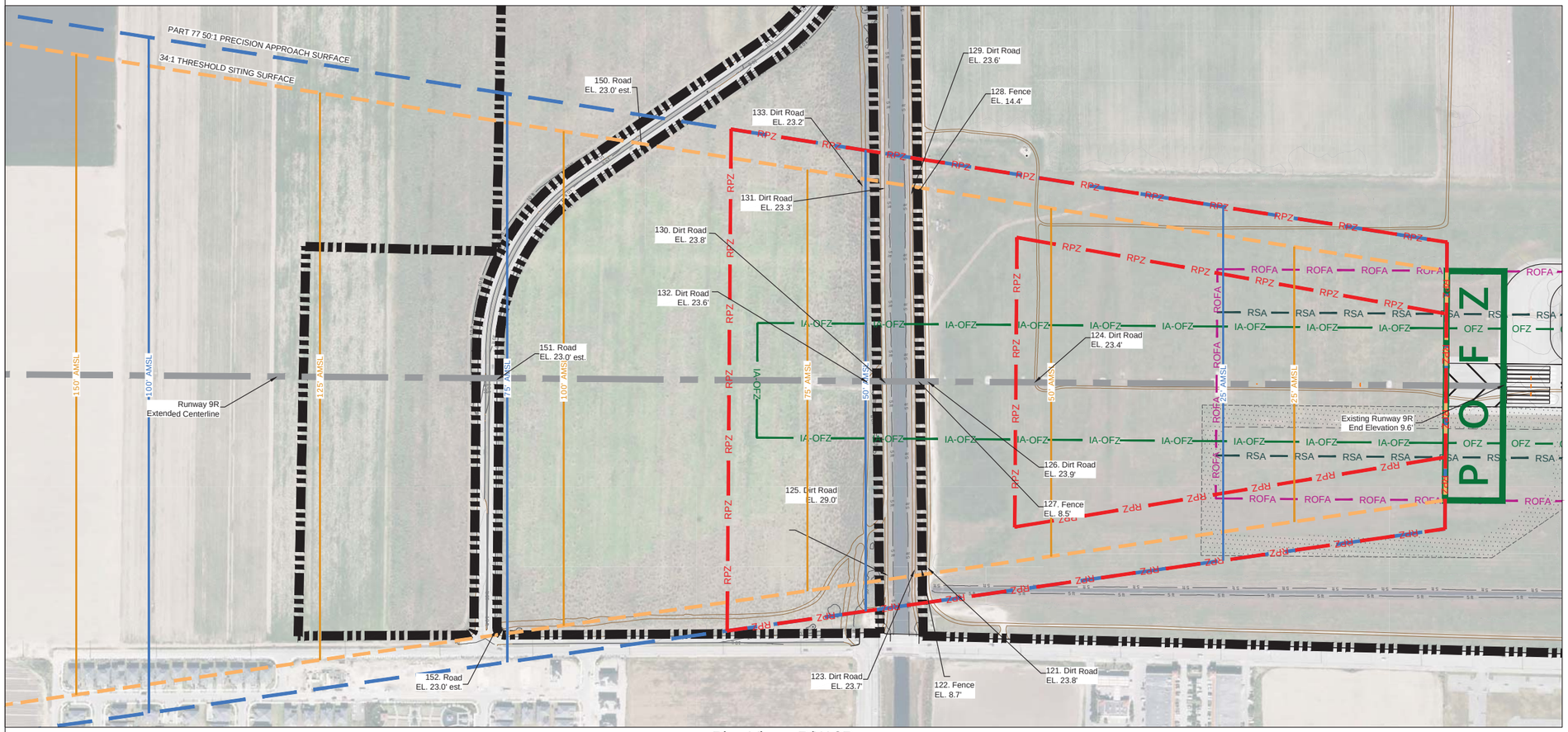
Revision and Description	Date	Name

FUTURE RUNWAY 27R INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 12 OF 25

Colorstable: Riccindo Plot Size.ctb LTScale: 0.0600 LwtDefault: 0.002 Last Saved: 6/7/2018 2:05 PM Plotted On: 6/7/2018 2:06 PM
File: P:\Project-Miami\MIA\DA\Strategic MP\Phase 4 Tasks\4K - Update GA Airport Layout Plans\CAD\TMB\SF\NAL\12 Future Runway 27R Inner Portion Of The Approach Drawing Layout, LAYOUT



Plan View - R/W 9R

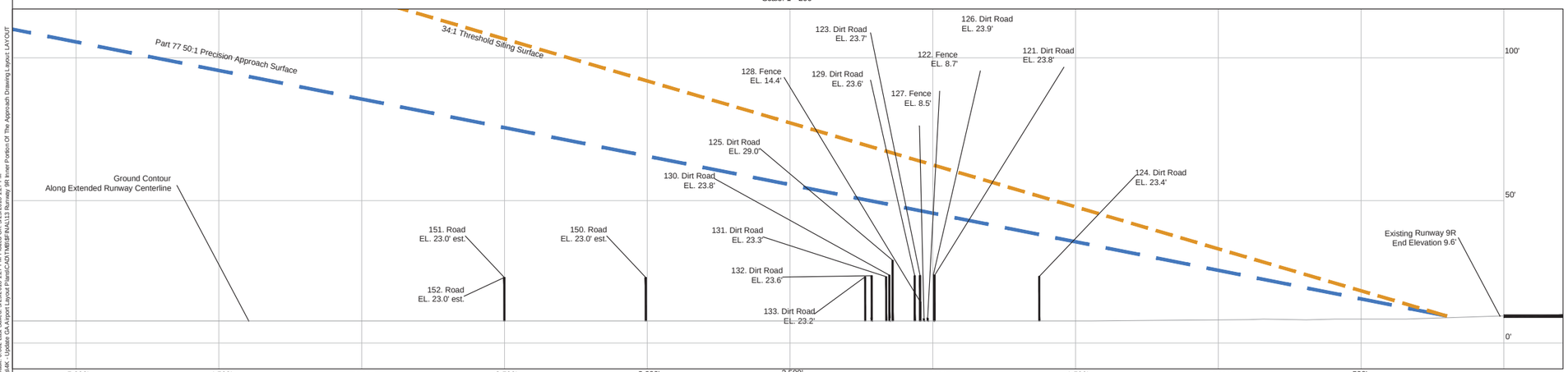
Scale: 1"=200'

0 100 200 400

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 9R

Scale: 1" = 200' (H); 1" = 20' (V)

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
121	Dirt Road	23.8'	None	N/A
122	Fence	8.7'	None	N/A
123	Dirt Road	23.7'	None	N/A
124	Dirt Road	23.4'	None	Grade
125	Dirt Road	29.0'	None	N/A
126	Dirt Road	23.9'	None	N/A
127	Fence	8.5'	None	N/A
128	Fence	14.4'	None	N/A
129	Dirt Road	23.6'	None	N/A
130	Dirt Road	23.8'	None	N/A
131	Dirt Road	23.3'	None	N/A
132	Dirt Road	23.6'	None	N/A
133	Dirt Road	23.2'	None	N/A
150	Road	23.0' est.	None	N/A
151	Road	23.0' est.	None	N/A
152	Road	23.0' est.	None	N/A

Elevations shown are in feet above mean sea level.

Sources:
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Graphic Legend	
Item	Description
	Existing Airfield Pavement
	Glide Slope Critical Area
100	Ground Contour
	Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone
	Part 77 Approach Surface
	Threshold Siting Surface

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MIAMI-DADE COUNTY

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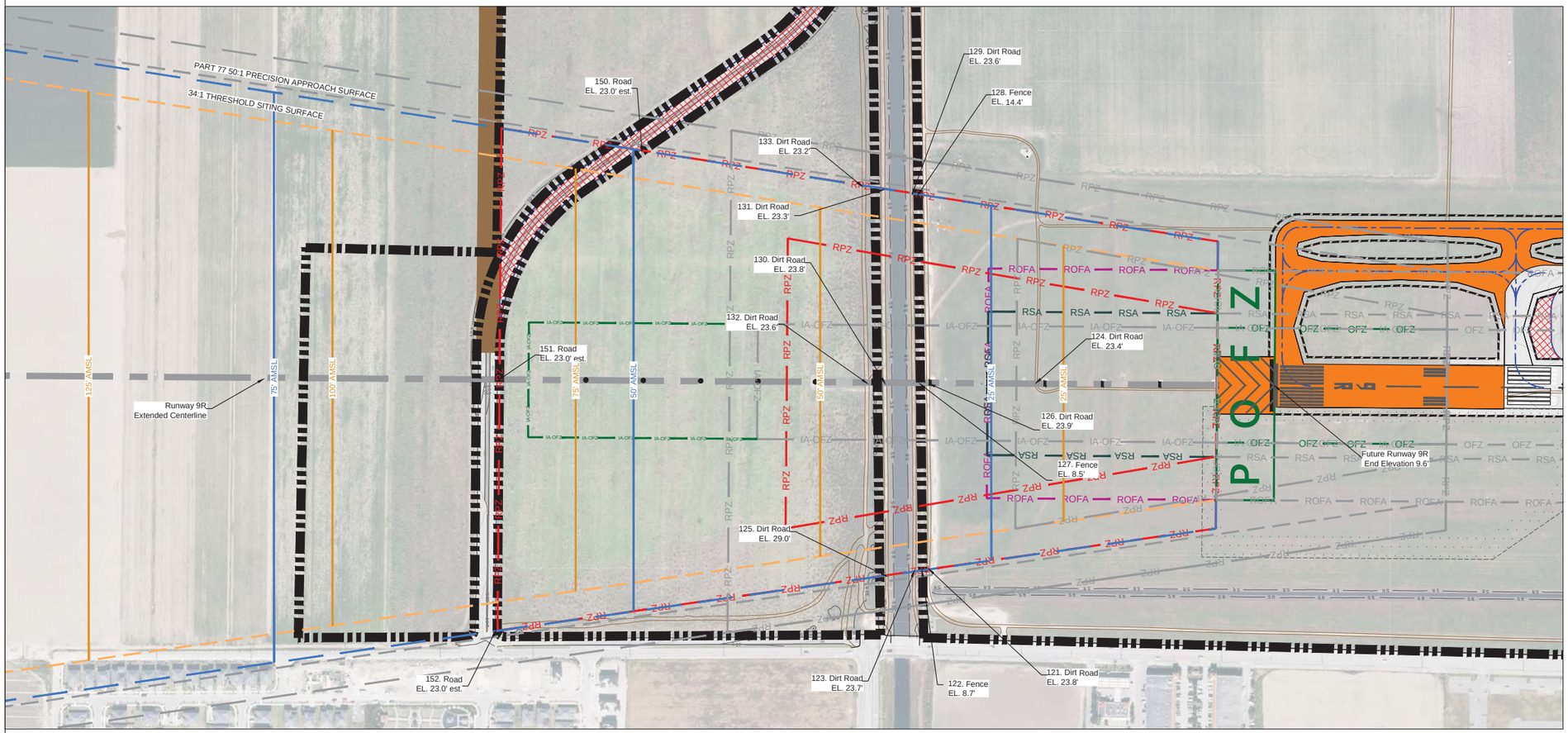
Declination: 06°18' W (2015)
Changing: 0°6' W per Year
6.33°

Revision and Description	Date	Name

RUNWAY 9R INNER PORTION OF THE APPROACH DRAWING

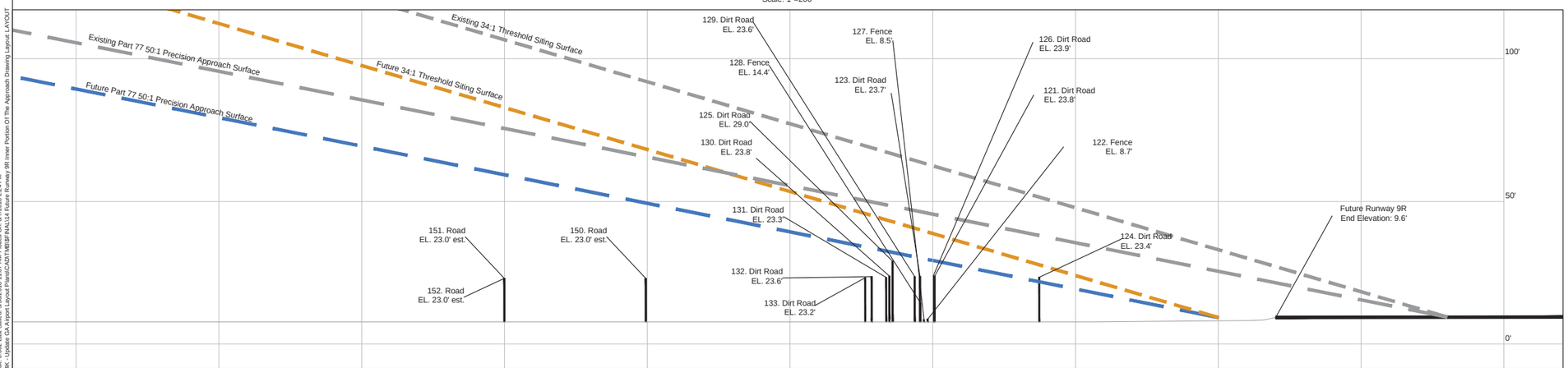
MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 13 OF 25



Plan View - R/W 9R

Scale: 1"=200'



Profile View - R/W 9R

Scale: 1" = 200' (H); 1" = 20' (V)

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
121	Dirt Road	23.8'	None	N/A
122	Fence	8.7'	None	N/A
123	Dirt Road	23.7'	None	N/A
124	Dirt Road	23.4'	None	Grade
125	Dirt Road	29.0'	None	N/A
126	Dirt Road	23.9'	None	N/A
127	Fence	8.5'	None	N/A
128	Fence	14.4'	None	N/A
129	Dirt Road	23.6'	None	N/A
130	Dirt Road	23.8'	None	N/A
131	Dirt Road	23.3'	None	N/A
132	Dirt Road	23.6'	None	N/A
133	Dirt Road	23.2'	None	N/A
150	Road	23.0' est.	None	N/A
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152	Road	23.0' est.	None	N/A

Elevations shown are in feet above mean sea level.

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Existing		Future	
Item	Description	Item	Description
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	Building		Pavement Rehabilitation
	Property Boundary		Pavement Demolition
	Glide Slope Critical Area		Landside Development
	Localizer Critical Area		Taxiway Centerline
950	Ground Contour		Airfield Shoulder
ROFA	Runway Object Free Area	ROFA	Runway Object Free Area
RSA	Runway Safety Area	RSA	Runway Safety Area
OFZ	Runway Object Free Zone	OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone	IA-OFZ	Inner Approach Object Free Zone
	Part 77 Approach Surface	RPZ	Runway Protection Zone
	Threshold Siting Surface		Part 77 Approach Surface
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Declination: 06°18' W (2015)
Changing: 0°6' W per Year
6.33°
MAGNETIC NORTH
TRUE NORTH

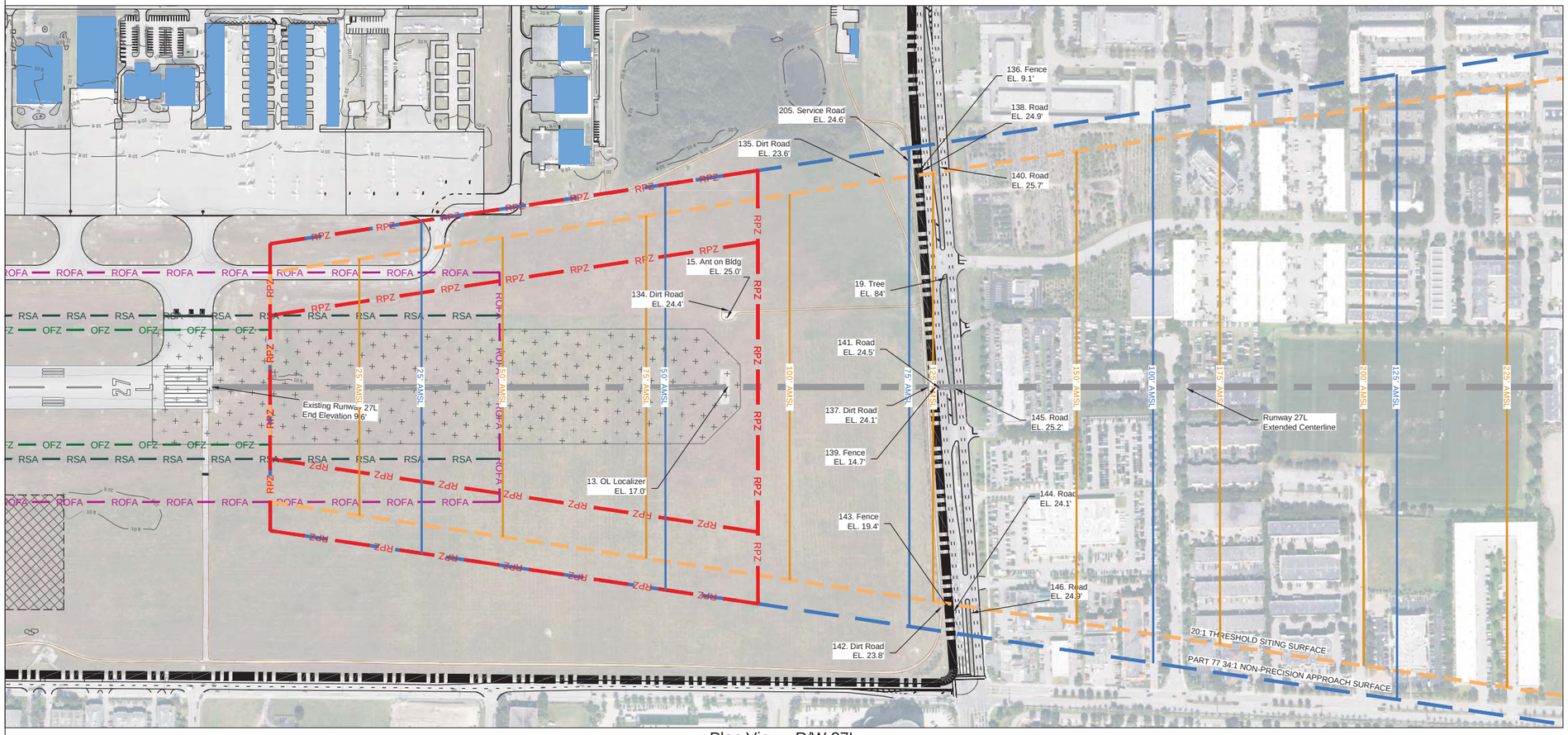
Revision and Description	Date	Name

FUTURE RUNWAY 9R INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 14 OF 25

Colorstable: Riconds Plot Size.stb LTScale: 0.6000 LwtDefault: 0.002 Last Saved: 5/30/2018 11:07 AM Plotted On: 6/7/2018 2:24 PM
File: P:\Project-Miami\MDAD\Strategic MP\Phase 4 Tasks\4K -Update GA Airport Layout Plans\CAD\TMB\SF INAL\114 Future Runway 9R Inner Portion Of The Approach Drawing Layout LAYOUT

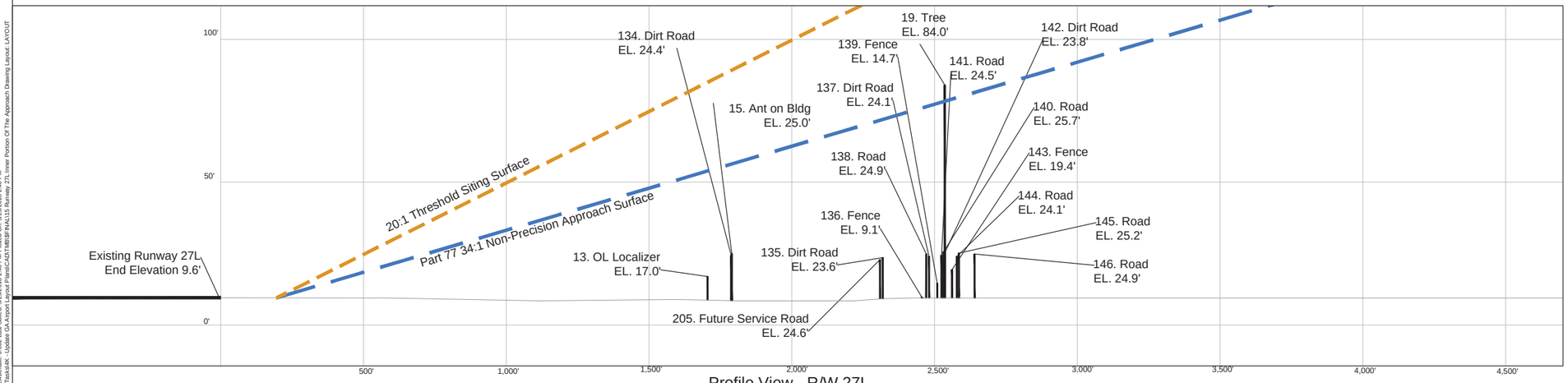


Plan View - R/W 27L

Scale: 1"=200'

0 100 200 400

GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET



Profile View - R/W 27L

Scale: 1"=200' (H); 1"=20 (V)

40 20 10 0

GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
13	OL Localizer	17.0'	None	N/A
15	Ant on Bldg	25.0'	None	N/A
19	Tree	84.0'	5.5'	Trim
134	Dirt Road	24.4'	None	N/A
135	Dirt Road	23.6'	None	N/A
136	Fence	9.1'	None	N/A
137	Dirt Road	24.1'	None	N/A
138	Road	24.9'	None	N/A
139	Fence	14.7'	None	N/A
140	Road	25.7'	None	N/A
141	Road	24.5'	None	N/A
142	Dirt Road	23.8'	None	N/A
143	Fence	19.4'	None	N/A
144	Road	24.1'	None	N/A
145	Road	25.2'	None	N/A
146	Road	24.9'	None	N/A
205	Service Road	24.6' est.	None	N/A

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Graphic Legend	
Item	Description
	Existing Airfield Pavement
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100'	Ground Contour
	Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone
	Part 77 Approach Surface
	Threshold Siting Surface

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Declination: 06°18' W (2015)
Changing: 0°6' W per Year

6.33°

Revision and Description	Date	Name

RUNWAY 27L INNER PORTION OF THE APPROACH DRAWING

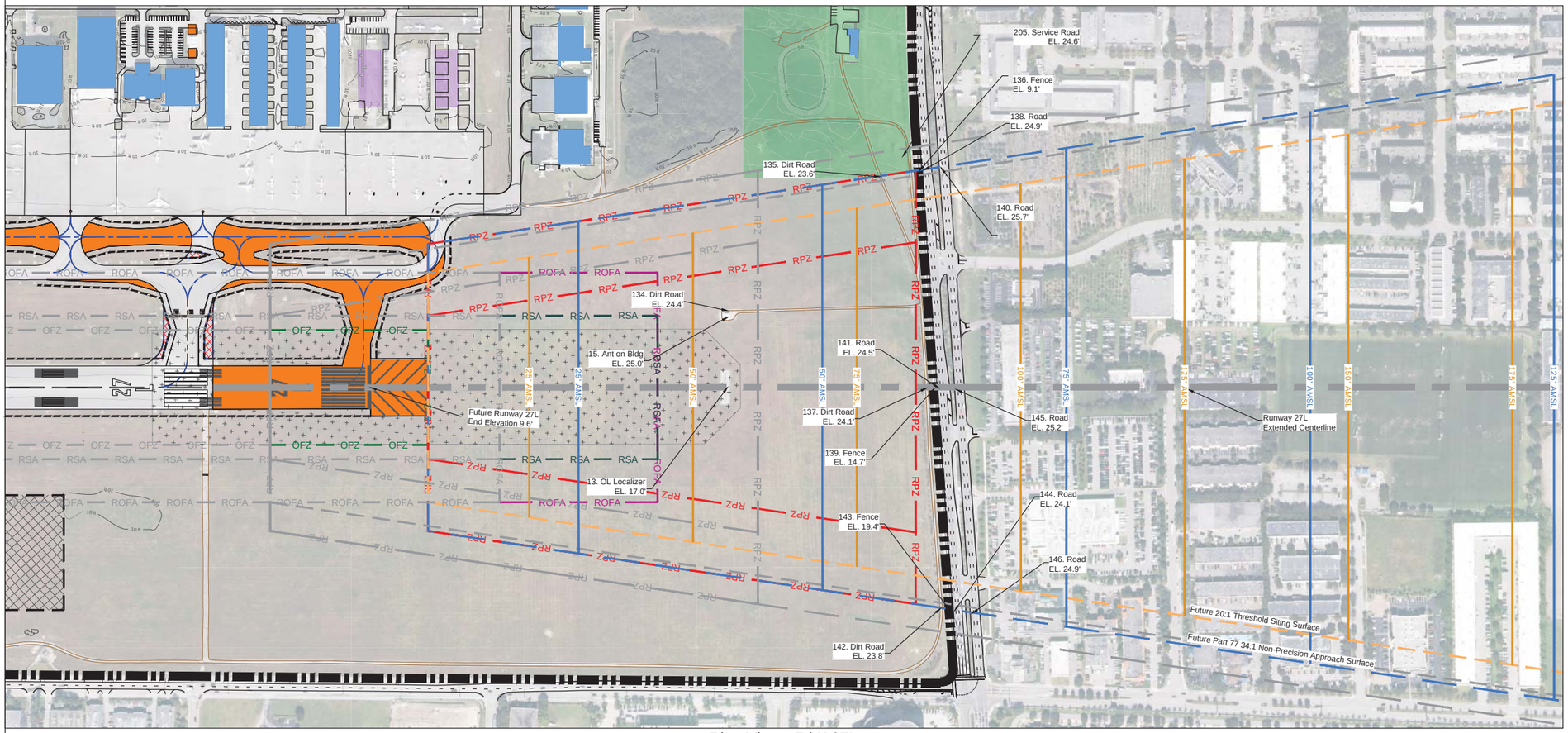
DRAFT

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018

Sheet: 15 OF 25

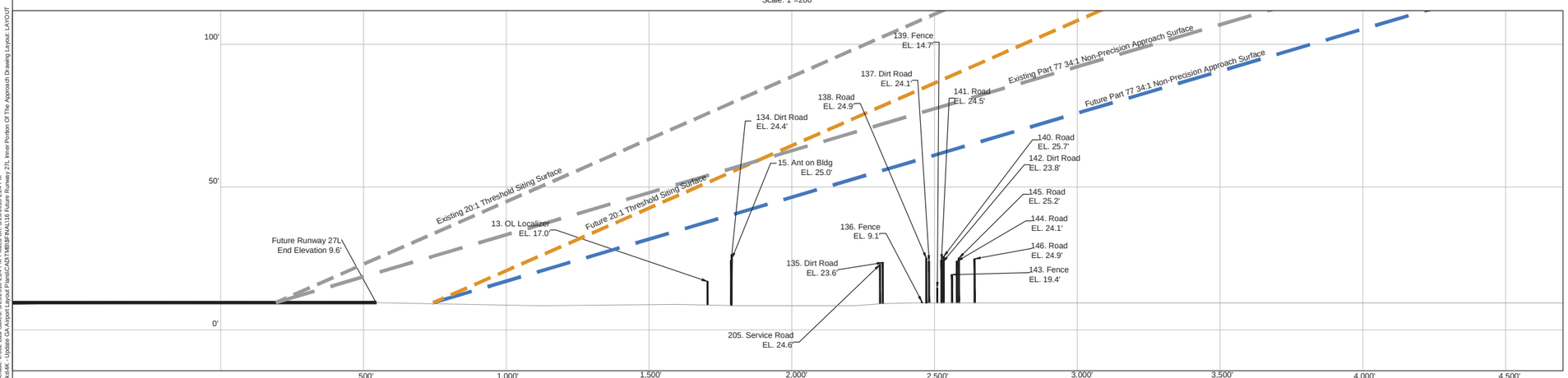


Plan View - R/W 27L

Scale: 1"=200'

0 100 200 400

GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET



Profile View - R/W 27L

Scale: 1"=200' (H); 1"=20 (V)

40 20 10 0

GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
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	Property Boundary		Future Facility
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6. Federal Communication Commission, Antenna Structure Registration, July 2006
7. Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (S)ervice Road (VSR), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year
6.33°
MAGNETIC NORTH
TRUE NORTH

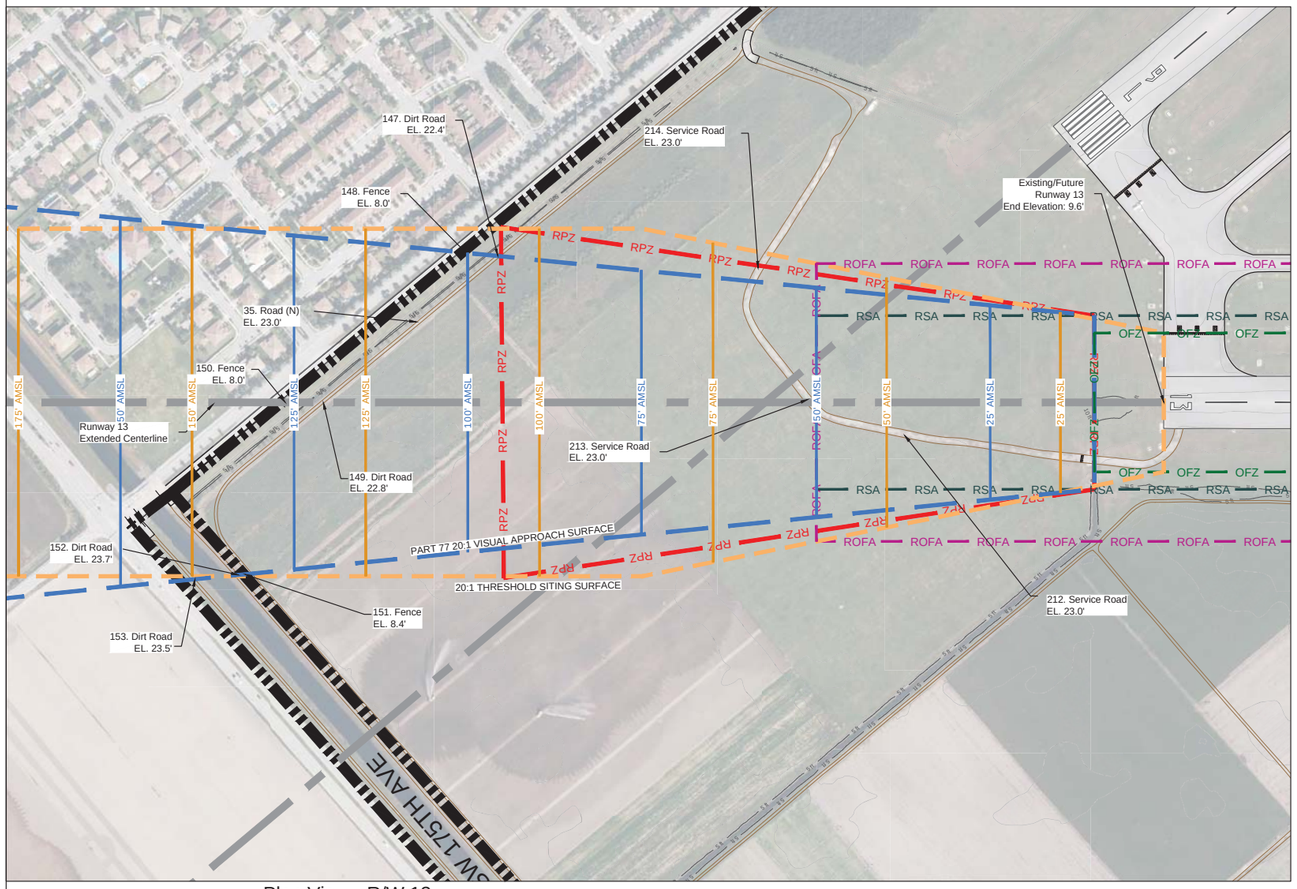
Revision and Description	Date	Name

FUTURE RUNWAY 27L INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 16 OF 25



Plan View - R/W 13

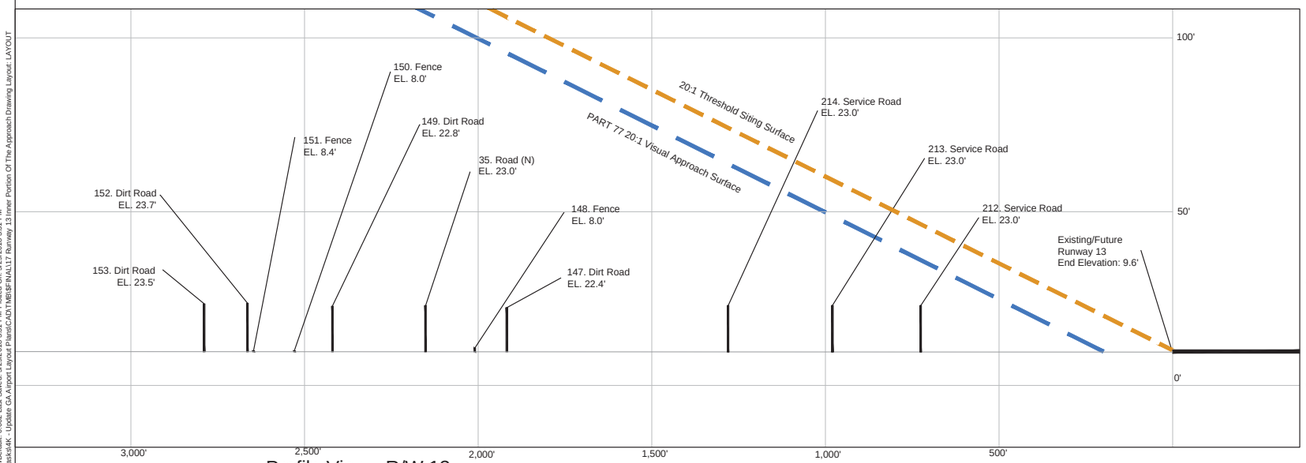
Scale: 1"=200'

0 100 200 400

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 13

Scale: 1"=200' (H); 1"=20 (V)

40 20 10 0

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
35	Road (N)	23.0'	None	N/A
147	Dirt Road	22.4'	None	N/A
148	Fence	8.0'	None	N/A
149	Dirt Road	22.8'	None	N/A
150	Fence	8.0'	None	N/A
151	Fence	8.4'	None	N/A
152	Dirt Road	23.7'	None	N/A
153	Dirt Road	23.5'	None	N/A
212	Service Road	23.0' est	None	N/A
213	Service Road	23.0' est.	None	N/A
214	Service Road	23.0' est.	None	N/A

Elevations shown are in feet above mean sea level.

Sources:

1. The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition
2. Planimetric Base Map: Miami-Dade Aviation Department, Technical Support Department, November 2003.
3. Federal Communication Commission, Antenna Structure Registration, January 2005

Note: Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphic Legend	
Item	Description
	Existing Airfield Pavement
350	Ground Contour
	Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone
	Part 77 Approach Surface
	Threshold Siting Surface

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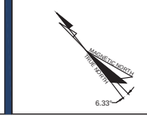
MIAMI-DADE COUNTY

NOTES:

1. Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. All tree obstructions to be trimmed or removed.
4. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
5. Planimetric mapping from 01/18/2010Third Party survey
6. Federal Communication Commission, Antenna Structure Registration, July 2006
7. Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (S)ervice Road (VSR), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year



Revision and Description	Date	Name

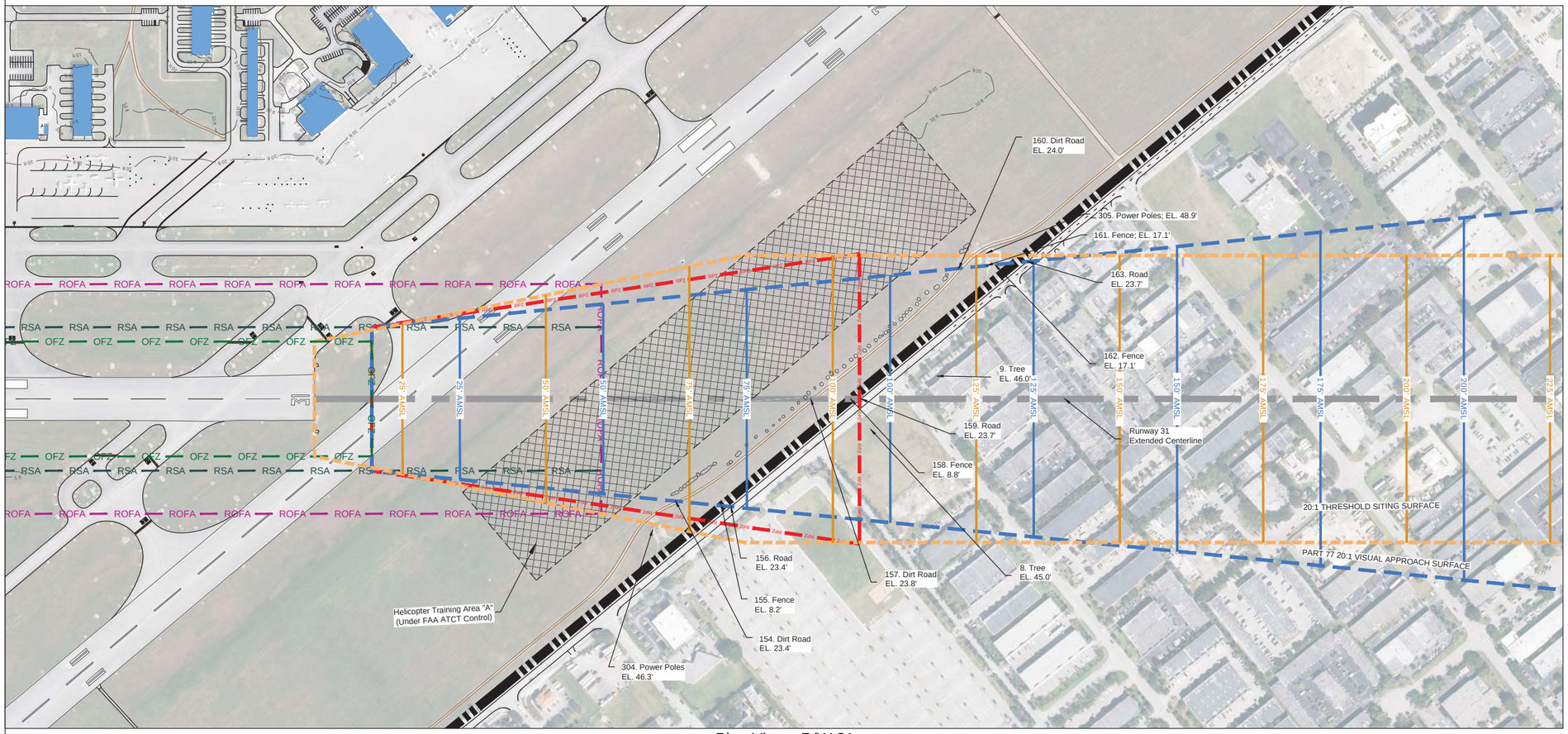
RUNWAY 13 INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018

Sheet: 17 OF 25



0 100 200 400

GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

Plan View - R/W 31

Scale: 1"=200'

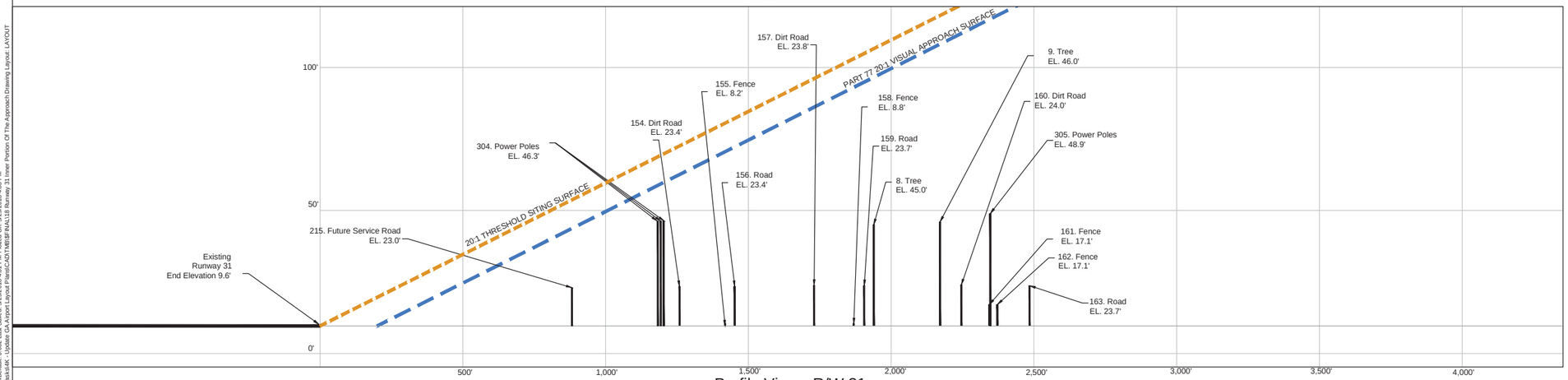
Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
154	Dirt Road	23.4'	None	N/A
155	Fence	8.2'	None	N/A
156	Road	23.4'	None	N/A
157	Dirt Road	23.8'	None	N/A
158	Fence	8.8'	None	N/A
159	Road	23.7'	None	N/A
160	Dirt Road	24.0'	None	N/A
161	Fence	17.1'	None	N/A
162	Fence	17.1'	None	N/A
163	Road	23.7'	None	N/A
304	Power Poles	46.3'	None	N/A
305	Power Poles	48.9'	None	N/A

Elevations shown are in feet above mean sea level.

Sources:
1. The National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (OCS) 5349 Miami Executive Airport, Surveyed January 1990, 7th Edition
2. Planimetric Base Map: Miami-Dade Aviation Department, Technical Support Department, November 2003.
3. Federal Communication Commission, Antenna Structure Registration, January 2005

Note: Updated obstruction surveys were not permitted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 31

Scale: 1"=200' (H); 1"=20 (V)

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphic Legend	
Item	Description
	Existing Airfield Pavement
	Ground Contour
	Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
RPZ	Runway Protection Zone
	Part 77 Approach Surface
	Threshold Siting Surface

40 20 10 0

GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

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MIAMI-DADE COUNTY

NOTES:
1. Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. All tree obstructions to be trimmed or removed.
4. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
5. Planimetric mapping from 01/18/2010Third Party survey
6. Federal Communication Commission, Antenna Structure Registration, July 2006
7. Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (S)ervice Road (VSR), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year

MAGNETIC NORTH
TRUE NORTH
6.33°

Revision and Description	Date	Name

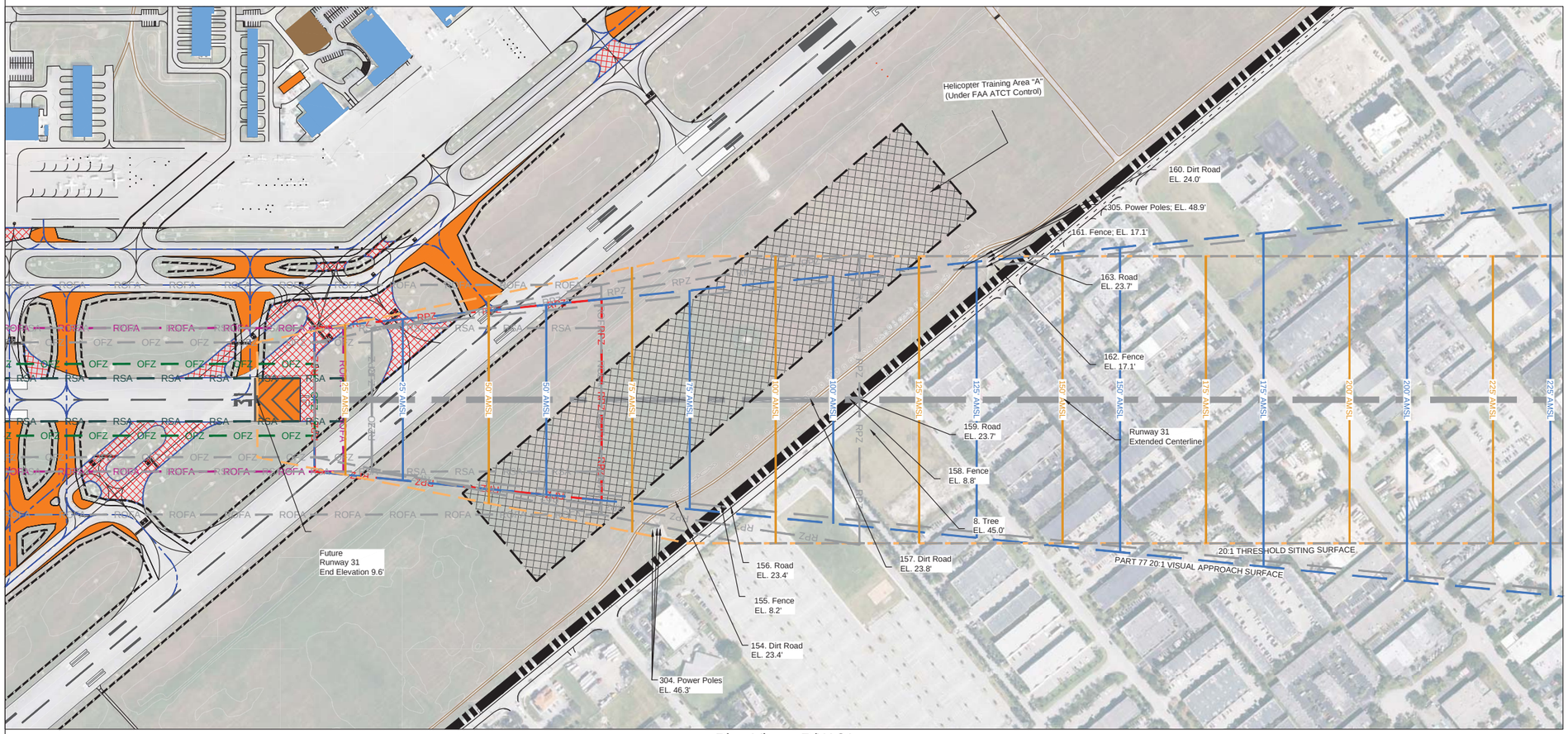
RUNWAY 31 INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018

Sheet: 18 OF 25



Plan View - R/W 31

Scale: 1"=200'

Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
154	Dirt Road	23.4'	None	N/A
155	Fence	8.2'	None	N/A
156	Road	23.4'	None	N/A
157	Dirt Road	23.8'	None	N/A
158	Fence	8.8'	None	N/A
159	Road	23.7'	None	N/A
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161	Fence	17.1'	None	N/A
162	Fence	17.1'	None	N/A
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304	Power Poles	46.3'	None	N/A
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Elevations shown are in feet above mean sea level.

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3. Federal Communication Commission, Antenna Structure Registration, January 2005

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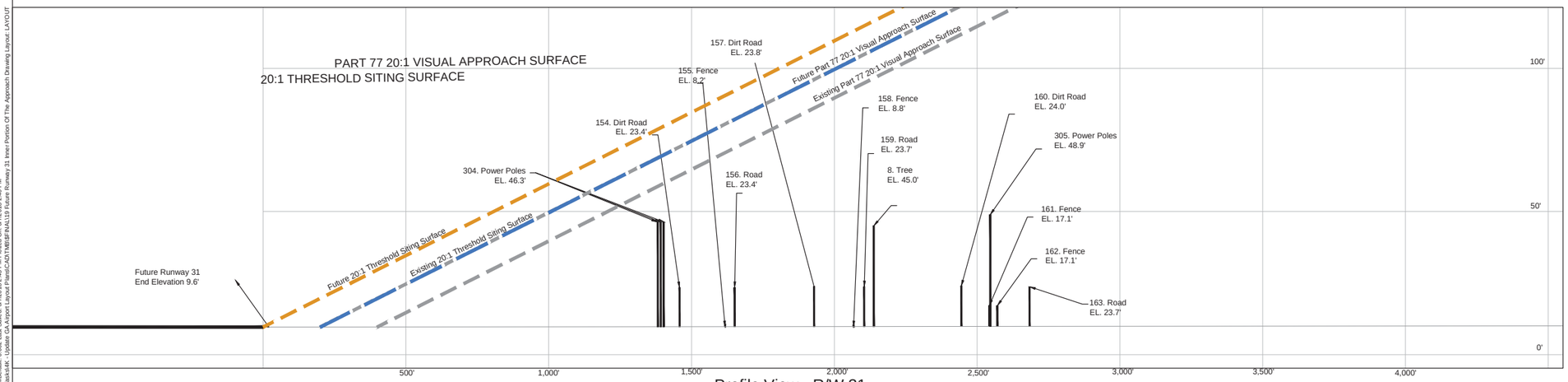
0 100 200 400
GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 31

Scale: 1"=200' (H); 1"=20 (V)

Existing		Future	
Item	Description	Item	Description
	Existing Airfield Pavement		Airfield Development
	Building		Pavement Demolition
	Property Boundary		Landside Development
	Glide Slope Critical Area		Taxiway Centerline
	Localizer Critical Area		Airfield Shoulder
100	Ground Contour	ROFA	Runway Object Free Area
ROFA	Runway Object Free Area	RSA	Runway Safety Area
RSA	Runway Safety Area	OFZ	Runway Object Free Zone
OFZ	Runway Object Free Zone	IA-OFZ	Inner Approach Object Free Zone
RPZ	Runway Protection Zone	RPZ	Runway Protection Zone
	Part 77 Approach Surface		Part 77 Approach Surface
	Threshold Siting Surface		Threshold Siting Surface

40 20 10 0
GRAPHICAL SCALE IN FEET
ALL DRAWING ELEVATIONS IN FEET

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

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Miami, Florida 33126-3511
(305) 260-2727

MIAMI-DADE COUNTY

NOTES:
1. Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
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4. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
5. Planimetric mapping from 01/18/2010Third Party survey
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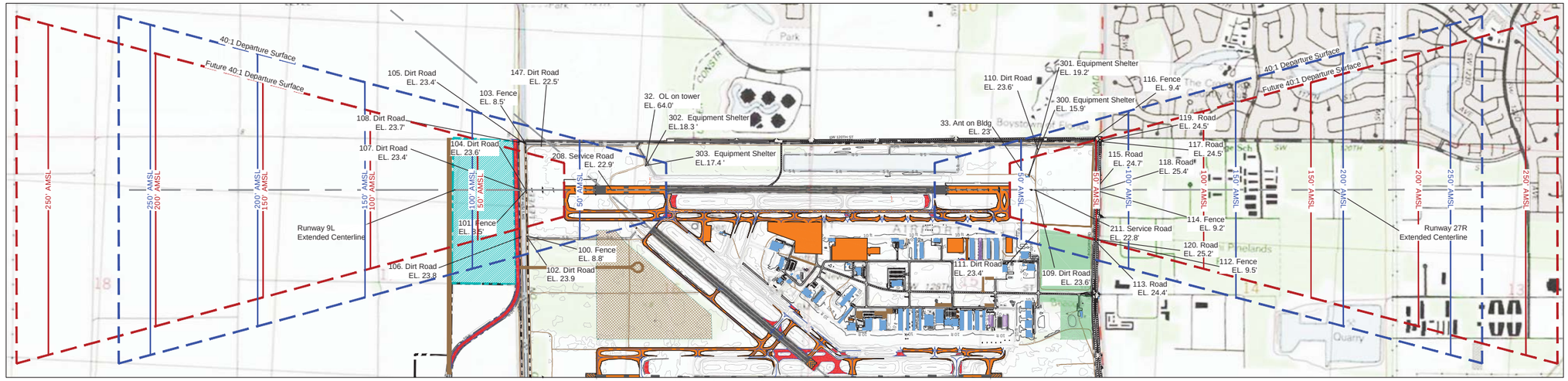
Declination: 06°18' W (2015)
Changing: 0°6' W per Year
MAGNETIC NORTH
TRUE NORTH
6.33°

Revision and Description	Date	Name

FUTURE RUNWAY 31 INNER PORTION OF THE APPROACH DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB
Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 19 OF 25



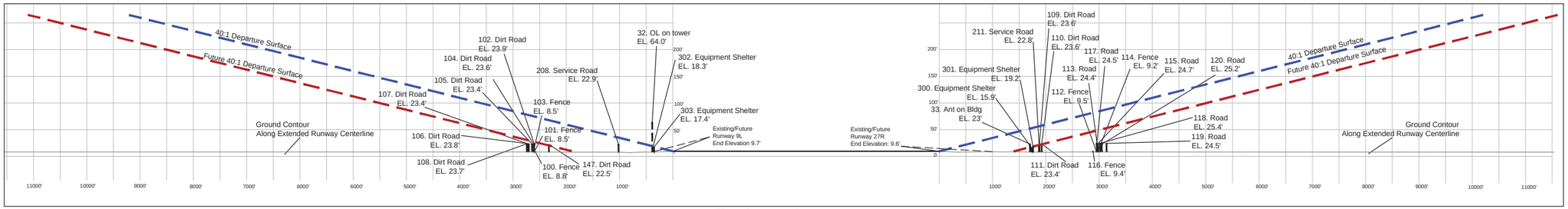
Plan View - R/W 9L-27R

Scale: 1"=1000'

0 500 1000

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET



Profile View - R/W 9L-27R

Scale: 1"=100' Vertical

1"=1000" Horizontal

0 500 1000

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

100 50 0

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

Source:

National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (ODS) 256 Miami Executive, Surveyed March 1993, 7th Edition.

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
32	OL On Tower (E)	64.0	44.7	LIGHT
302	Equipment Shelter (E)	18.3	-.6	
147	Dirt Road (F)	22.5	2.2	

Note:

1. Obstructions and clearances under 1' AGL are located on Runway 9L for Existing ("E") and Future ("F") conditions.

2. Points 33, 109, 110, 111, 300 and 301 will be re-located when the runway extension is constructed, therefore they were not included as future obstructions to the departure surface.

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphical Legend

Item	Description
	Existing Airfield Pavement
	Building
	Airfield Development
	Pavement Rehabilitation
	Pavement Demolition
	Future Facility
	Landside Development
	Non-Aeronautical Development
	Future Property Acquisition
	Property Boundary
	Property Boundary
950	Ground Contour

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MIAMI-DADE COUNTY

NOTES:
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Declination: 06°18'57.6" W (2014)
Changing: 0°5.8' W per Year

TRUE NORTH
MAGNETIC NORTH
6.31°

Revision and Description	Date	Name

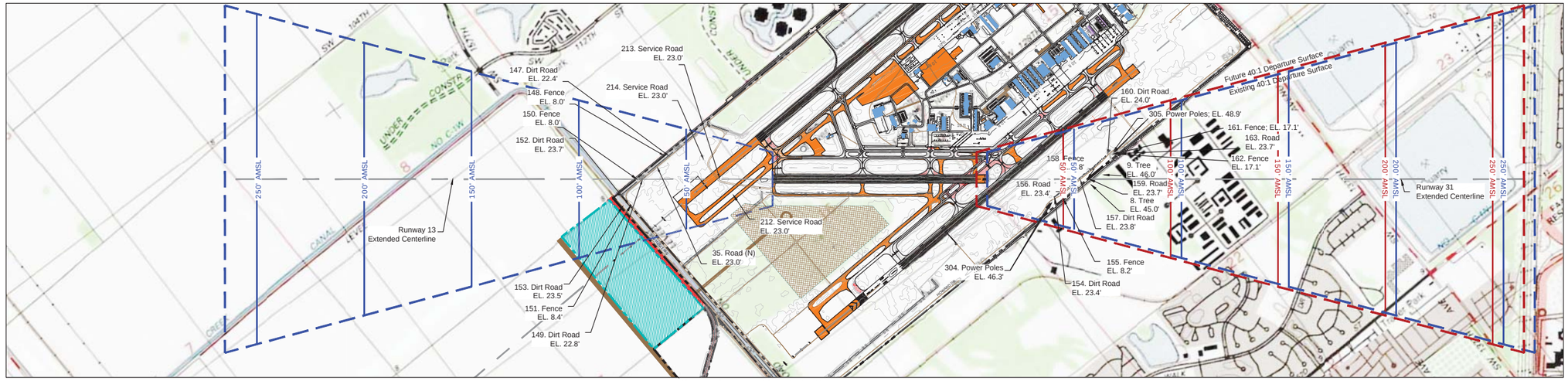
RUNWAY 09L-27R DEPARTURE SURFACE DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018

Sheet: 20 OF 25



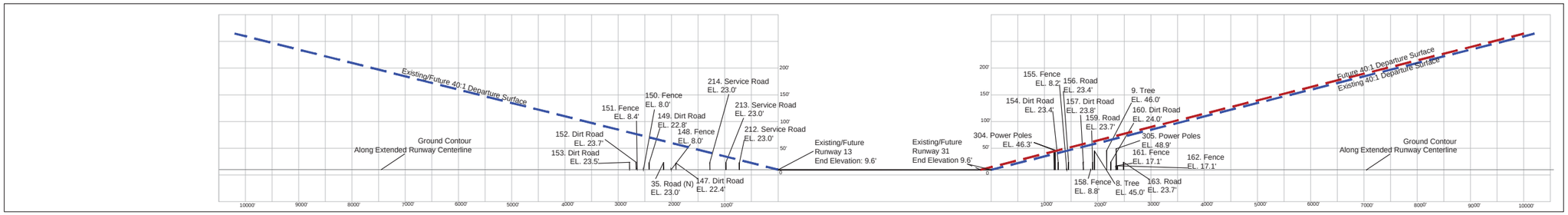
Plan View - R/W 13-31

Scale: 1"=1000'

0 500 1000

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET



Profile View - R/W 13-31

Scale: 1"=100' Vertical

1"=1000' Horizontal

0 500 1000

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

100 50 0

GRAPHICAL SCALE IN FEET

ALL DRAWING ELEVATIONS IN FEET

Source:

National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (ODS) 256 Miami Executive, Surveyed March 1993, 7th Edition.

Airspace Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
304	Power Poles (E)	46.3	7.3	FURTHER STUDY REQUIRED
304	Power Poles (F)	46.3	2.2	FURTHER STUDY REQUIRED

Note:

1. Obstructions are located on Runway 31 for Existing ("E") and Future ("F") conditions.

At the time of the obstruction analysis, the Runway 9L end elevation was reported as 9.7' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.8' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphical Legend

Item	Description
	Existing Airfield Pavement
	Building
	Airfield Development
	Pavement Rehabilitation
	Pavement Demolition
	Future Facility
	Landside Development
	Non-Aeronautical Development
	Future Property Acquisition
	Property Boundary
	Property Boundary
150	Ground Contour

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Declination: 06°18'57.6" W (2014)
Changing: 0°5.8' W per Year

Revision and Description	Date	Name

RUNWAY 13-31 DEPARTURE SURFACE DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

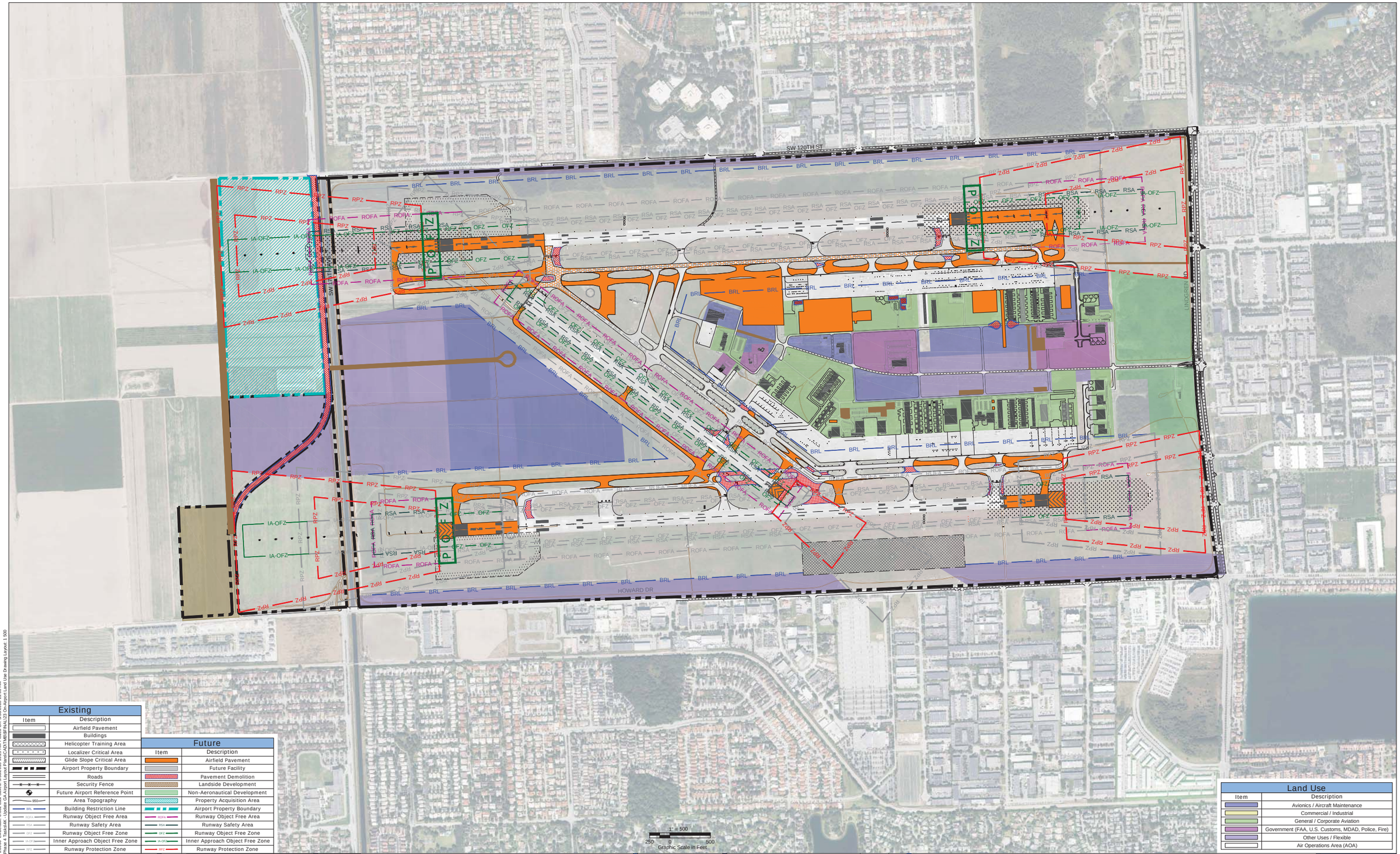
TMB

Drawn by: JDA

Checked By: RFT

Issue Date: MAY 2018

Sheet: 22 OF 25



Existing	
Item	Description
	Airfield Pavement
	Buildings
	Helicopter Training Area
	Localizer Critical Area
	Glide Slope Critical Area
	Airport Property Boundary
	Roads
	Security Fence
	Future Airport Reference Point
950	Area Topography
BRL	Building Restriction Line
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
IA-OFZ	Inner Approach Object Free Zone
RPZ	Runway Protection Zone

Future	
Item	Description
	Airfield Pavement
	Future Facility
	Pavement Demolition
	Landside Development
	Non-Aeronautical Development
	Property Acquisition Area
	Airport Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
IA-OFZ	Inner Approach Object Free Zone
RPZ	Runway Protection Zone

Land Use	
Item	Description
	Avionics / Aircraft Maintenance
	Commercial / Industrial
	General / Corporate Aviation
	Government (FAA, U.S. Customs, MDAD, Police, Fire)
	Other Uses / Flexible
	Air Operations Area (AOA)

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Miami, Florida 33126-3511
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MIAMI-DADE COUNTY

NOTES:

1. This composite map illustrates information contained in the official Miami-Dade zoning district maps and reflects existing land uses

Declination: 06°18' W (2015)
Changing: 0°6' W per Year
MAGNETIC NORTH
6.33°

Revision and Description	Date	Name

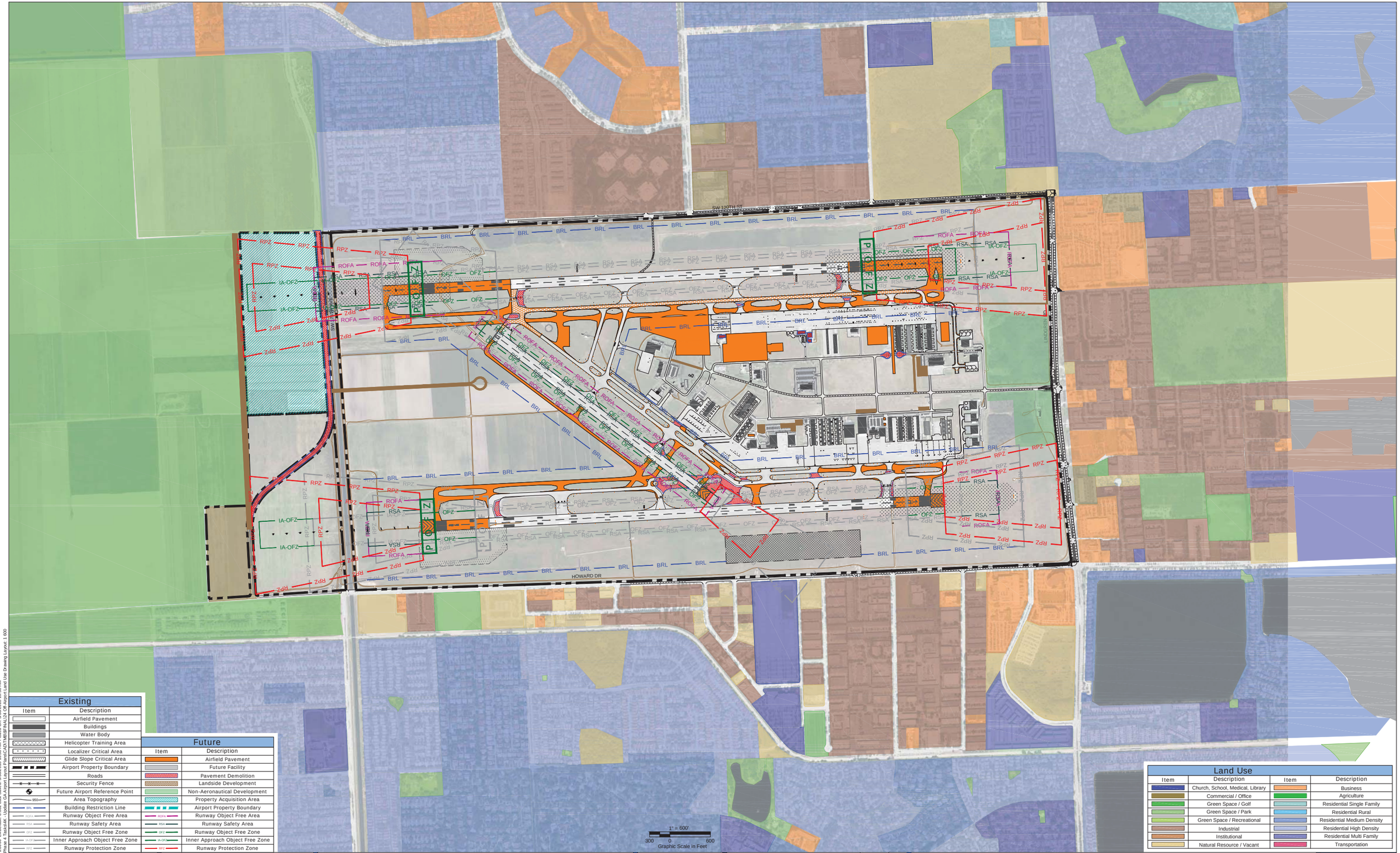
ON-AIRPORT LAND USE DRAWING

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 23 OF 25

Colorstable: Ricondo Plot Style.ctb, LTScale: 1.0000, LwDefault: 0.002, Last Saved: 5/30/2018 10:25 AM, Plotted On: 5/30/2018 11:00 AM
File: P:\Project-Miami\MOAD\Strategic MP\Phase 4 Tasks\4K - Update GA Airport Layout Plans\CAD\TMB\BFINAL\23 On-Airport Land Use Drawing Layout 1 500



Existing

Item	Description
	Airfield Pavement
	Buildings
	Water Body
	Helicopter Training Area
	Localizer Critical Area
	Glide Slope Critical Area
	Airport Property Boundary
	Roads
	Security Fence
	Future Airport Reference Point
950	Area Topography
BRL	Building Restriction Line
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
IA-OFZ	Inner Approach Object Free Zone
RPZ	Runway Protection Zone

Future

Item	Description
	Airfield Pavement
	Future Facility
	Pavement Demolition
	Landside Development
	Non-Aeronautical Development
	Property Acquisition Area
	Airport Property Boundary
ROFA	Runway Object Free Area
RSA	Runway Safety Area
OFZ	Runway Object Free Zone
IA-OFZ	Inner Approach Object Free Zone
RPZ	Runway Protection Zone

1" = 600'
300 0 600
Graphic Scale in Feet

Land Use

Item	Description	Item	Description
	Church, School, Medical, Library		Business
	Commercial / Office		Agriculture
	Green Space / Golf		Residential Single Family
	Green Space / Park		Residential Rural
	Green Space / Recreational		Residential Medium Density
	Industrial		Residential High Density
	Institutional		Residential Multi Family
	Natural Resource / Vacant		Transportation

jda
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Ypsilanti, MI 48197
(734) 961-3200

RICONDO & ASSOCIATES
1000 N.W. 57th Court
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Miami, Florida 33126-3511
(305) 260-2727

MIAMI-DADE COUNTY

NOTES:

1. This composite map illustrates information contained in the official Miami-Dade zoning district maps prepared by Miami-Dade County Regulatory and Economic Resources Department; Planning Research and Economic Analysis Section, June 2015, and reflects existing land use.

Declination: 06°18' W (2015)
Changing: 0°6' W per Year
TRUE NORTH
MAGNETIC NORTH
6.33°

Revision and Description	Date	Name

OFF-AIRPORT LAND USE DRAWING

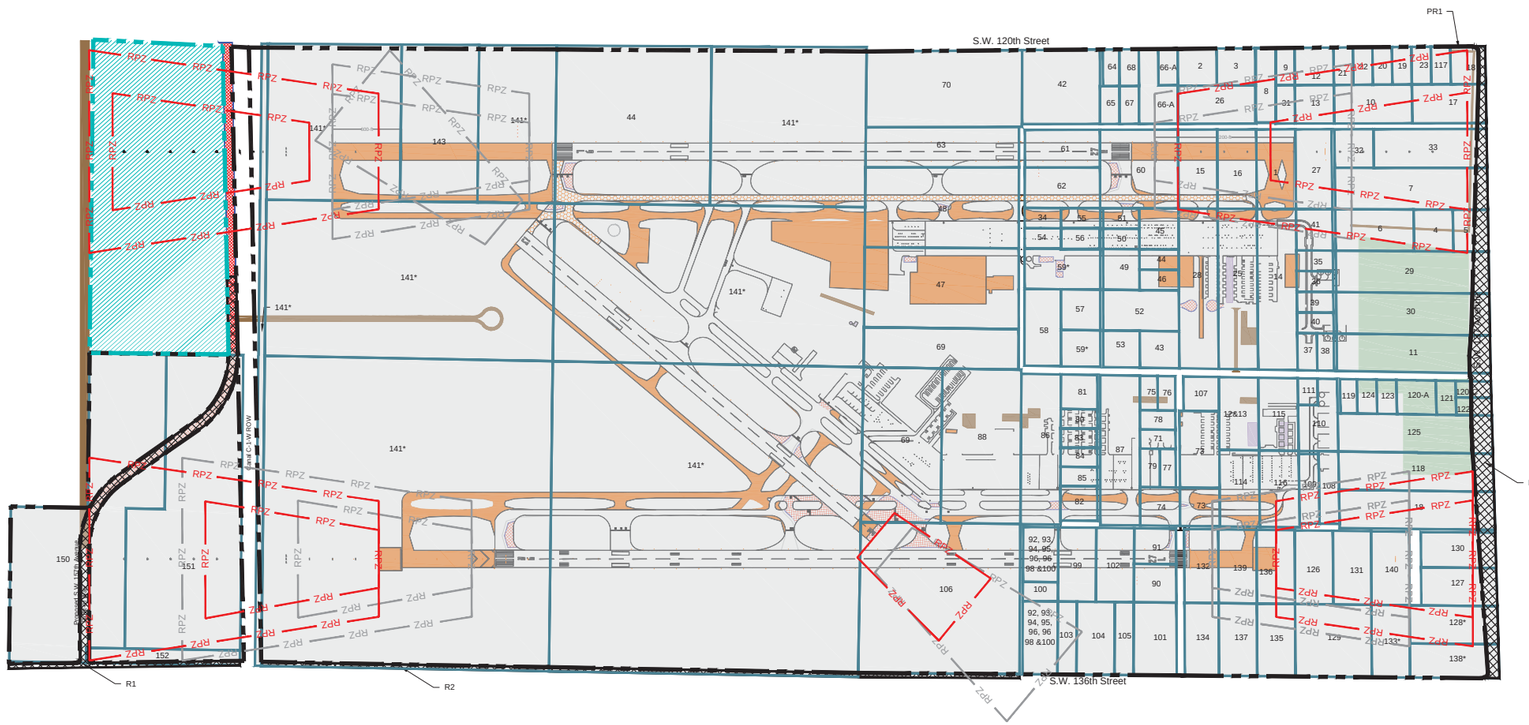
MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

TMB

Drawn by: JDA
Checked By: RFT
Issue Date: MAY 2018
Sheet: 24 OF 25

INITIAL PROPERTY CONVEYANCE

Parcel No.	Owner	Book & Page	Date	Federal Aid Project Number	Type of Ownership	Parcel Acreage
1	Miami-Dade County	O.R.B. 4302, Pg. 548	10/12/1964	-	Special Warranty Deed	5.33
2	Miami-Dade County	O.R.B. 4265, Pg. 581	8/19/1964	-	Special Warranty Deed	2.47
3	Miami-Dade County	O.R.B. 4091, Pg. 275	4/3/1961	-	Special Warranty Deed	2.48
4	Miami-Dade County	O.R.B. 4430, Pg. 721	1/6/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.8
5	Miami-Dade County	O.R.B. 4039, Pg. 323	2/27/1964	FAAP 9-08-067-D401	Special Warranty Deed	1.51
6	Miami-Dade County	O.R.B. 4302, Pg. 562	10/31/1964	-	Special Warranty Deed	5.58
7	Miami-Dade County	O.R.B. 4385, Pg. 153	11/28/1964	FAAP 9-08-067-D401	Special Warranty Deed	9.84
8	Miami-Dade County	O.R.B. 4265, Pg. 583	8/18/1964	-	Special Warranty Deed	2.52
9	Miami-Dade County	O.R.B. 4302, Pg. 520	10/26/1964	-	Special Warranty Deed	1.24
10	Miami-Dade County	O.R.B. 4302, Pg. 554	10/3/1964	-	Special Warranty Deed	5.17
11	Miami-Dade County	O.R.B. 4436, Pg. 238	1/9/1965	FAAP 9-08-067-D401	Special Warranty Deed	8.57
12	Miami-Dade County	O.R.B. 4302, Pg. 534	9/29/1964	-	Special Warranty Deed	2.49
13	Miami-Dade County	O.R.B. 4302, Pg. 536	8/28/1964	-	Special Warranty Deed	2.57
14	Miami-Dade County	O.R.B. 4302, Pg. 550	10/12/1964	-	Special Warranty Deed	10.84
15	Miami-Dade County	O.R.B. 4702, Pg. 255	7/6/1965	FAAP 9-08-067-D401	Special Warranty Deed	5.3
16	Miami-Dade County	O.R.B. 4097, Pg. 56	4/7/1964	-	Special Warranty Deed	5.32
17	Miami-Dade County	O.R.B. 4709, Pg. 392	8/8/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.38
18	Miami-Dade County	O.R.B. 4261, Pg. 544	8/18/1964	-	Special Warranty Deed	1.8
18	Miami-Dade County	O.R.B. 4265, Pg. 593	8/20/1964	-	Special Warranty Deed	9.13
19	Miami-Dade County	O.R.B. 4605, Pg. 9	5/10/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.25
20	Miami-Dade County	O.R.B. 4302, Pg. 514	9/8/1964	-	Special Warranty Deed	1.25
21	Miami-Dade County	O.R.B. 4302, Pg. 522	10/24/1964	-	Special Warranty Deed	1.25
22	Miami-Dade County	O.R.B. 4106, Pg. 25	4/17/1964	-	Special Warranty Deed	1.25
23	Miami-Dade County	O.R.B. 4457, Pg. 238	1/23/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.26
25	Miami-Dade County	O.R.B. 4546, Pg. 513	4/1/1965	FAAP 9-08-067-D401	Special Warranty Deed	10.8
26	Miami-Dade County	O.R.B. 4977, Pg. 410	3/11/1966	FAAP 9-08-067-D401	Special Warranty Deed	5.1
27	Miami-Dade County	O.R.B. 4447, Pg. 189	1/13/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.95
28	Miami-Dade County	O.R.B. 4605, Pg. 7	5/18/1965	FAAP 9-08-067-D401	Special Warranty Deed	9.82
29	Miami-Dade County	O.R.B. 4657, Pg. 51	6/24/1965	FAAP 9-08-067-D401	Special Warranty Deed	9.78
30	Miami-Dade County	O.R.B. 4605, Pg. 3	5/18/1965	FAAP 9-08-067-D401	Special Warranty Deed	9.66
31	Miami-Dade County	O.R.B. 4083, Pg. 522	4/1/1964	-	Special Warranty Deed	1.28
32	Miami-Dade County	O.R.B. 4464, Pg. 548	1/14/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.57
33	Miami-Dade County	O.R.B. 4436, Pg. 236	1/11/1965	FAAP 9-08-067-D401	Special Warranty Deed	6.85
34	Miami-Dade County	O.R.B. 4302, Pg. 518	10/26/1964	-	Special Warranty Deed	1.26
35	Miami-Dade County	O.R.B. 4588, Pg. 669	5/8/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.29
36	Miami-Dade County	O.R.B. 5208, Pg. 722	9/12/1966	FAAP 9-08-067-D401	Special Warranty Deed	1.29
37	Miami-Dade County	O.R.B. 4735, Pg. 574	8/29/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.26
38	Miami-Dade County	O.R.B. 4546, Pg. 511	4/6/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.07
39	Miami-Dade County	O.R.B. 4546, Pg. 509	4/7/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.29
40	Miami-Dade County	O.R.B. 4436, Pg. 234	1/8/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.29
41	Miami-Dade County	O.R.B. 4503, Pg. 372	2/23/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.57
42	Miami-Dade County	O.R.B. 4179, Pg. 279	6/10/1964	-	Special Warranty Deed	9.9
43	Miami-Dade County	O.R.B. 4086, Pg. 584	4/2/1964	-	Special Warranty Deed	2.49
44	Miami-Dade County	O.R.B. 4530, Pg. 14	3/17/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.37
45	Miami-Dade County	O.R.B. 4302, Pg. 558	10/26/1964	-	Special Warranty Deed	2.74
46	Miami-Dade County	O.R.B. 4086, Pg. 576	4/1/1964	-	Special Warranty Deed	1.38
47	Miami-Dade County	O.R.B. 4407, Pg. 9	9/16/1964	FAAP 9-08-067-D401	Special Warranty Deed	21.26
48	Miami-Dade County	O.R.B. 4201, Pg. 732	5/29/1964	-	Special Warranty Deed	21.18
49	Miami-Dade County	O.R.B. 4302, Pg. 528	8/25/1964	-	Special Warranty Deed	2.54
50	Miami-Dade County	O.R.B. 4265, Pg. 585	8/20/1964	-	Special Warranty Deed	1.27
51	Miami-Dade County	O.R.B. 4265, Pg. 587	8/20/1964	-	Special Warranty Deed	1.27
52	Miami-Dade County	O.R.B. 4136, Pg. 116	5/8/1964	-	Special Warranty Deed	5.3
53	Miami-Dade County	O.R.B. 4302, Pg. 530	9/10/1964	-	Special Warranty Deed	2.3
54	Miami-Dade County	O.R.B. 4424, Pg. 330	12/19/1964	FAAP 9-08-067-D401	Special Warranty Deed	1.26
55	Miami-Dade County	O.R.B. 4086, Pg. 578	4/1/1964	-	Special Warranty Deed	1.36
56	Miami-Dade County	O.R.B. 4302, Pg. 516	9/1/1964	-	Special Warranty Deed	1.36
57	Miami-Dade County	O.R.B. 4027, Pg. 675	2/18/1964	-	Special Warranty Deed	2.74
58	Miami-Dade County	O.R.B. 4343, Pg. 398	10/17/1964	-	Special Warranty Deed	4.81
59	Miami-Dade County	O.R.B. 4302, Pg. 560	10/10/1964	-	Special Warranty Deed	2.47
60	Miami-Dade County	O.R.B. 4086, Pg. 580	4/2/1964	-	Special Warranty Deed	10.55
61	Miami-Dade County	O.R.B. 4049, Pg. 298	3/4/1964	-	Special Warranty Deed	4.86
62	Miami-Dade County	O.R.B. 4091, Pg. 271	4/6/1964	-	Special Warranty Deed	5.24
63	Miami-Dade County	O.R.B. 4167, Pg. 327	5/20/1964	-	Special Warranty Deed	10.56
64	Miami-Dade County	O.R.B. 4049, Pg. 300	3/4/1964	-	Special Warranty Deed	1.04
65	Miami-Dade County	O.R.B. 4311, Pg. 659	9/29/1964	-	Special Warranty Deed	1.26
66-A	Miami-Dade County	O.R.B. 3702, Pg. 632	6/11/1963	-	Warranty Deed	1.21
66-A	Miami-Dade County	O.R.B. 4265, Pg. 589	8/19/1964	-	Special Warranty Deed	3.78
67	Miami-Dade County	O.R.B. 4311, Pg. 657	9/25/1964	-	Special Warranty Deed	1.26
68	Miami-Dade County	O.R.B. 4306, Pg. 398	9/18/1964	-	Special Warranty Deed	1.22
69	Miami-Dade County	O.R.B. 4252, Pg. 173	8/7/1964	-	Special Warranty Deed	10.66
70	Miami-Dade County	O.R.B. 4098, Pg. 526	4/2/1964	-	Special Warranty Deed	21.18
71	Miami-Dade County	O.R.B. 4365, Pg. 126	11/10/1964	FAAP 9-08-067-D401	Special Warranty Deed	1.17
72	Miami-Dade County	O.R.B. 4269, Pg. 532	8/21/1964	-	Special Warranty Deed	2.62
73	Miami-Dade County	O.R.B. 4269, Pg. 530	8/19/1964	-	Special Warranty Deed	4.01
74	Miami-Dade County	O.R.B. 4302, Pg. 552	8/31/1964	-	Special Warranty Deed	2.62
75	Miami-Dade County	O.R.B. 4097, Pg. 52	4/3/1964	-	Special Warranty Deed	1.05
76	Miami-Dade County	O.R.B. 4097, Pg. 54	4/3/1964	-	Special Warranty Deed	1.05
77	Miami-Dade County	O.R.B. 4369, Pg. 21	11/3/1964	FAAP 9-08-067-D401	Special Warranty Deed	1.04
78	Miami-Dade County	O.R.B. 4365, Pg. 124	11/10/1964	FAAP 9-08-067-D401	Special Warranty Deed	1.17
79	Miami-Dade County	O.R.B. 4369, Pg. 23	11/3/1964	FAAP 9-08-067-D401	Special Warranty Deed	1.31
80	Miami-Dade County	O.R.B. 4302, Pg. 526	9/17/1964	-	Special Warranty Deed	1.21
81	Miami-Dade County	O.R.B. 4328, Pg. 438	10/7/1964	-	Special Warranty Deed	2.16
82	Miami-Dade County	O.R.B. 4311, Pg. 661	9/28/1964	-	Special Warranty Deed	2.18
83	Miami-Dade County	O.R.B. 4086, Pg. 582	4/2/1964	-	Special Warranty Deed	1.21
84	Miami-Dade County	O.R.B. 4302, Pg. 556	10/1/1964	-	Special Warranty Deed	1.21
85	Miami-Dade County	O.R.B. 4106, Pg. 27	4/16/1964	-	Special Warranty Deed	1.22
86	Miami-Dade County	O.R.B. 4605, Pg. 1	5/14/1965	FAAP 9-08-067-D401	Special Warranty Deed	10.12
87	Miami-Dade County	O.R.B. 4091, Pg. 273	4/3/1964	-	Special Warranty Deed	10.18
88	Miami-Dade County	O.R.B. 4098, Pg. 528	4/10/1964	-	Special Warranty Deed	20.6
89	Miami-Dade County	O.R.B. 4252, Pg. 171	8/7/1964	-	Special Warranty Deed	21.04
90	Miami-Dade County	O.R.B. 4431, Pg. 597	1/7/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.79
91	Miami-Dade County	O.R.B. 4407, Pg. 7	12/16/1964	FAAP 9-08-067-D401	Special Warranty Deed	2.47
92, 93, 94, 95 96, 97, 98 &100	Miami-Dade County	O.R.B. 1819, Pg. 496	11/12/1959	FAAP 9-08-067-D401	Warranty Deed	4.38
99	Miami-Dade County	O.R.B. 4302, Pg. 532	9/10/1964	-	Special Warranty Deed	4.82
100	Miami-Dade County	O.R.B. 4902, Pg. 276	1/13/1966	FAAP 9-08-067-D401	Right of Eminent Domain	1.16
101	Miami-Dade County	O.R.B. 4328, Pg. 440	9/17/1964	-	Special Warranty Deed	5.36
102	Miami-Dade County	O.R.B. 4553, Pg. 568	4/6/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.71
103	Miami-Dade County	O.R.B. 4595, Pg. 262	5/11/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.32
104	Miami-Dade County	O.R.B. 4588, Pg. 667	5/7/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.74
105	Miami-Dade County	O.R.B. 4595, Pg. 266	5/12/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.37
106	Miami-Dade County	O.R.B. 4302, Pg. 546	9/19/1964	-	Special Warranty Deed	41.38
107	Miami-Dade County	O.R.B. 4595, Pg. 264	5/11/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.08
108	Miami-Dade County	O.R.B. 4302, Pg. 538	8/31/1964	-	Special Warranty Deed	2.47
109	Miami-Dade County	O.R.B. 4201, Pg. 734	6/11/1964	-	Special Warranty Deed	2.37
110	Miami-Dade County	O.R.B. 4039, Pg. 321	2/27/1964	FAAP 9-08-067-D401	Special Warranty Deed	4.01
111	Miami-Dade County	O.R.B. 4027, Pg. 673	2/18/1964	-	Special Warranty Deed	0.9
112,113	Miami-Dade County	O.R.B. 2277, Pg. 137	8/29/1960	-	Warranty Deed	4.92
114	Miami-Dade County	O.R.B. 4304, Pg. 101	9/10/1964	-	Special Warranty Deed	5.23
115	Miami-Dade County	O.R.B. 4487, Pg. 640	1/6/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.92
116	Miami-Dade County	O.R.B. 4304, Pg. 99	9/10/1964	-	Special Warranty Deed	5.22
117	Miami-Dade County	O.R.B. 3097, Pg. 107	1/22/1962	-	Warranty Deed	1.26
118	Miami-Dade County	O.R.B. 4265, Pg. 591	8/20/1964	-	Special Warranty Deed	10.13
119	Miami-Dade County	O.R.B. 4605, Pg. 5	5/17/1965	FAAP 9-08-067-D401	Special Warranty Deed	0.99
120-A	Miami-Dade County	O.R.B. 4550, Pg. 144	4/9/1965	FAAP 9-08-067-D401	Special Warranty Deed	2.31
120-C	Miami-Dade County	O.R.B. 4302, Pg. 540	7/26/1964	FAAP 9-08-067-D401	Special Warranty Deed	0.45
121	Miami-Dade County	O.R.B. 4530, Pg. 16	3/17/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.15
122	Miami-Dade County	O.R.B. 4057, Pg. 222	4/6/1964	FAAP 9-08-067-D401	Special Warranty Deed	0.5
123	Miami-Dade County	O.R.B. 4550, Pg. 142	4/9/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.16
124	Miami-Dade County	O.R.B. 4550, Pg. 146	4/7/1965	FAAP 9-08-067-D401	Special Warranty Deed	1.16
125	Miami-Dade County	O.R.B. 4044, Pg. 87	3/2/1694	FAAP 9-08-067-D401	Special Warranty Deed	8.75
126	Miami-Dade County	O.R.B. 4457, Pg. 240	1/27/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.82
127	Miami-Dade County	O.R.B. 4902, Pg. 279	1/13/1966	FAAP 9-08-067-D502	Right of Eminent Domain	4.73
128,133,138	Miami-Dade County	O.R.B. 4902, Pg. 280	1/13/1966	FAAP 9-08-067-D502	Right of Eminent Domain	4.74
129	Miami-Dade County	O.R.B. 4457, Pg. 236	1/25/1965	FAAP 9-08-067-D502	Special Warranty Deed	9.48
130	Miami-Dade County	O.R.B. 4723, Pg. 683	8/20/1965	FAAP 9-08-067-D502	Special Warranty Deed	4.35
131	Miami-Dade County	O.R.B. 4302, Pg. 524	9/8/1964	-	Special Warranty Deed	4.82
132	Miami-Dade County	O.R.B. 4436, Pg. 232	1/9/1965	FAAP 9-08-067-D401	Special Warranty Deed	4.32
134	Miami-Dade County	O.R.B. 4430, Pg. 719	1/6/1965	FAAP 9-08-067-D502	Special Warranty Deed	4.25
135	Miami-Dade County	O.R.B. 4302, Pg. 542	9/3/1964	-	Special Warranty Deed	4.75
136	Miami-Dade County	O.R.B. 4302, Pg. 544	9/16/1964	-	Special Warranty Deed	4.82
137	Miami-Dade County	O.R.B. 4430, Pg. 715	1/6/1965	FAAP 9-08-067-D502	Special Warranty Deed	4.75
139	Miami-Dade County	O.R.B. 4449, Pg. 24	1/5/1964	FAAP 9-08-067-D401	Special Warranty Deed	4.83
140	Miami-Dade County	O.R.B. 4430, Pg. 717	1/5/1965	-	Special Warranty Deed	4.81
141	Miami-Dade County	O.R.B. 997, Pg. 519	8/26/1958	-	Special Warranty Deed	479.51
141	Miami-Dade County	O.R.B. 2431, Pg. 262	12/22/1960	-	Special Warranty Deed	
142	Miami-Dade County	O.R.B. 4265, Pg. 597	7/27/1964	-	Special Warranty Deed	42.07
142	Miami-Dade County	O.R.B. 4265, Pg. 597	7/27/1964	-	Special Warranty Deed	42.07
143	Miami-Dade County	O.R.B. 4265, Pg. 595	7/27/1964	-	Special Warranty Deed	20.85



PROPERTY ACQUISITIONS

Parcel No.	Owner	Date Acquired	Federal Aid Project Number	Parcel Acreage
150	Miami-Dade County	9/10/1972	-	50.06
151	Miami-Dade County	8/24/1972	-	48.10
152	Miami-Dade County	2/26/1970	-	3.97

PROPERTY RELEASES OR DISPOSALS

Parcel No.	Date of Release	Parcel Acreage
R1	2/1/2005	7.74
R2	3/11/2003	5.26
R3	2/22/1989	16.30

PROPOSED PROPERTY RELEASES OR DISPOSALS

Parcel No.	Owner	Parcel Acreage
PR1	Miami-Dade County	0.07

Legend:

- RPZ — Runway Protection Zone
- Initial Conveyance
- New Property Acquisitions
- Properties Released or Disposed
- Proposed Land Release as Public Right-of-Way

RICONDO & ASSOCIATES
1000 N.W. 57th Court
Suite 920
Miami, Florida 33126-3511
(305) 260-2727

MIAMI-DADE COUNTY

NOTES:

1. The Exhibit "A" Property Map for TMB was last updated in 2007.

Declination: 05°15' W (2014)
Changing: 0°4' W per Year

5.25°

Revision and Description	Date	Name

AIRPORT PROPERTY MAP

MIAMI EXECUTIVE AIRPORT
AIRPORT LAYOUT PLANS UPDATE

Drawn by: PMH
Checked By: DER
Issue Date: MAY 2018
Sheet: 25 OF 25

Colortable: Ricondo Plot Size: ctb LTScale: 1.00 LwDefault: 0.002 Last Saved: 5/29/2018 6:34 PM Plotted On: 5/29/2018 6:35 PM
File: P:\Project-Miami\MIA\DA\Strategic MP\Phase 4 Tasks\4k - Update GA Airport Layout Plans\CAD\TMB\BFIN\ALP25 Airport Property Map Layout Layout1

Appendix C FAA Approval Letter for MDAD Strategic Master Planning Study General Aviation Activity Forecast Report

U.S. Department
of Transportation
**Federal Aviation
Administration**

ORLANDO AIRPORTS DISTRICT OFFICE
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August 6, 2012

Mr. Jose A. Ramos, R.A.
Division Director
Aviation Planning, Land Use, and Grants
Miami-Dade Aviation Department
Miami International Airport
P.O. Box 592075
Miami, Florida 33159

Dear Mr. Ramos,

RE: Miami Dade Aviation Department
Strategic Airport Master Planning Study
Approval of General Aviation Activity Forecasts

This letter responds to your consultant's July 27, 2012 transmission of the "Strategic Airport Master Planning Study General Aviation Activity Forecasts" dated June 2012. While the forecasts depicted in Table 5, on page 44 of the report, as attached, are not consistent with the 2011 Federal Aviation Administration (FAA) Terminal Area Forecasts (TAF,) the methods and assumptions used in preparing these forecasts are found to be reasonable. In addition, the overall general aviation demand forecast for the Miami Dade area, as shown in your report, is consistent with the sum of the general aviation demand the 2011 TAF presents for the individual Miami Dade airports. Therefore, we approve the forecasts to be used in your on-going master planning efforts.

If you have any questions, please feel free to contact me at (407) 812-6331, ext. 122.

Sincerely,

ORIGINAL SIGNED BY

Rebecca R. Henry
Planning Specialist

cc: Paul Devoti, APP-400
Remy Lucette, Ricondo & Associates, Inc.

Appendix D Hot Spot #1 Runway Incursions Mitigation Plan Reevaluation

NOVEMBER 2017 |

MIAMI EXECUTIVE AIRPORT

Hot Spot #1 Runway Incursions

Mitigation Plan Reevaluation

Prepared for:

Miami-Dade Aviation Department

Prepared by:

RICONDO

Table of Contents

List of Appendices

List of Tables

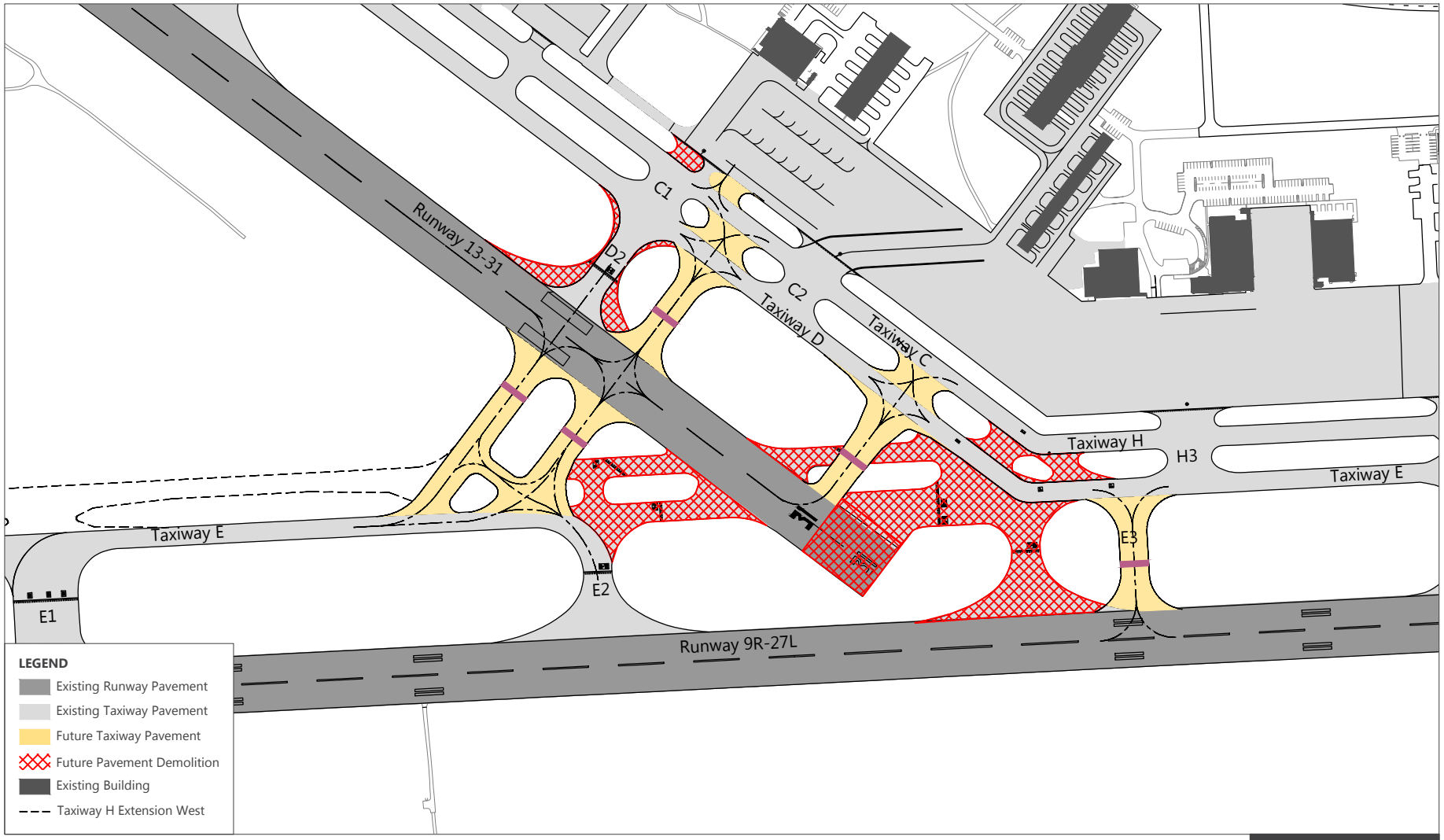
List of Exhibits

1. Introduction

The Airport Layout Plan (ALP) for the Miami Executive Airport (TMB or the Airport) was updated as part of the Miami-Dade Strategic Airport Master Plan (SMP) and, as of November 2017 is under review by the Federal Aviation Administration (FAA). The Draft ALP update included, among other proposed airfield modifications, the mitigation of Hot Spot #1 (HS-1). This Hot Spot was identified by the FAA after experiencing several incursions on Runway 13-31 where Taxiways E and H serve as the primary aircraft crossing point as they taxi to/from Runway 9R-27L at TMB.

During the SMP, several mitigation options for Hot Spot #1 were generated and evaluated in collaboration with the TMB Air Traffic Control (ACT) and Miami-Dade Aviation Department (MDAD) staff. The mitigation options that were considered during the SMP included reconfiguration of the Runway 13-31 taxiway crossings and shortening of Runway 13-31 to eliminate the crossings altogether. A consensus was reached that the preferred mitigation option was to replace the non-perpendicular taxiway crossings associate with Taxiways E and H with two new perpendicular taxiway crossings. In addition, Taxiway E3 would be shifted to the east approximately 280 feet, Runway 13-31 would be shortened by approximately 200 feet (to eliminate its encroachment on the Runway 9R-27L runway safety area), and a new entrance taxiway to Runway 31 would be established. Although not required for the mitigation of HS-1, the TMB ALP Update also provides consideration for the ultimate extension of Taxiway H to the departure end of Runway 9R. The resulting taxiway geometry, which is illustrated on **Exhibit 1-1**, was reflected on the Draft ALP update that was submitted to the FAA.

During its initial review of the draft ALP update for TMB, the FAA's Orlando Airport District Office (ADO) requested that MDAD reassess the various options for mitigating HS-1. This was requested in order to determine if there was a viable option that would also reduce the number of aircraft crossings associated with Runway 13-31. Through coordination with MDAD and FAA personnel, two additional potential mitigation options have been identified as possible runway incursion mitigation measures for HS-1. In addition to the original options that were evaluated as part of the SMP, these additional mitigation options include:



SOURCE: Ricondo, Inc., *Strategic Airport Master Plan Update 2015-2050*; Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 1-1

NORTH 0 400 ft.

Original HS-1 Mitigation Recommendation
Miami-Dade Strategic Airport Master Plan (SMP)

Drawing: \\ricondo.com\public\Miami\project\MDAD\On-call 2017\02 - 2017 Misc Planning Tasks\2-3 TMB RIM Study - Dual Taxiway Evaluation\CAD\HS-1 Tech Report Exhibits 20171110.dwgLayout: Ex. 1-1 SMP Proposal Plotted: Mar 30, 2018, 10:58AM

- Establishing a single taxiway crossing on Runway 13-31, coupled with the elimination of Taxiway E2
- Establishing a single taxiway crossing on Runway 13-31, coupled with an extension of Taxiway H to the west end of Runway 9R.

The purpose of the technical report is to present the approach, methodologies, and findings of the reevaluation of mitigation options for Hot Spot #1 at TMB. It details the process that MDAD and the FAA has used to determine the preferred option to mitigate runway incursions at TMB in a way that mitigates the potential for runway incursions without diminishing operational safety at the Airport. This includes:

- an overview of the existing conditions,
- review of runway incursion data,
- evaluation of the various mitigation options
- selection of a preferred option that was selected jointly by the FAA Orlando ADO personnel and TMB ATC Tower Manager

The following chapters of this report provide additional information on the approach, methodologies, and findings for the mitigation of Hot Spot #1 at TMB

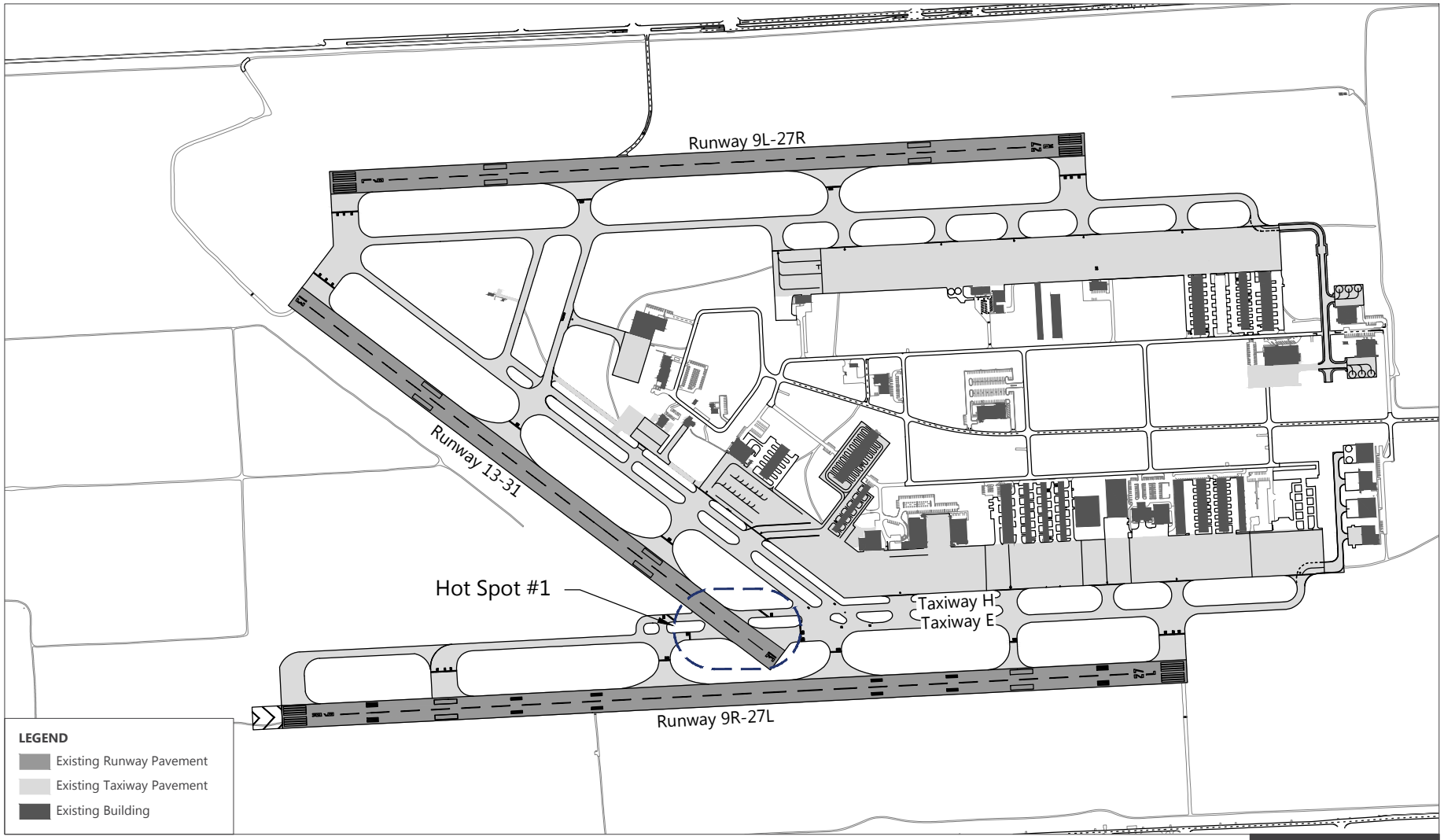
2. Existing Conditions

This section provides an overview of the existing airfield and operational characteristics at TMB with a focus on the taxiway and runway geometry associated with HS-1. It includes a general overview of the various runway use configurations and typical aircraft taxi flows that influence the current utilization of the taxiways and runways that are associated with HS-1. It also details the chronological airfield development that has influenced aircraft operations within the vicinity of HS-1, and provides a summary of the Runway 13-31 incursion events that have resulted from its intersections with Taxiways E and H.

2.1 Existing Airfield Configuration and Operational Characteristics

TMB is designated as a general aviation reliever for Miami International Airport (MIA) by the FAA in the National Plan of Integrated Airports System (NPIAS). While the airfield serves both large and small general aviation aircraft, it has a high concentration of flight training activities by both local and itinerant aircraft operators. In fact, there are three flight schools that are located on the south side of the airfield, which generate a significant amount of aircraft taxi operations along Taxiways E and H. In 2016, the Airport experienced 281,734 aircraft operations, with over 116,000 of these operations being local, making TMB one of the busiest general aviation/flight training airports in the United States.

As illustrated on **Exhibit 2-1**, the current airfield configuration at TMB is comprised of three runways: Runways 9R-27L, 9L-27R, and 13-31. Runways 9R-27L and 9L-27R serve as the airfield's primary runways, while Runway 13-31 is commonly utilized when the prevailing winds exceed the crosswind component. In 2012, Runway 9R-27L was extended to 6,000 feet to allow it to serve more demanding corporate jet aircraft, thereby making it the longest runway at the Airport. The runway extension also included an extension to Taxiway E with an additional entrance taxiway at the new runway end. Before the extension, most aircraft that would land on Runway 9R would exit the runway at Taxiway Connector E3 or E4. After the extension was completed, most light piston aircraft could now exit at Taxiway Connector E2, west of Runway 13-31.



SOURCE: 2016 Existing Airport Layout Plan, Ricondo, Inc., January 2016.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 2-1

NORTH 0 1,000 ft.

Existing Airfield Pavement Geometry

Drawing: \\ricondo.com\public\Miami\project\MDAD\On-call 2017\02 - 2017 Misc Planning Tasks\2-3 TMB RIM Study - Dual Taxiway Evaluation\CAD\HS-1 Tech Report Exhibits 20171110.dwgLayout: Ex. 2-1 Existing Conditions Plotted: Mar 30, 2018, 10:58AM

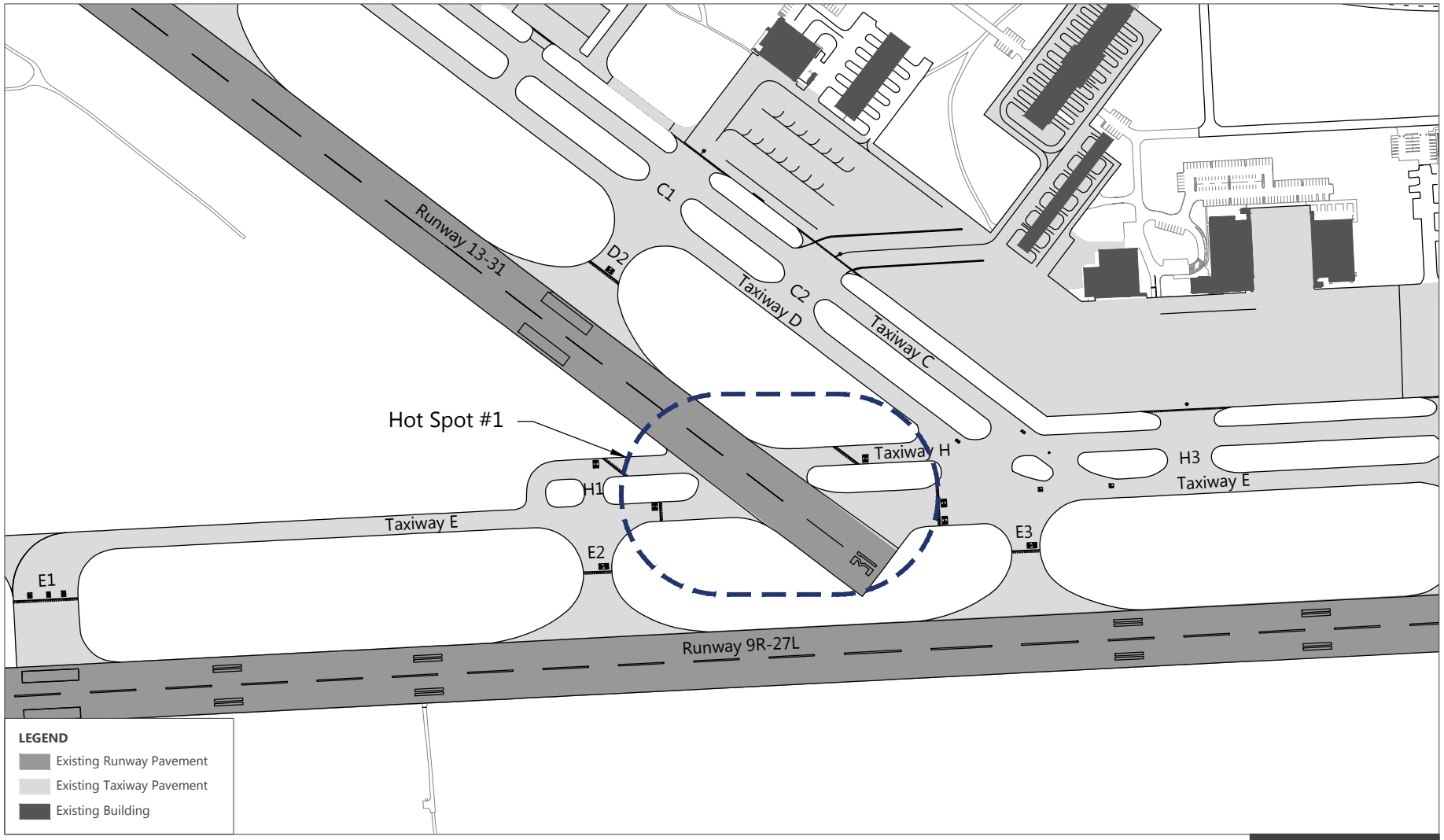
The TMB ALP also includes consideration for the potential future extension of Runway 9R-27L to an overall length of 7,350 feet, should there be a need for this additional runway length. This would include further extension of Runway 9R-27L on both the east and west ends. The western extension would increase the utilization of Taxiway E2 as an exit taxiway during East Flow operations.

Each runway at TMB is served with a parallel taxiway system, which provides access to tenant facilities that are all concentrated to the east of Runway 13-31. This airfield configuration requires many aircraft that utilize Runway 9R-27L to cross Runway 13-31 via Taxiways E or H. These two runway crossing points are designated as HS-1. In June 2015, HS-1 was identified as a Runway Incursion Mitigation (RIM) initiative by the FAA, and MDAD submitted the SMP's recommended Mitigation Option to the FAA as its recommendation.

Exhibit 2-2 illustrates the pavement geometry associated with HS-1. As shown, Taxiways E and H comprise a dual parallel taxiway system that serves Runway 9R-27L. Taxiway E serves as a full length, inboard parallel taxiway, while Taxiway H is a partial length, outboard parallel taxiway. Due to the proximity between Runways 9R-27L and 13-31, these two taxiways result in a non-perpendicular crossing of Runway 13-31. Taxiway E also currently serves as the entrance taxiway to Runway 31 for departing aircraft.

ATC typically operates the TMB airfield in one of two runway use configurations: East Flow and West Flow operations. **Exhibit 2-3** illustrates the typical aircraft taxi flows on Taxiways E and H while the airfield is operated in the East and West flow configuration. As shown, while the airfield operates in East Flow, landing aircraft may exit Runway 9R at Taxiway E2 and therefore, are required to cross Runway 13-31 as they taxi to the ramp area. Meanwhile, aircraft that depart from Runway 9R also cross Runway 13-31, thereby creating bi-directional flow. In an effort to enhance aircraft circulation patterns in this area, Taxiway H was extended to the west across Runway 13-31 in 1999. This allows ATC to segregate inbound and outbound aircraft taxi flows, which provides bypass capability for aircraft that would exit Runway 9R at Taxiway E2 and taxi eastbound to the aircraft parking ramp.

In addition to the proposed reconfiguration of Taxiways E and H, the ALP Update that was developed as part of the SMP also suggested several other airfield improvements that would influence the mitigation of HS-1. First, the ALP proposes shortening Runway 13-31 by 200 feet. The current end of Runway 13-31 is within the runway safety area of Runway 9R-27L. By shortening the runway by 200 feet, the operations of the runways are decoupled, and each runway can operate independently. There is also a long-term plan to extend Runway 9R-27L by an additional 800 feet west and 550 feet east or 1,350 feet in total. This would increase the overall length of Runway 9R-27L to 7,350 feet.

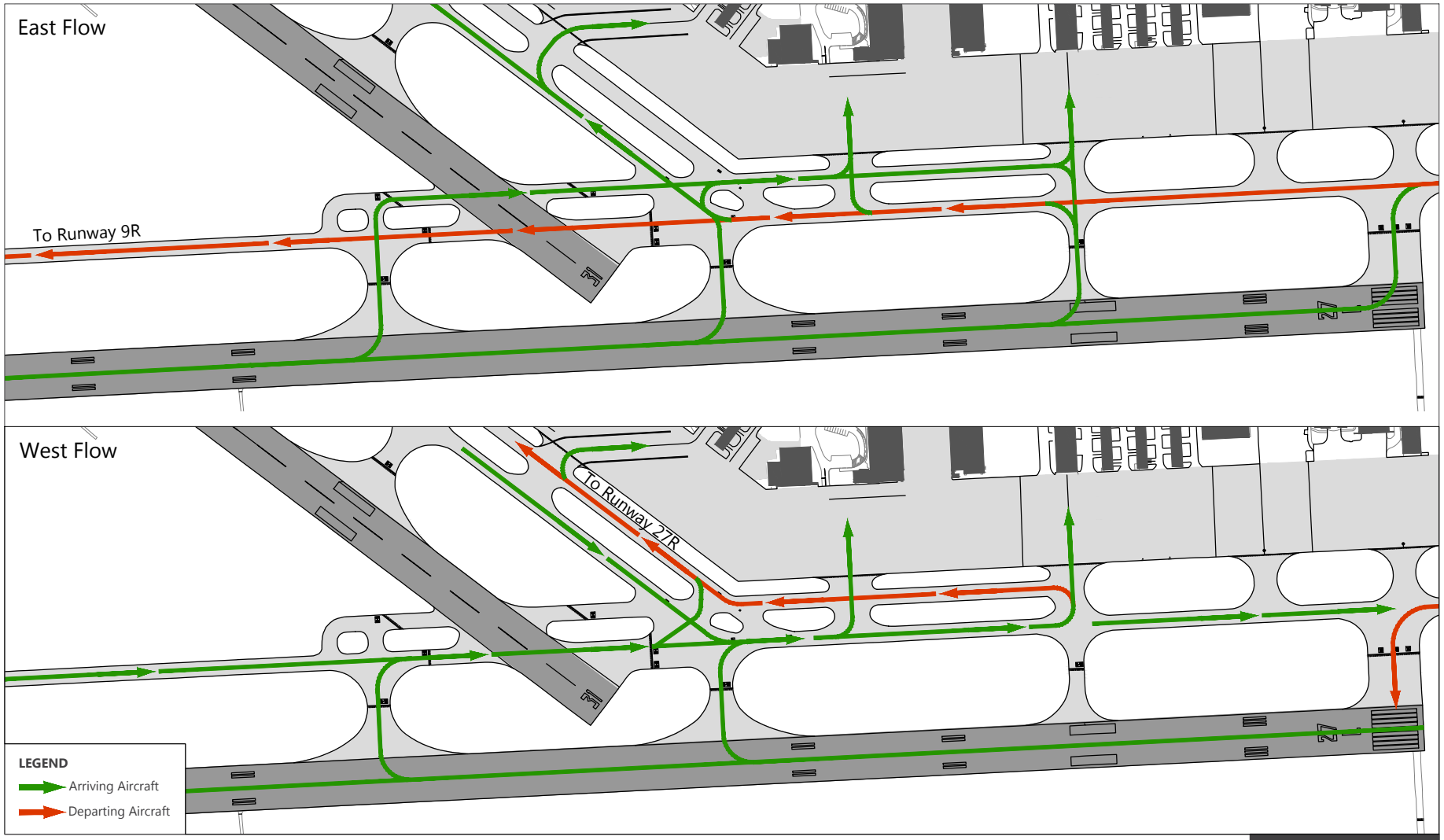


SOURCE: 2016 Existing Airport Layout Plan, Ricondo, Inc., January 2016.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 2-2

NORTH 0 400 ft.

Existing Airfield Pavement Geometry
Hot Spot #1



SOURCE: 2016 Existing Airport Layout Plan, Ricondo, Inc., January 2016.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 2-3

NORTH 0 500 ft.

Typical Aircraft Taxi Flows
Hot Spot #1

2.2 Hot Spot #1 Runway Incursion Summary

To understand and properly address runway incursions at HS-1, a review of incursion incident reports was completed. The incident reports reviewed cover the period between October 2007 and October 2017. These incident reports are included as Appendix A. Over the ten-year period, eleven incursions were reported at HS-1. The eleven incidents were divided into the following subtypes to clarify the cause of incursions:

- four involved a pilot missing the turn from Taxiway E to D
- two involved aircraft taxiing without communicating with ATC
- two involved Local control and ground control miscommunication
- two involved aircraft not stopping for hold short bars while taxiing along E
- one involved emergency vehicles responding to a disabled aircraft

The incident reports show that most incursions are caused by pilots failing to follow ATC instructions after correct readback. Failure to follow ATC instructions and failure to contact ATC accounted for eight total incursions over the 10-year period. In consultation with MDAD staff and the TMB's ATC manager, the following list of primary factors that likely caused the high level of runway incursion events at HS-1 was identified:

- **Current pavement geometry:** The FAA has mandated that runway crossings and entrances to runway ends should be at a 90-degree angle to improve safety and pilot awareness. The crossings of Runway 31 via Taxiways E and H are at an acute angle of 40-degrees. In comparison to perpendicular runway crossings, the non- perpendicular runway crossings associated with Taxiways E and H reduces the pilot's visibility down the runway as the aircraft crosses the runway. It also reduces the pilot's awareness that he/she is approaching a runway. As part of the RIM initiative, the FAA has also suggested that airports limit long straight taxi segments that include a runway crossing, such as those resulting from the Runway 13-31 crossings via Taxiways E and H. This further exasperates the potential for runway incursions at HS-1.
- **Flight training activities:** TMB has a relatively high level of student pilots, some of which English is not their primary language. This can lead to miscommunications and failure to follow standard operating procedures.
- **Infrequent use of Runway 13-31:** When Runway 13-31 is not operational, ATC will typically clear aircraft to taxi to Runway 9R for departure without holding short of Runway 13-31. Conversely, this also occurs when landing aircraft exit Runway 9R-27L via Taxiway E1 or E2 and are cleared to the ramp without holding short of the Runway. It is believed that this causes local pilots that utilize the Airport on a regular basis to get into the habit of crossing Runway 13-31 without holding short of it. Therefore, when Runway 13-31 is operational, pilots may forget to hold short of the Runway when instructed to do so by ATC.

3. Aircraft Activity and Demand Characteristics

The runway incursion mitigation options considered herein may influence runway operations, airfield capacity and aircraft taxi flows on the airfield. To assess these potential impacts, a general understanding of the aircraft operational and demand characteristics at the Airport is warranted. This includes a review of the current and forecasted operational demand levels, aircraft fleet mix composition, and runway demand allocations.

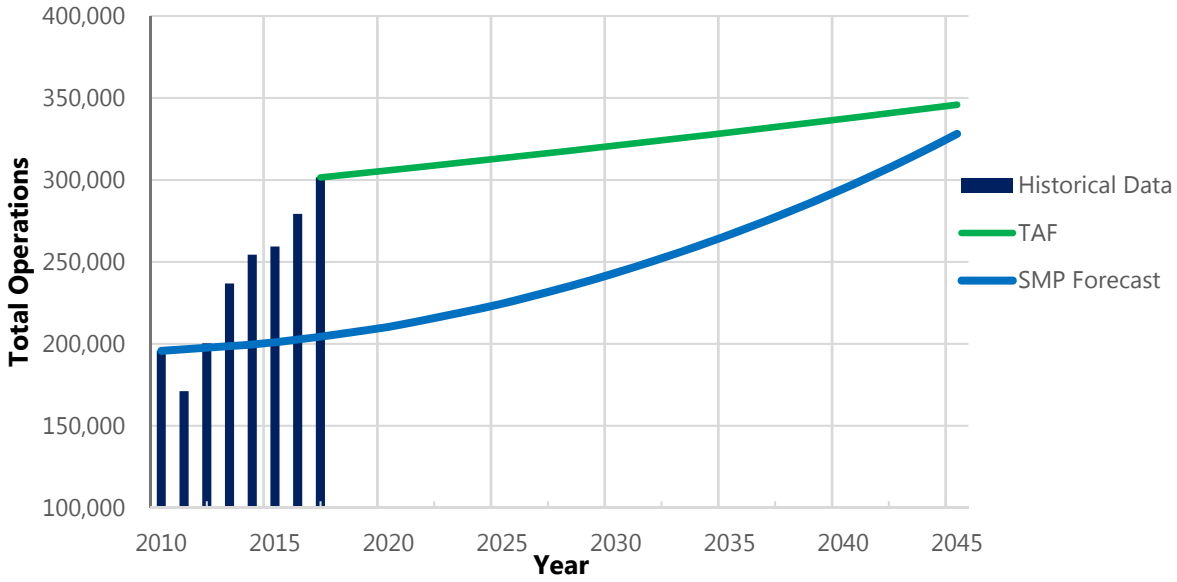
The following subsections presents the relevant aircraft activity and operational characteristics for TMB. It includes a comparison between the overall aircraft activity forecasts that were derived during the SMP and those contained in the 2017 FAA Terminal Area Forecast (TAF) for the Airport. Data from MDAD's Aircraft Noise and Monitoring System (ANOMS) was also evaluated to determine the aircraft fleet mix composition and distribution of aircraft operations activity among the various runway ends. The ANOMS data for the period of July 1, 2016 through June 30, 2017 serves the basis for defining these operational characteristics.

ANOMS typically does not record all aircraft operations that are performed at the Airport. Therefore, the actual demand levels are typically higher than the number of operations contained in the ANOMS database. However, ANOMS data is reflective of more than 50 percent of the total number of operations and therefore is considered a large enough sample to estimate the Airport's overall aircraft fleet mix and runway utilization percentages. The ANOMS data also does not track aircraft type for visual flight rule (VFR) flights. Therefore, it was assumed that the VFR traffic that occurred at the Airport consisted of light piston and single turbo prop aircraft.

3.1.1 AIRCRAFT ACTIVITY FORECASTS

Exhibit 3-1 presents a comparison between the FAA's 2017 TAF and the Activity Forecasts that were derived during the SMP. As shown, operational demand levels at TMB for the past five years have exceeded the demand levels that were projected during the SMP, which were approved by the FAA in July 2012. In fact, TMB is currently experiencing demand levels (projected to be 301,500 operations in 2017) similar to those that were projected for 2040 under the SMP activity forecasts.

Exhibit 3-1: TMB Operations Forecast Comparison with ASV (SMP vs. TAF)



SOURCES: Federal Aviation Administration (FAA), *2016 Terminal Area Forecast*, March 16, 2017; Ricondo, Inc. Miami-Dade Strategic Airport Master Plan Update, FAA Approved General Aviation Activity Forecasts, July 2012. FAA Advisory Circular 150/5060-5 (Change 2), Airport Capacity and Delay, September 23, 1983.

PREPARED BY: Ricondo, Inc., October 2017.

3.1.2 OPERATIONS TYPE AND FORECASTED OPERATIONS

Table 3-1 summarizes the distribution of aircraft operations contained in the ANOMS data set that operated on either a VFR or IFR flight plan. As shown, approximately 71 percent of all operations at the Airport were observed to be under VFR conditions. Single and dual piston aircraft operations make up a total of 86.3 percent of all operations at the Airport, with turbo prop and jet traffic making up a combined 13.7 percent.

Table 3-1: TMB Aircraft Operational Demand Levels (July 1, 2016 – June 30, 2017)

AIRCRAFT CLASSIFICATION	IFR OPERATIONS	VFR OPERATIONS	TOTAL	SHARE
Single Piston	32,491	97,233	129,724	74.2 %
Dual Piston	4,949	16,358	21,307	12.2 %
Single Turbo Prop	3,272	10,802	14,074	8.0 %
Dual Turbo Prop	1,615	-	1,615	0.9 %
Light Jet	5,593	-	5,593	3.2 %
Medium Jet	2,669	-	2,669	1.5 %
Total	**50,589**	**124,393**	**174,982**	**100.0 %**
Share	28.9 %	71.1 %	100.0 %	

SOURCE: Miami Dade Aviation Department, TMB *Airport Noise Monitoring System*, July 1, 2016 through June 30, 2017.
PREPARED BY: Ricondo, Inc., October 2017.

3.1.3 RUNWAY UTILIZATION

Table 3-2 summarizes the runway utilization estimates for the East and West Flow runway use configurations at TMB. As shown, Runway 9R-27L had the highest utilization, representing 50.7 percent of all operations that occurred during that period. From discussions with ATC, this runway is used heavily for touch and go operations with training pilots. This is further reinforced when the jet and turboprop traffic is separated from the piston and VFR traffic.

Table 3-3: TMB Runway Utilization Estimates (July 1, 2016 – June 30, 2017)

	OPERATIONS			
RUNWAY	EAST FLOW	WEST FLOW	COMBINED	SHARE
9R-27L	63,014	17,099	80,113	46.3%
9L-27R	74,788	12,879	87,667	50.7%
13-31	4,072	1,216	5,288	3.1%
Total	**141,874**	**31,194**	**173,068**	**100%**
Share	**82.0 %**	**18.0 %**	**100.0 %**	

SOURCE: Miami-Dade Aviation Department, TMB *Airport Noise Monitoring System*, July 1, 2016 through June 30, 2017.
PREPARED BY: Ricondo, Inc., October 2017.

4. Hot Spot #1 Mitigation Options

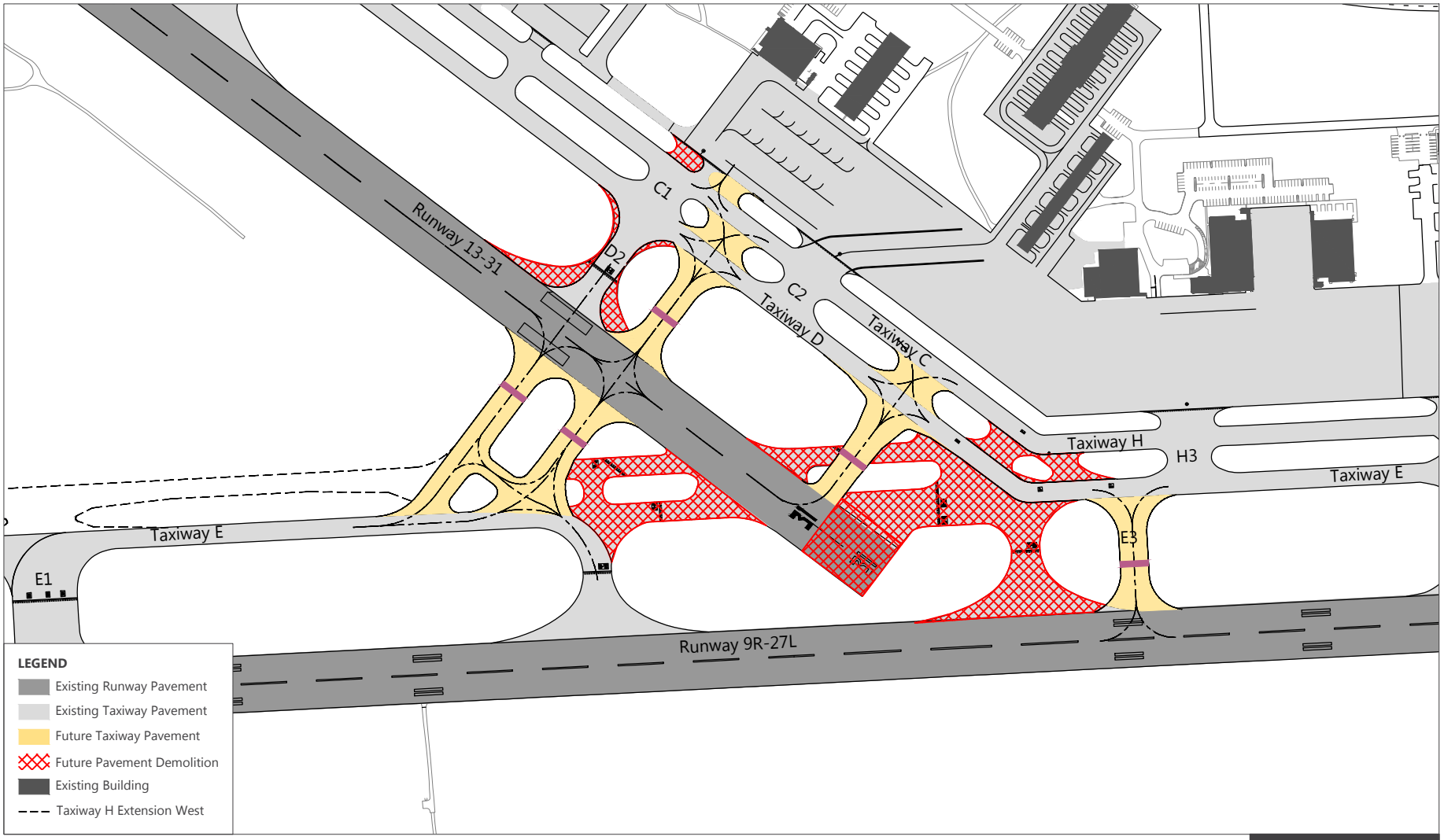
This section presents the identification and evaluation of the various mitigation options for HS-1. The options include the two original options that were previously evaluated during the SMP, as well as two additional options that were identified in consultation with various stakeholders from MDAD, the FAA's Orlando ADO, and TMB ATC tower. These mitigation option were evaluated collaboratively with these stakeholders during a workshop conducted on October 11, 2017, which concluded with a consensus on the final recommendations.

4.1 Option 1: Original SMP Proposed Mitigation

As illustrated in **Exhibit 4-1**, HS-1 Mitigation Option 1 coincides with the mitigation approach that was originally recommended as part of the SMP. Among other airfield modifications, this includes the partial decommissioning of Taxiways E and H to eliminate their non-perpendicular crossing of Runway 13-31. In order maintain the operational capability that is currently provided by this dual taxiway crossing of Runway 13-31, Option 1 recommends the establishment of a dual perpendicular taxiway crossing of Runway 13-31. The airfield modifications associated with Mitigation Option 1 would include the following:

- Taxiways E and H would be partially demolished between exit Taxiways E2 and E3,
- Runway 13-31 would be shortened by 200 feet, coupled with the construction of a new entrance taxiway that is perpendicular to the runway,
- Exit Taxiway E3 would be relocated to the east,
- Relocation of an apron entrance that is currently aligned with Taxiway C1/D2,
- Taxiway D2 would be extended across Runway 13 to Taxiway E and a new parallel taxiway will be built, thereby establishing two new perpendicular runway crossings.

Note: Mitigation Option 1 was recommended during the SMP due to its replacement of a non-perpendicular runway crossing with perpendicular crossing. It would also force aircraft to utilize parallel Taxiway D prior to accessing Runway 13-31, thereby increasing situation awareness and making pilots more aware of the runway crossing.



SOURCE: Ricondo, Inc., *Strategic Airport Master Plan Update 2015-2050*; Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-1

NORTH 0 400 ft.

Option #1
SMP Proposed Mitigation

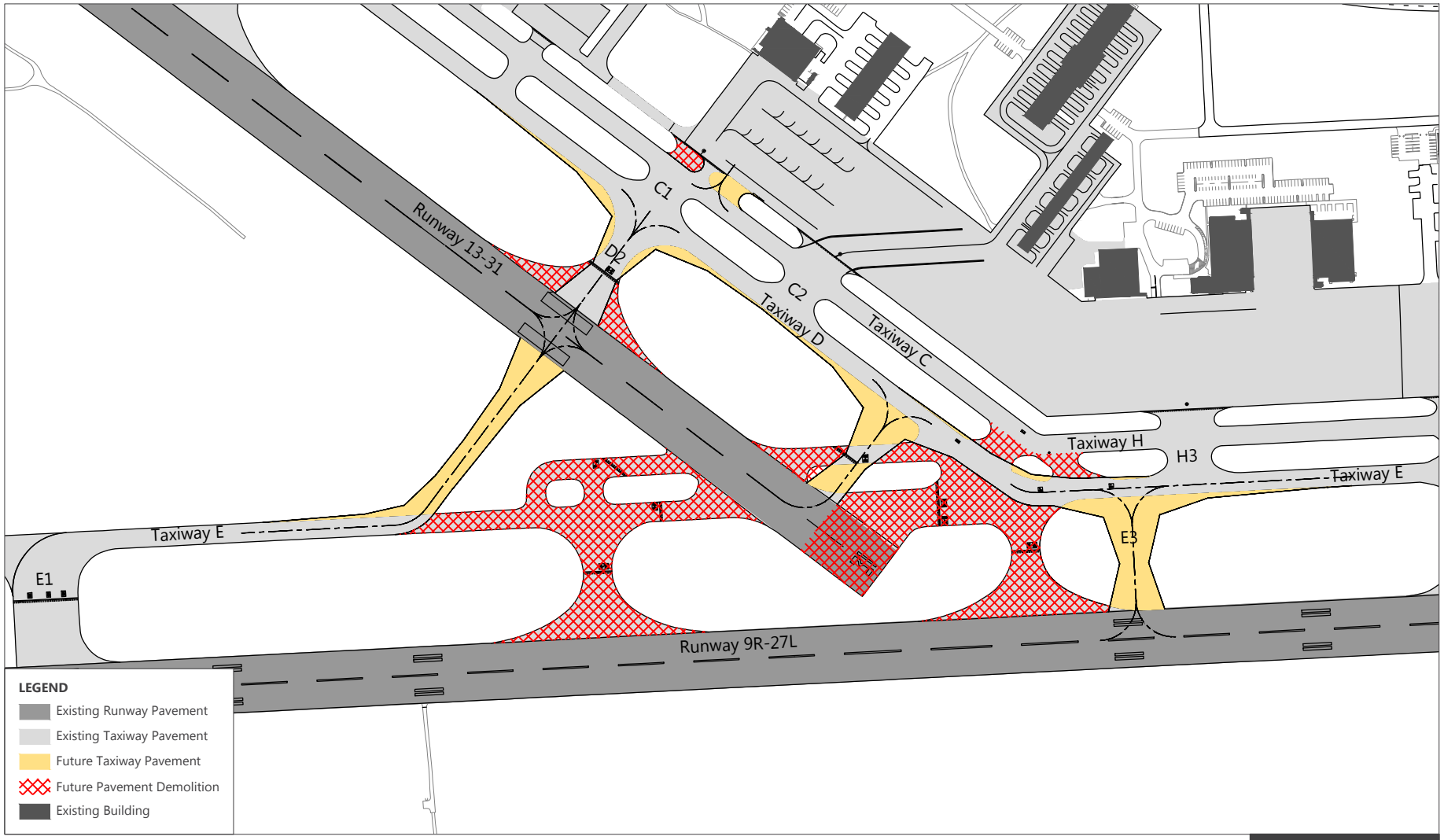
4.2 Option 2: Single Runway 13-31 Crossing & Taxiway E2 Closure

Similar to Option 1, HS-1 Mitigation Option 2 includes the partial decommissioning of Taxiways E and H to eliminate their non-perpendicular crossing of Runway 13-31. However, it would only create a single perpendicular runway crossing point instead of two. To avoid creating a bidirectional flow on the runway crossing, Taxiway E2 would be decommissioned, thereby requiring landing aircraft to exit Runway 9R east of Runway 13-31.

As illustrated on **Exhibit 4-2**, the airfield modifications associated with Mitigation Option 2 would include the following:

- Taxiways E and H would be partially demolished between exit Taxiways E2 and E3,
- Runway 13-31 would be shortened by 200 feet, coupled with the construction of a new entrance taxiway that is perpendicular to the runway,
- Exit Taxiway E2 would be decommissioned and Exit Taxiway E3 would be relocated to the east,
- Relocation of an apron entrance that is currently aligned with Taxiway C1/D2,
- Taxiway D2 would be extended across Runway 13 to Taxiway E, thereby establishing a single new perpendicular runway crossing.

Option 2 mitigates HS-1 in two ways. First, arriving aircraft on Runway 9R land and exit after E3, avoiding crossing Runway 13-31 entirely. Second, aircraft that are required to cross Runway 13-31 will do so at a perpendicular crossing. This option the number of aircraft that are required to cross Runway 13-31 at the expense of airfield capacity. When operating in east flow, there is an increase of 11 seconds in the average ROT which equates to an overall reduction in ASV of 4.6 percent. With the current growth at the Airport, a single crossing of Runway 13-31 is a concern as the airfield approaches capacity, estimated at 413,600 annual operations.



SOURCE: Ricondo, Inc., *2015 Draft Airport Layout Plan Update,* August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-2

NORTH 0 400 ft.

Option #2
Single Runway 13-31 Crossing & Closure of Taxiway E2

Drawing: \\ricondo.com\public\Miami\project\MDAD\On-call 2017\02 - 2017 Misc Planning Tasks\2-3 TMB RIM Study - Dual Taxiway Evaluation\CAD\HS-1 Tech Report Exhibits 20171110.dwgLayout: Ex. 4-2 Alternative 2 Plotted: Mar 30, 2018, 10:59AM

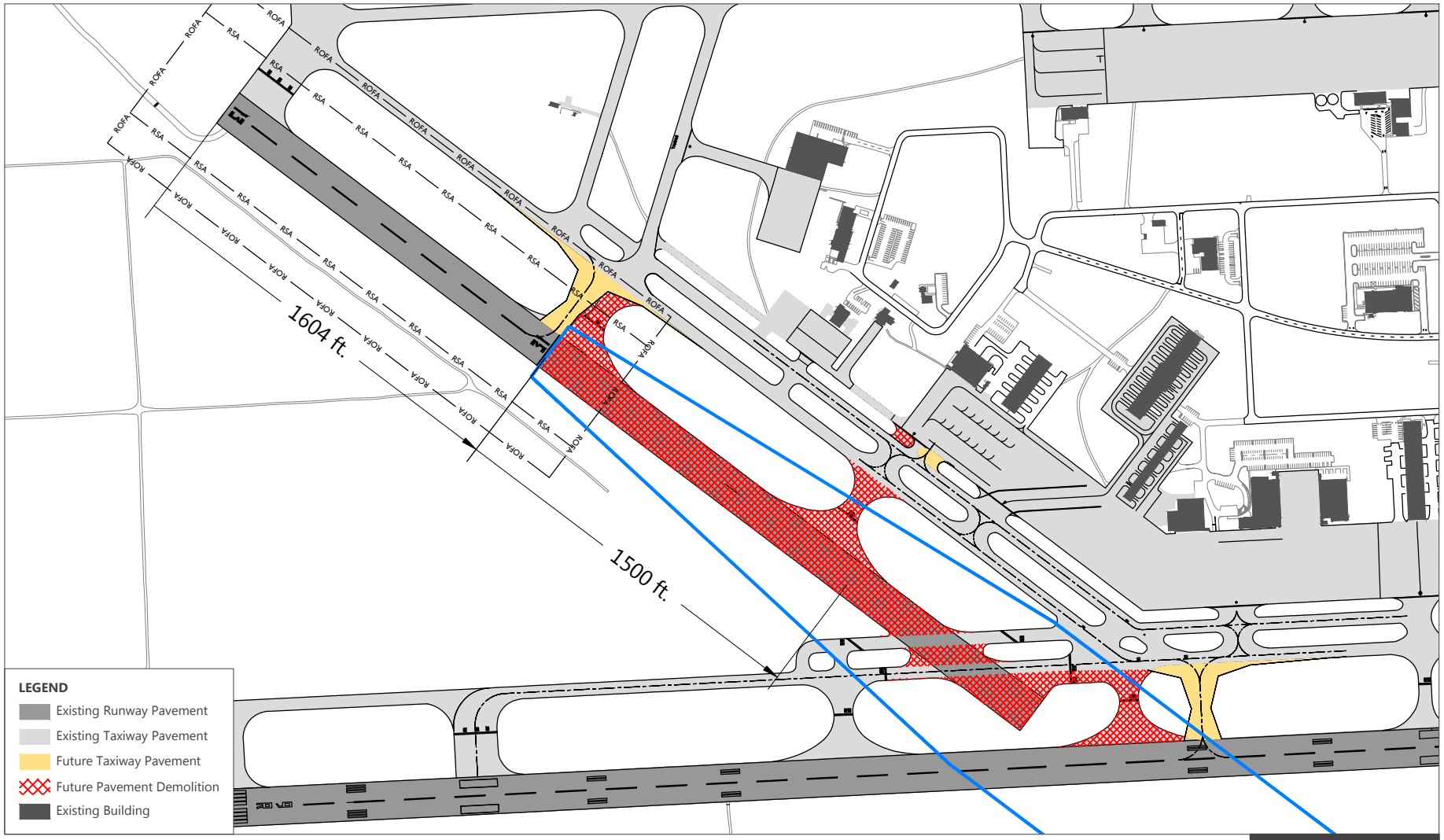
4.3 Option 3: Shorten Runway 13-31

Under HS-1 Mitigation Option 3, Runway 13-31 would be shortened to eliminate its intersection with Taxiway E and Taxiway H would be decommissioned west of Taxiway D. This would cause Taxiway E to function in a similar manner as an End Around Taxiway (EAT). This would require a minimum separation of 1,500 feet between Taxiway E and end of Runway 13-31. This would ultimately require Runway 13-31 to be shortened to an overall length of 1,604 feet. The installation of a visual screen to obscure the vision of aircraft operating on Runway 13 would also be required.

As illustrated on **Exhibit 4-3**, the airfield modifications associated with Mitigation Option 3 would include the following:

- Runway 13-31 would be shortened by 2,394 feet, coupled with the construction of a new entrance taxiway that is perpendicular to the runway,
- Exit Taxiway E3 would be relocated to the east,
- Relocation of an apron entrance that is currently aligned with Taxiway C1/D2,
- Installation of a visual screen along the north side of Taxiway E.

Note: Mitigation Option 3 was eliminated from consideration during the SMP due to the non-practical runway length.



SOURCE: Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-3

NORTH 0 600 ft.

Option 3
Shorten Runway 13-31 & Decommission Taxiway H

4.4 Option 4: Single Runway 13-31 Crossing & Taxiway H Extension

Mitigation Option 4 is similar to Option 2, as it would establish a single perpendicular runway crossing in lieu of the dual non-perpendicular crossings that result from the current configuration of Taxiways E and H. However, instead of closing Taxiway E2, Option 4 would include the extension of Taxiway H to the west end of Runway 9R. The west extension of Taxiway H would provide additional taxiway pavement to potentially hold arriving aircraft that must yield to departing aircraft that are outbound to Runway 9R. Extending Taxiway H would also enhance ATC's ability to sequence aircraft departures from Runway 9R during east flow operations, particularly when aircraft run-up operations occur.

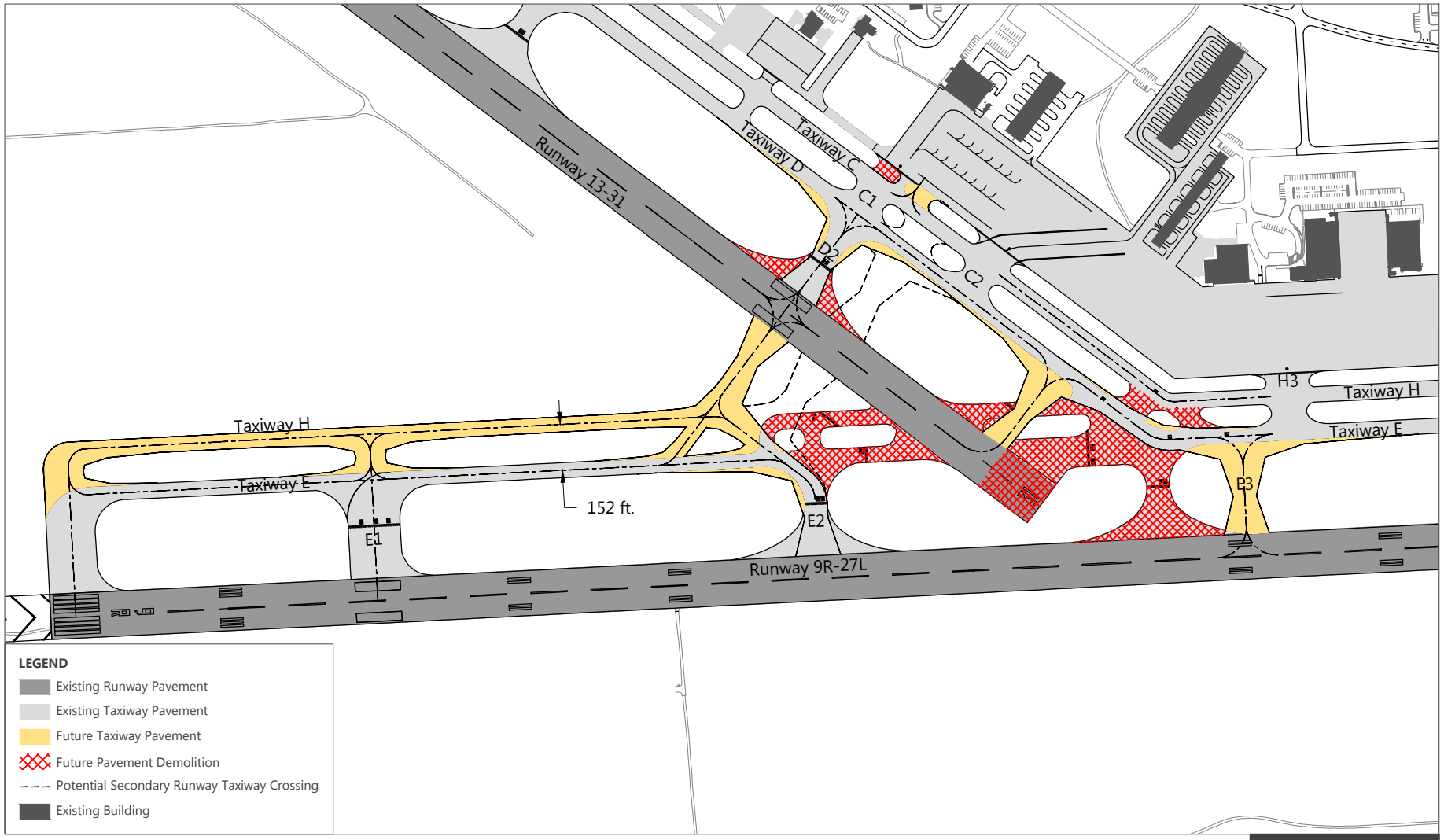
As illustrated on **Exhibit 4-4**, the airfield modifications associated with Mitigation Option 4 would include the following:

- Taxiways E and H would be partially demolished between exit Taxiways E2 and E3,
- Taxiway H would be extended west 2,100 feet to establish a dual parallel taxiway system to the approach end of Runway 9R,
- Runway 13-31 would be shortened by 200 feet, coupled with the construction of a new entrance taxiway that is perpendicular to the runway,
- Exit Taxiway E3 would be relocated to the east,
- Relocation of an apron entrance that is currently aligned with Taxiway C1/D2,
- Taxiway D2 would be extended across Runway 13 to Taxiway E, thereby establishing a single new perpendicular runway crossing.

While Option 4 would reduce the number of runway crossing points, it would not reduce the volume of aircraft that are required to cross Runway 13-31. The single runway crossing also creates a bidirectional flow, that increases ATC workload and cause delays that would increase as operational demand increases. Because of this, Option 4 includes the long-term ability to establish a second runway crossing in the future, should activity levels dictate.

4.5 Evaluation of HS-1 Mitigation Options and Conclusions

The selection of a preferred mitigation option for HS-1 considered various evaluation criteria that were identified as the key differentiators among the various mitigation options presented herein. **Table 4-1** lists the evaluation criteria and summarizes the applicability to each option. It also includes a brief synopsis of the conclusion that was reached in consultation with the various stakeholders that were involved in this effort. The following includes a more detailed summary of the applicability of the evaluation criteria to each option:



SOURCE: Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-4

NORTH 0 500 ft.

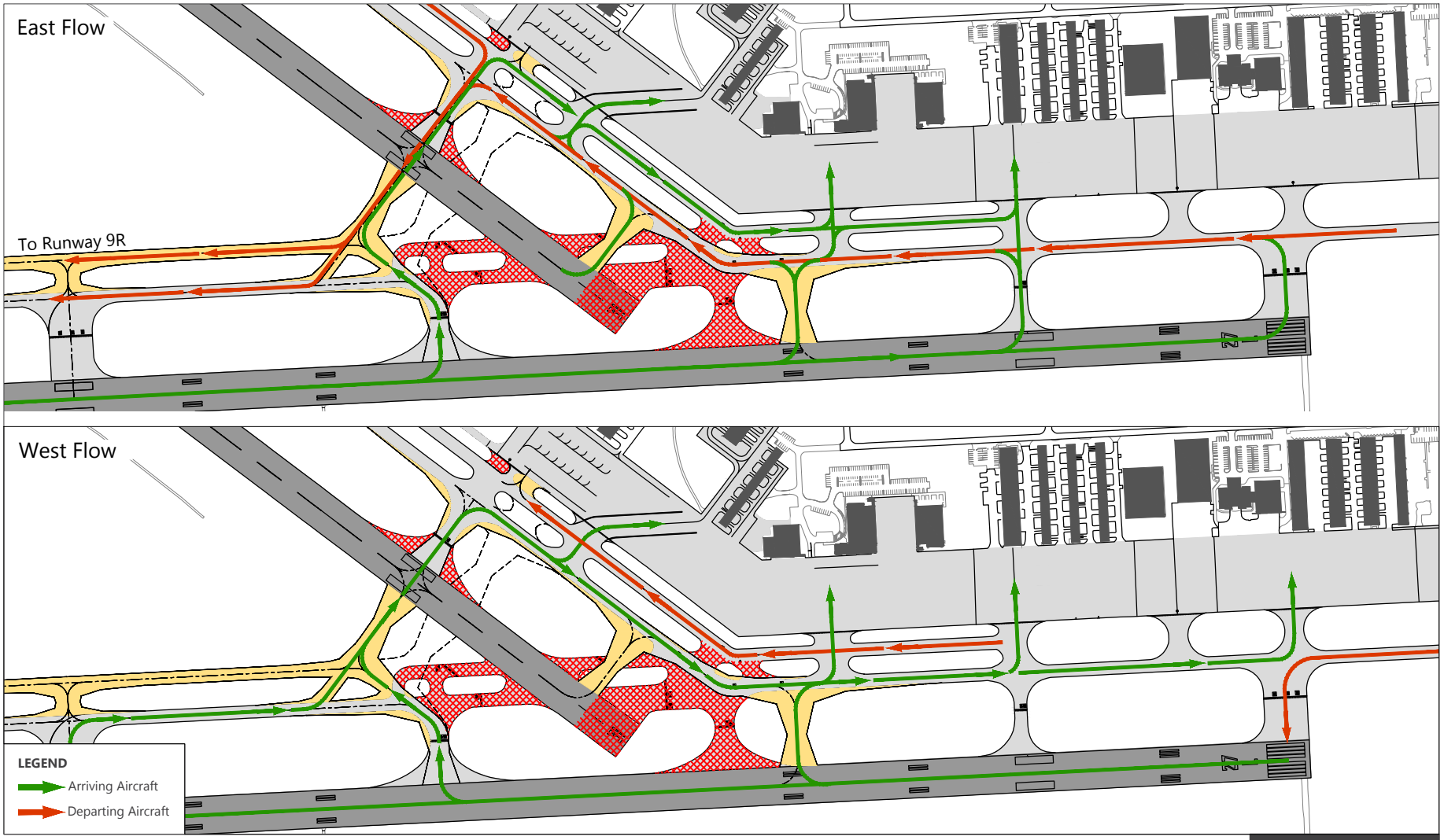
Option #4
Single Runway 13-31 Crossing & Taxiway H Extension

Table 4-1: Evaluation Matrix – Hot Spot #1 Mitigation Options

EVALUATION CRITERIA	OPTION 1: DUAL CROSSING	OPTION 2: TAXIWAY E2 CLOSURE	OPTION 3: SHORTEN RUNWAY 13-31	OPTION 4: EXTEND TAXIWAY H
1. Eliminates non-perpendicular Runway 13-31 taxiway crossings	**Yes**	**Yes**	**Yes**	**Yes**
2. Reduces the need for runway crossings	No	**Yes**	**Yes**	No
3. Resulting quantity of Runway 13-31 taxiway crossings	2	1	**0**	1
4. Increases operational complexity/controller workload	**No**	**No**	**No**	Yes
5. Diminishes overall airfield capacity	**No**	Yes	Yes	**No**
6. Increased potential for aircraft go around operations on Runway 9R-27L	No	**Yes**	**Yes**	No
7. Would result in aircraft arrival/departure flight paths over taxiing aircraft	**No**	**No**	Yes	**No**
Conclusion	**Preserve for Long-Term Development**	**Not Recommended**	**Not Recommended**	**Implement as Initial Mitigation Approach**
Justification	Replaces non-perpendicular runway crossing with perpendicular runway crossing. Replaces non-perpendicular runway entrance with perpendicular runway entrance. Dual runway crossing points eliminate bidirectional aircraft flows on runway crossing.	Decreases the need and number of runway crossings at the expense of controller workload and overall airfield capacity	Decreases the need and number runway crossings, but does not increase overall safety of the airfield with potential overflights of taxiing aircraft	Replaces non-perpendicular runway crossing with perpendicular runway crossing. Replaces non-perpendicular runway entrance with perpendicular runway entrance. Reduces the number of runway crossing points.

Sources: Ricondo, Inc. Evaluation and Consultation with FAA Orlando ADO, TMB ATC Tower, and MDAD Staff, October 2017.
Prepared by: Ricondo, Inc. November 2017.

- **Eliminates non-perpendicular Runway 13-31 taxiway crossings** – As prescribed in FAA Advisory Circular (AC) 150/5300-13A (Change 1), *Airport Design*, Paragraph 401, non-perpendicular runway crossings increase the potential for runway incursions. While eliminating runway crossings altogether is preferred, the replacement of non-perpendicular runway crossings with perpendicular crossings is also an effective means of mitigating runway incursions. This improves the pilot's visibility of the runway as the taxiing aircraft approaches the runway. It also provides the pilot with a better indication that he/she is approaching the runway. All four options eliminate both non-perpendicular crossings of Runway 13-31.
- **Reduces the need for runway crossings** – FAA AC 150/5300-13A, Paragraph 401, also states that the potential for human error can be mitigated by reducing the occurrence of runway crossings and a reduction in ATC workload. Of the four Mitigation Options, Options 2 and 3 would reduce the occurrence of runway crossings. Option 2 by forcing aircraft to exit the runway after Runway 13-31, and Option 3 by decoupling Runway 13-31 from Taxiways E and H.
- **Resulting quantity of runway crossing points** – While eliminating runway crossings altogether would reduce the need for runway crossings, AC 150/5300-13A does **not** indicate that consolidating multiple runway crossing points into a single crossing point is considered a runway incursion mitigation measure. However, the FAA Orlando ADO staff has requested that this be identified as a differentiator in the evaluation of mitigation options for HS-1. While Option 3 would eliminate both taxiway crossing points on Runway 13-31, Options 2 and 4 would reduce the number of crossing points to a single crossing. Option 1, however, would result in two crossing points, thereby maintaining the same number of runway crossing points that currently exists with Taxiways E and H. Options 1 and 4, however, would **not** reduce the number of aircraft that are required to cross Runway 13-31.
- **Increases ATC workload and operational complexity** – by reducing the number of runway crossing points to a single crossing point, a bidirectional taxi flow on the runway crossing would be created during East Flow operations. This is because approximately 83 percent of all aircraft that land on Runway 9R could exit at Taxiway E2. Since all tenant facilities at TMB are located east of Runway 13-31, these aircraft would need to cross Runway 13-31 in the eastbound direction. This would create a bidirectional flow when there are outbound aircraft destined to Runway 9R for departure. When this occurs, ATC would need to hold aircraft prior to entering the crossing taxiway. As shown on **Exhibit 4-5**, Option 4 would result in a bidirectional flow in the crossing taxiway, thereby increasing ATC workload and operational complexity. As illustrated on **Exhibits 4-6** through **4-8**. Options 1, 2 and 3 would not create a bidirectional taxiway flow during east flow operations. Should tenant facilities ever be constructed west of Runway 13-31, bidirectional taxiway flows would also occur during West Flow operations under Options 2 and 4, but not Options 1 and 3. However, there are no immediate plans to construct tenant facilities west of Runway 13-31 at this time.

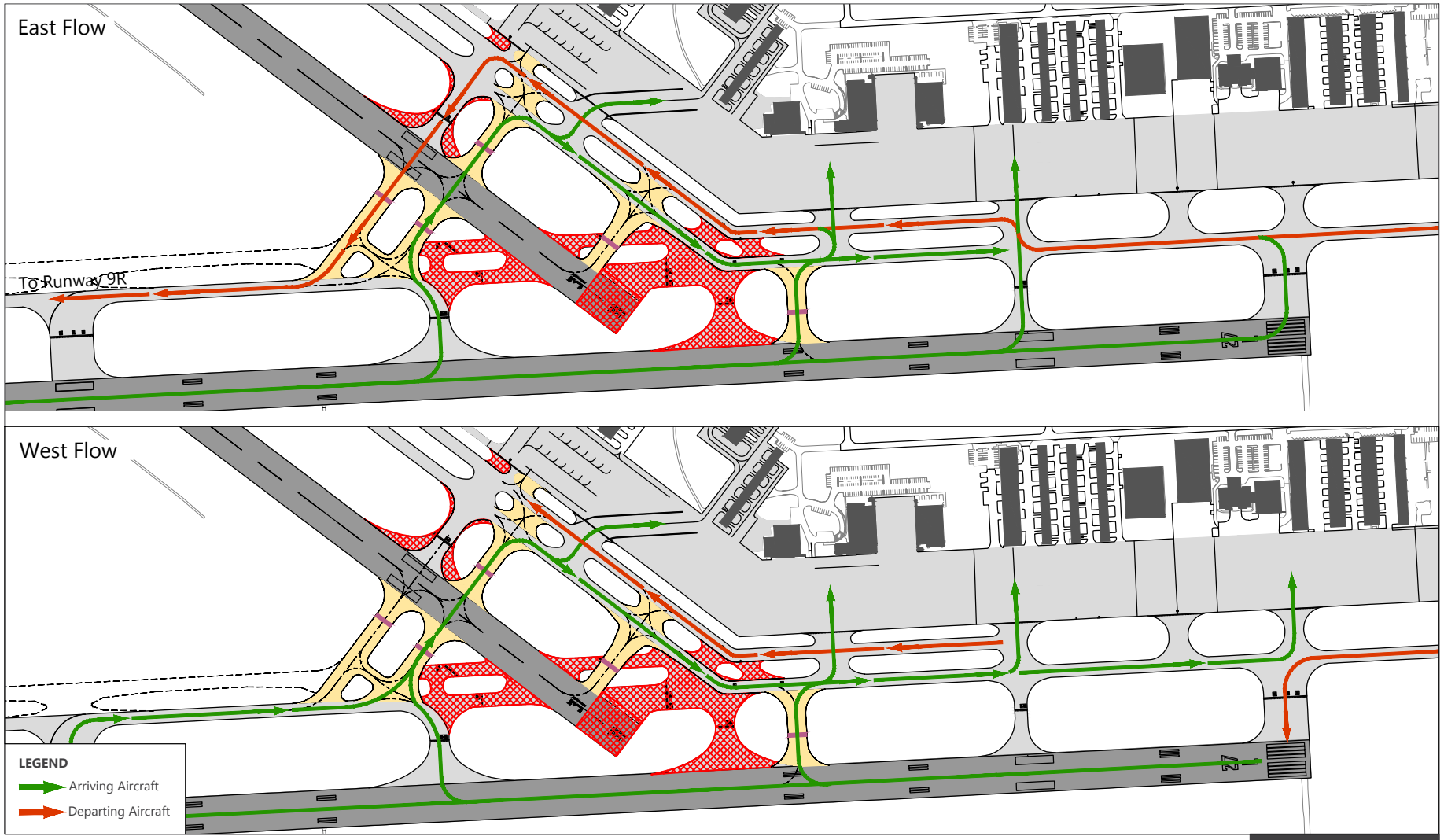


SOURCE: Ricondo, Inc., *Strategic Airport Master Plan Update 2015-2050*; Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-5

NORTH 0 500 ft.

Aircraft Taxi Flows
Option 4

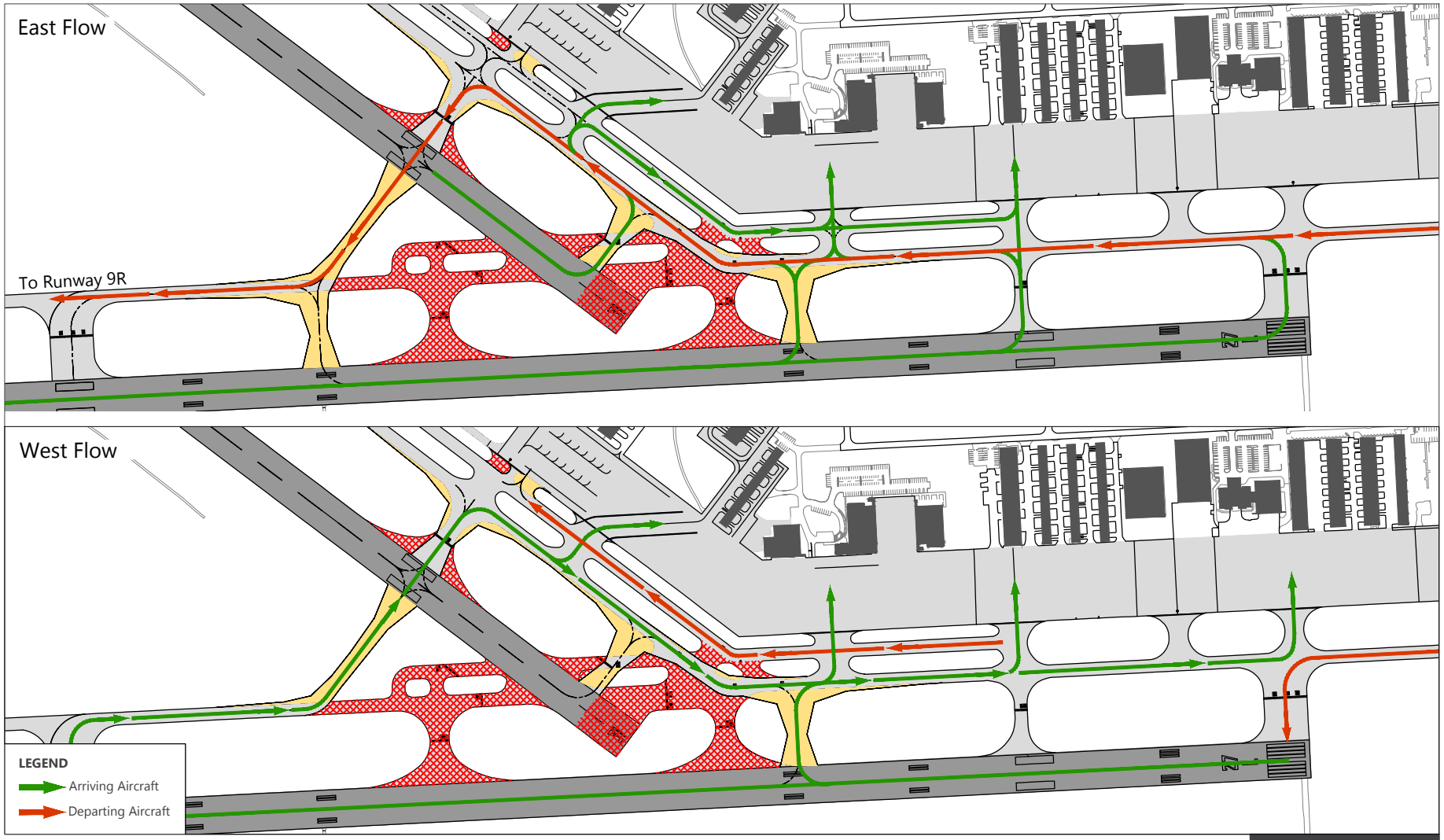


SOURCE: Ricondo, Inc., *Strategic Airport Master Plan Update 2015-2050*; Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-6

NORTH 0 500 ft.

Aircraft Taxi Flows
Option 1

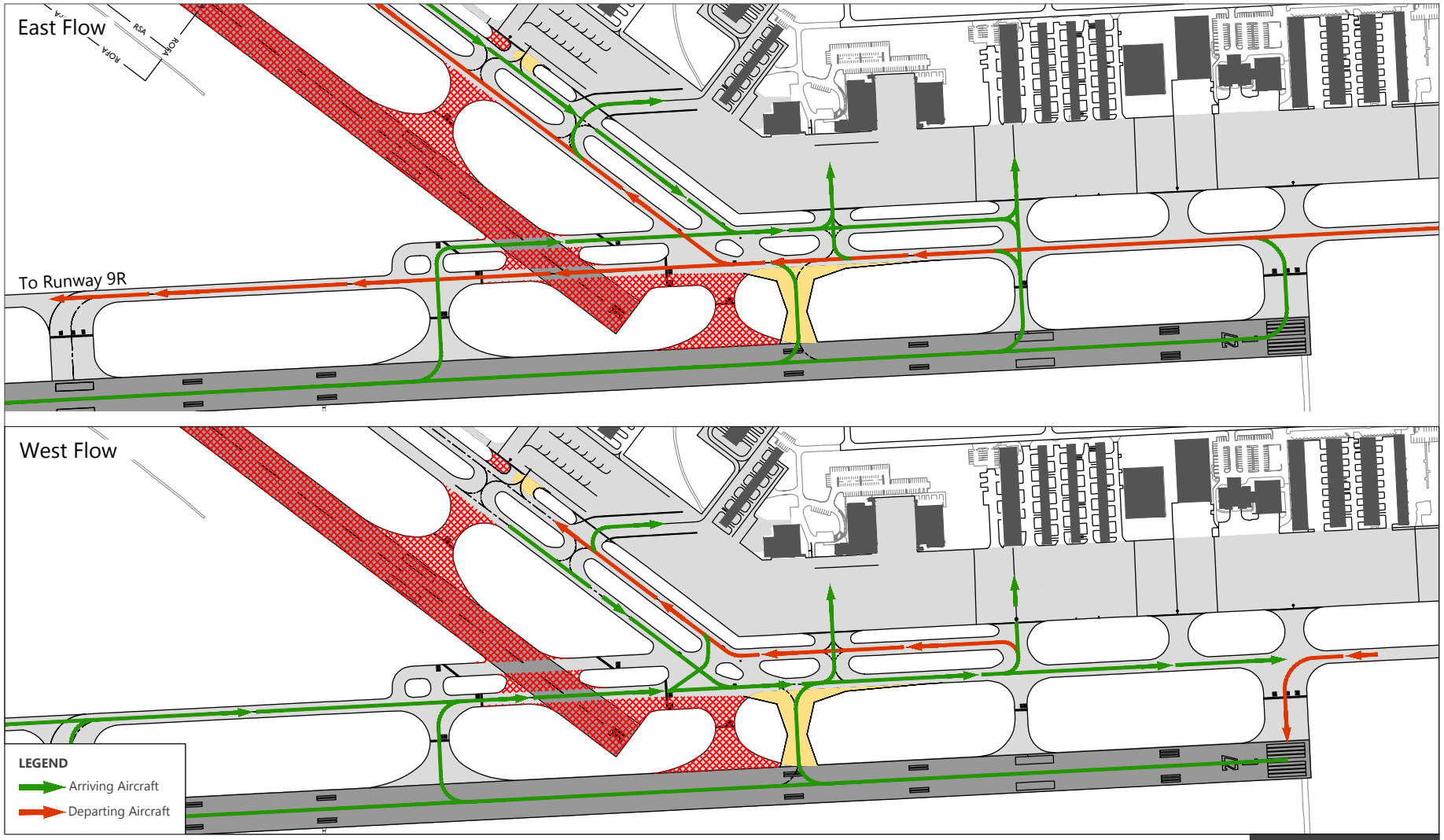


SOURCE: Ricondo, Inc., *Strategic Airport Master Plan Update 2015-2050*; Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-7

NORTH 0 500 ft.

Aircraft Taxi Flows
Option 2



SOURCE: Ricondo, Inc., *Strategic Airport Master Plan Update 2015-2050*; Ricondo, Inc., *2015 Draft Airport Layout Plan Update*, August 2015.
PREPARED BY: Ricondo, Inc., November 2017.

EXHIBIT 4-8

NORTH 0 500 ft.

Aircraft Taxi Flows
Option 3

- **Diminish overall airfield capacity**: With the closure of Taxiway E2, Option 2 would increase runway occupancy times (ROTs) on Runway 9R-27L. During East Flow operations, the average ROT would increase by nearly 11 seconds. This would reduce the hourly capacity of Runway 9R from 97 operations to 84 operations. Overall, the annual service volume (ASV) of the airfield would be decreased from approximately 416,300 operations to 397,000 operations. This would correspond to a net decrease in the ASV of approximately 4.6 percent. Option 3 also reduces overall capacity and operational flexibility with the shortening of Runway 13-31. The proposed runway length of 1,604 feet is not practical for the aircraft that use the runway and would effectively reduce the number of runways at the Airport. Since the other two options would maintain the current configuration of Taxiway E2, the capacity impacts would be negligible, primarily due to the proposed relocation of Taxiway E3 to the west. **Appendix B** includes a PowerPoint presentation that documents the analyses of ROTs and the resulting airfield capacity impacts that would result from each of the four mitigation options considered herein.
- **Increased potential for aircraft go-around operations** – In addition to diminishing the overall airfield capacity, the increased ROTs that would result from closing Taxiway E2 would also increase the potential for aircraft go-around operations. These operations could be triggered by arriving aircraft not being able to land on Runway 9R-27L should the previous landing aircraft not exit the runway in an expeditious manner. The risk for aircraft go-around operations would be greatest for Option 2.
- **Would result in aircraft arrival/departure flight paths over taxiing aircraft** – the decoupling of Runway 13-31 from Taxiways H and/or E could result in aircraft overflying aircraft that are operating on either of these two Taxiways. During east flow, it may be possible that aircraft departing from Runway 13 would overfly an aircraft that is operating on Taxiway H or E. Conversely, landing aircraft that are approaching Runway 31 could also overfly aircraft operating on these taxiways. In essence, Taxiways H and/or E would function as an end around taxiway, thereby triggering the need to protect for approach and departure surfaces, as well as installing a visual screen to prevent aircraft operations on Runway 13 from being disrupted. Since TMB accommodates a significant amount of flight training activity, having aircraft depart or arrive over aircraft on a taxiway is a valid safety concern. Only Option 3 would result in aircraft arrival/departure flight paths occurring over taxiing aircraft.

As shown, it was concluded that Option 4 would be implemented as an initial mitigation approach. However, Option 1 will continue to be depicted on the TMB ALP to preserve the ability to establish a secondary Runway 13-31 crossing point, should future demand levels warrant it.