CHAPTER 9
AIRPORT LAYOUT PLANS

9.1 INTRODUCTION

The improvement concepts recommended in a Master Plan Update are generally illustrated in a separate set of drawings, called the Airport Layout Plan (ALP) set, which accompanies the Master Plan report. The current airport improvement recommendations presented in **Chapter 4** (Facility Requirements) and **Chapter 5** (Planning Alternatives) of this report are summarized pictorially in a current set of ALP drawings. In addition to depicting the proposed airport improvements, the ALP set also illustrates existing runways, taxiways, hangars, the airport property boundary, and other existing facilities discussed in **Chapter 2** (Inventory of Existing Conditions).

The purpose of the ALP set is to provide airport management with a scaled, graphic presentation of the locations for existing facilities and future improvements. The ultimate configuration of airport facilities should demonstrate a feasible improvement plan that provides safe, compatible, and efficient airport operations. Dimensional information provided in the drawings demonstrates compliance with minimum airport design standards established by federal, state, and local criteria.

To provide uniformity in the development of the ALP set and to simplify agency review of the documents, the Federal Aviation Administration (FAA) requests that planners follow a general format for the presentation of specified information. This recommended format is outlined in FAA AC 150/5070-6B (Airport Master Plans).

9.2 AIRPORT LAYOUT PLAN SET

To clearly present the recommended airport improvement information, the ALP set includes a number of individual drawings. Several of these drawings are necessary for the set to be eligible to receive conditional approval from the FAA, whereas some additional drawings may be included in the ALP set to provide detailed illustrations of areas with complex improvement recommendations. The 16 individual drawings included in the current ALP set for Cecil Field include the following:

- Cover Sheet
- Data Sheet
- Airport Layout Plan
- Facility Plan – Northwest
- Facility Plan – Northeast
- Facility Plan – Southeast
- Airport Airspace Drawing (Sheet 1 of 2)
- Airport Airspace Drawing (Sheet 2 of 2)
- R/W 18L-36R Inner Approach Drawing
- R/W 18R Inner Approach Drawing
- R/W 36L Inner Approach Drawing
- R/W 9R-27L Inner Approach Drawing
- R/W 9L Inner Approach Drawing
- R/W 27R Inner Approach Drawing
- Ultimate R/W 17-35 Inner Approach Drawing
- On-Airport Land Use Plan
- Existing & Future Land Use Plan
- Property Map

These drawings are developed and produced as a set on 42-inch by 30-inch sheets using AutoCAD 2007. Reduced reproductions of the plan drawings are included in **Appendix 48** for illustration purposes. The drawings included in the appendix are for review and decision making purposes. Full-size sets of the drawings are submitted to the FAA and FDOT for approval. An approved ALP is perhaps the single most important planning tool for an airport.

9.3 AIRPORT LAYOUT PLAN CHECKLIST AND SUMMARY

The Airport Layout Plan Drawing Set Checklist – Orlando Airport District Office (Revised 12/01) contains a list of issues to be addressed in the ALP. This section addresses these issues as they pertain to this updated plan set.

- **Significant Development Changes Since Previous ALP Approval –** Several changes/additions have been made to this ALP as compared to the previous ALP (1998). Major changes include:

    - o Incorporation of additional aviation related and non-aviation related development areas.
    - o Revised property acquisition limits in northwest quadrant
    - o Revised INM contours reflecting current forecast projections
    - o Identification of AIP-eligibility limits for existing runway system
    - o Planned reductions in runway lengths for secondary runways; (6) incorporation of proposed spaceport facilities.

- **List of existing and proposed waivers to Federal Aviation Administration (FAA) airport design standards –** No waivers to FAA standards are proposed at this time.

- **Discuss any structures located on the plan which in your opinion may:**

    1. **Adversely affect the flight or movement of aircraft –** It is not anticipated that any of the proposed structures will adversely affect the flight or movement of aircraft.
    2. **Cause electro-magnetic interference at air navigation aids –** It is not anticipated that any of the proposed structures will cause electromagnetic interference with air navigational aids. It is recommended, however, that the FAA conduct a review of any proposed facilities for potential interference prior to construction of any new facilities.
    3. **Derogate line-of-sight feasibility from a control tower –** Building 177 is currently located within the Runway Visibility Zone (RVZ) as defined in Chapter 5 of FAA Advisory Circular 150/5300-13. This building currently violates line-of-site requirements but is proposed to be relocated and demolished.

- **List any development which could be a potential noise problem –** As proposed in the Airport Layout Plan (ALP), Runway 18R-36L and 9L-27R are proposed to be shortened. The reduction in length would result in Runway End 18R and Runway End 27R relocated away from the current property boundary, which would raise the departure and approach surfaces above the surrounding communities. This development may decrease current noise levels to the north and east of the airport. Proposed Runway 17-35, located parallel and east of the Runway 18-36 system, may introduce potential noise concerns. Detailed noise analyses are recommended prior to initiating development related to proposed Runway 17-35.

  Forecasts indicate that airport operations are anticipated to experience continued growth. However, many of the future operations expected at the airport will be conducted in improved and quieter aircraft, which would help to mitigate the potential for future noise impacts.

  Many of the properties surrounding the airport include residential development. Changes to the City of Jacksonville zoning and land development regulations are recommended in this ALP Update project.

- **Does the ALP show anticipated Navaids?** – Anticipated Navaids include the addition of an ILS/LPV precision approach for Runway 9R and a GPS/LPV precision approach for Runway 27L. It is proposed that Runway 18L remain a non-precision approach but will be improved with an LPV approach. Similarly, Runway 36R will remain a precision approach but will be improved with a GPS-based approach. In addition, the plan recommends a precision GPS instrument approach on each end of Runway 17-35. It is anticipated that these approaches may be based on future GPS procedures in lieu of traditional ILS-based approaches.

- **Provide any applicable comments on the proximity of urban congestion or any**

potential problem related to safety or persons and property on the ground - Avigation easements are in place in the vicinity of the Airport and reach as far north as Interstate 10. These easements will ensure compatibility between precision instrument approach operations by providing control of structure heights, etc. in these regions. Residential development is occurring south of the proposed location of Runway 17-35. Changes to the City of Jacksonville zoning and land development regulations are recommended to ensure compatibility with the strategies of this ALP Update project.

- **Discuss staging of construction as is applicable to the Master Plan** - An overview of the proposed construction schedule for airport development is provided in the tables following pp. 7-2 of the Master Plan Update narrative report. **Exhibit 7-1** (p. 7-19) illustrates the projected short-term (0-5 years) improvements. A discussion of short term improvements for the Northwest development area is provided on pp. 5-30. Mid- to long-term projects are discussed on pp. 5-44 through 5-48.

  Improvements to future hangar facilities, vehicular parking facilities, and future property acquisition projects have been scheduled in phases to correspond with the projected demand for these facilities. The proposed development in each phase has been estimated to accommodate future growth, and to avoid excess costs associated with the over-development of the facilities.

  Typically, development of the proposed airport improvements should occur as needed to accommodate demand and to match funding availability. The construction of any of the individual proposed improvements may be staged based on the availability of funding.

- **Discuss any changes to non-aviation use property -** This Master Plan Update and ALP proposes the acquisition of approximately 140 acres bordering the northwest property line of the airport. These parcels are to be acquired to facilitate the development of MRO/Cargo/Maintenance hangar development in the Northwest Development Area. This hangar development will cause this property to become "aviation-use."

  This Master Plan Update and ALP also proposes that approximately 335 acres located at the northeast corner of the Airport, be reserved for non-aviation commercial development to address airport self-sufficiency goals.

- **Discuss if the circulation of the proposal would in any way compromise the sponsor's position in land acquisition -** The circulation of the Master Plan Update and ALP should not compromise the sponsor's position in land acquisition. The sponsor's proposals have been coordinated with appropriate City, County, State, and Federal governmental agencies.

9.4 SHEET 1: COVER SHEET

The first sheet in the ALP set states the official airport name (Cecil Field), the official airport operator (Jacksonville Aviation Authority), and the plan preparers. This cover sheet depicts the general location of Cecil Field in relation to the state of Florida and within the Duval County/Jacksonville Area. A full index of the 18 drawings in this ALP set is also provided on Sheet 1. Additionally, a "Revisions" box is included so that future changes can be properly documented.

9.5 SHEET 2: DATA SHEET

This sheet provides the "Runway Data Table", "Taxiway/Taxilane Data Table", "Airport Data Table" and the appropriate windroses based on the airport layout. The data table provides the appropriate FAA design standards for each existing and proposed runway.

The Runway Data Table summarizes the existing and ultimate designations for the primary FAA design criteria. This includes items such as pavement dimensions and operational safety criteria (RSA, ROFZ, ROFA, RPZ, and separation distances). The data table details other airfield characteristics such as lighting and marking; NAVAIDS; runway threshold data (coordinates and elevation); and taxiway parameters. Additionally, data is provided regarding the planned instrument approaches to each runway end, including the type of approach, the approach minima, and the approach slope.

The "Taxiway/Taxilane Data Table" provides FAA design criteria for Aircraft Design Groups (ADG) II, III and IV. The "Airport data Table" describes key characteristics of the airport. This table notes the applicable Airport Reference Code (ARC), the NPIAS role and classification, and the overall acreage of the property.

Additionally, the Data Sheet includes a legend presenting the various symbols used for both the existing and ultimate developments at Cecil Field. A statement regarding the requirement for FAA notification prior to construction is also included on this drawing.

This Data Sheet also presents three windroses as well as tables showing the percent wind coverage for the area. The three conditions are based on the following criteria:

- *All Weather*: This includes all recorded observations no matter the visibility or cloud ceiling height.
- *Visual Flight Rule (VFR):* This includes observations when the visibility was greater than or equal to three miles and/or the cloud ceiling was greater than or equal to 1,000 feet.
- *Instrument Flight Rule (IFR):* This condition includes the recorded observations when the visibility was less than three miles and/or the cloud ceiling ranged from 200 to 1,000 feet.

This analysis was based on wind observation data from the National Climatic Data Center for the period of July 1989 to June 1999.

9.6 SHEET 3: AIRPORT LAYOUT PLAN

The Airport Layout Plan (ALP) drawing graphically presents at a scale of 1 inch = 800 feet the existing condition of Cecil Field. Additionally, this drawing shows other ultimate developments planned through 2026. These long-term developments serve to preserve areas for their designated uses. Thus, this ALP drawing will function as effective guidance to airport management in future development decisions. This ALP drawing will also be utilized by the FAA and FDOT in reviewing future grant funding decisions.

Most of the information presented on the ALP drawing has been analyzed in preceding chapters, justifying the need for each recommended development. The primary airfield developments as depicted on the ALP include runways, taxiways, navigational aids, and FAA safety-related clearance areas (such as the RPZ and RSA). The ALP depicts the primary vehicular access route (Aviation Avenue) from 103rd Street as well as showing the airport interior roads. Additionally, the ALP drawing identifies the existing runway end elevations.

9.7 SHEETS 4-6: FACILITY PLAN – NORTHWEST, NORTHEAST AND SOUTHEAST

These three facility plan sheets provide greater detail in the Northwest, Northeast and Southeast development areas. Each of these sheets provide a "Facility Information" table which presents building numbers, building descriptions, approximate sizes and years constructed.

9.8 SHEETS 7-8: AIRPORT AIRSPACE DRAWINGS

Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, sets forth criteria defining the airport's navigable airspace to ensure that aircraft approaches to each runway are free from hazards that could affect the safe and efficient operation at airports in the U.S. The Part 77 criteria define imaginary surfaces in the airspace surrounding an airport that no manmade or natural object should penetrate. The dimensions of these imaginary surfaces vary based upon the most critical existing or planned aircraft projected to use a runway and the most critical existing or planned aircraft approach to each runway end.

This airspace drawing, having a graphic scale of 1 inch = 2,000 feet, is presented on two sheets in the ALP set. Sheet 7 shows the airport with the imaginary conical surface. Sheet 8 presents the approach surfaces where they extend beyond sheet 7, in particular Runway Ends 35, 36R, 17, 18L, 9R and 27L. A U.S.G.S. digital quadrangle map from 2006 serves as the background for these drawings. The following list describes the Part 77 surfaces applicable for Cecil Field.

- Primary Surface: This defined area includes a rectangular area symmetrically located about each runway centerline and extended a distance of 200 feet beyond each runway threshold. The primary surface width is based on the type of approach to a particular runway. The elevation of the primary surface is the same as the runway centerline elevation. The

primary surface width is 500 feet for the visual approach runways and 1000 feet for the precision approach runways.

- Approach Surfaces: These surfaces begin at the end of the Primary Surface (200 feet beyond the runway threshold) and slope upward at a ratio determined by the runway category and the approach type available to the runway end. The width and elevation of the inner end of the approach surface and the outer end of the primary surface are the same. The approach surface length and width at its outmost edge are governed by the runway category and approach procedure available.
- Horizontal Surface: A level, oval-shaped area situated 150 feet above the airport elevation, with an elevation of 235.1 feet above AMSL at Cecil Field. The horizontal surface is created by extending an arc with a 10,000-foot radius from the center of the primary surface for each runway having an instrument approach. Tangents between the arcs are then connected forming the full horizontal surface.
- Conical Surfaces: Extends outward for a distance of 4,000 feet beginning at the outer edge of the horizontal surface and sloping upward at a ration of 20:1. For the new airport site, the conical surface begins at an elevation of 235.1 feet AMSL and ends at 435.1 feet AMSL.
- Transitional Surfaces: These surfaces begin at the edges of the primary and approach surfaces and slope outward at a ratio of 7:1.

To ensure that future developments do not penetrate these surfaces, this airspace drawing should become a key tool in future land use and development decisions for property located near Cecil Field.

The Part 77 surfaces, presented on Sheets 7 and 8, are based off the current runway lengths. Traditionally, the Part 77 surfaces are based off the ultimate runway configuration however, to reserve the airspace required for current airport operations, the existing runway configuration is utilized. This situation provides the most demanding surfaces for the surrounding areas. Considering the most demanding surfaces during planning efforts will ensure airspace compliance in the future. Basing the Part 77 surfaces on the ultimate runway configuration would raise the approach surface off the Runway 18R and 27R Ends, which may allow for penetrations into the current airspace. Once the runway ends have been relocated, the Part 77 surfaces can be revised to reflect the current configuration.

9.9 SHEETS 9-15: INNER APPROACH DRAWINGS

In contrast to the Airport Airspace Plan, which presents the Part 77 surfaces, each Inner Approach Drawing shows a close-in view near each runway end. Each sheet shows a plan and profile view of the inner approach areas and identifies the estimated elevations of roads, fences, buildings, etc. under or near the approach surface. These drawings depict both the initial and ultimate inner approach surfaces. The Inner Approach Drawings also provide a detailed view of the Runway Protection Zone at each runway end, which should remain clear of all incompatible objects. Each sheet also includes a table identifying any obstructions.

9.10 SHEET 16: ON-AIRPORT LAND USE PLAN

The On Airport Land Use Plan sheet depicts existing and ultimate airport developments. It identifies areas reserved ultimately for land acquisition, the Natural and Recreational Corridor, RPZs, and non-aviation related development.

9.11 SHEET 17: EXISTING AND FUTURE LAND USE PLAN

The Existing and Future Land Use Plan sheet presents land uses surrounding Cecil Field, which include residential, commercial, agriculture, etc. The Cecil Field property boundary is shown along with the existing and ultimate 60, 65, 70, 75, and 80 DNL contour lines. Ordinance 2006-1225-E (March 27, 2007) outlines which types of land uses are allowed within different noise exposure zones and this sheet should be used in making future development decisions.

9.12 SHEET 18: PROPERTY MAP

The final drawing in the ALP set for Cecil Field identifies the existing and proposed airport boundary, encompassing planned developments, wetlands, natural and recreational corridor, and property acquisition. Curve data is presented for the property boundary near Lake Fretwell.

9.13 SUMMARY

The ALP set for Cecil Field provides a graphic presentation of the existing and ultimate developments. As the airport develops Cecil Field, these drawings should be revised to reflect what is constructed. These revisions should be noted on the appropriate ALP sheet with a description of the change being documented in the respective Revision Tables. These interim changes should then be incorporated in the next master plan update.