

## **A. INTRODUCTION**

In order to capture the key elements of this study for inclusion in the Sussex County Airport Layout Plan (ALP), it is useful to reflect on the alternative concepts and solutions considered in Chapter Four. After examining the various advantages and disadvantages of each alternative, and considering recommendations from the consultant, Sussex County Airport management determined the ALP should include a runway extension, conventional and T-hangar development consistent with prior development, and auto parking expansion. In addition to the proposed development phased throughout the 20-year planning period, ultimate land uses of airport properties are depicted to assist airport management in longer term planning.

Runway Development Alternative 1, Facility Development Alternative C, and Roadway Realignment Alternative 2, described in Chapter Four as the preferred operational alternatives, are the cornerstones for the adopted plan. This Master Plan Update achieves several specific goals, including:

- Addressing existing non-standard conditions to achieve consistency with FAA design standards,
- Evaluating obstructions to FAR Part 77 surfaces and presenting policy recommendations to prevent future penetrations to these surfaces,
- Recommending actions to meet facility requirements, aircraft operational needs, public access, and future development capability, and
- Presenting a land acquisition program that will result in the County gaining controlling interest in the existing and future Runway Protection Zones (RPZs).



These items, as well as others, will be necessary for the airport's long-term development and operation as a safe, dependable facility for Sussex County and the surrounding area.

The Airport Layout Plan (ALP) is a set of drawings that graphically represent the existing and future development at the Sussex County Airport. As a 'federally obligated' airport that accepts federal funding for development and, in exchange, commits to a series of grant assurances related to the operation of the airport, the County must maintain a current and approved ALP. All proposed development, regardless of funding source, must be identified on an approved ALP prior to implementation. The following is a summary description of the airport's development as it relates to the complete ALP drawing set. A reduced size copy of each of the drawings addressed in this narrative is included at the end of this chapter.

The **Cover Sheet** (sheet 1 of 18) is an index of each drawing in the Airport Layout Plan set. In addition, wind roses for the existing and proposed runway configuration are presented, as well as a location and vicinity map to aid in identifying the location of the airport.

The **Airport Layout Drawing (ALD)** (sheet 2 of 18) is a graphic representation of existing airport facilities and proposed improvements during the planning period. The ALD indicates pertinent clearance and dimensional information required to show conformance with applicable FAA standards. The drawing depicts the recommended location and configuration of facilities required to meet the needs during the 20-year planning period. It is important to note that the ALD serves as a guide for proposed development and is a key document that should be kept current. When formally approved by the FAA, this drawing serves as a public document that is a record of aeronautical requirements, both present and future. An approved ALD is also required for any funding consideration by the FAA.

The **Phased Development Drawing** (sheet 3 of 18) depicts the phasing of the proposed development over the planning period. Although the 20-year planning period for facility requirement demand was defined in Chapter Three as 2002-2021, the extensive public participation program and associated Roadway Realignment Feasibility Study suspended



submission of the Master Plan Update from fall 2003 to summer 2005. Maintaining the 2002-2021 planning period as the Master Plan Study resumed in 2005 would have resulted in an out of date ALP drawing set upon date of publishing. In review of the activity forecast and facility requirements, it was determined that a shift to the period 2005-2024 would more accurately represent the timeframe for which the ALP is intended. The phased development, as depicted within the ALP set, is therefore defined as Phase I (2005-2009), Phase II (2010-2014), and Phase III (2015-2024).

Longer range development plans are also depicted throughout the ALP drawing set to assist in community long term planning and compatible land use planning near the airport. Development proposed beyond Phase III is identified as Ultimate.

The **Terminal Area Plan (TAP)** (sheets 4 and 5 of 18) sheets graphically enlarge the existing layout and proposed development of terminal facilities shown on the ALD such as aprons, buildings, and hangars. The TAP is derived from the ALP and focuses on development anticipated during the 20-year planning period.

The **Airport Airspace Drawing – Part 77** (sheet 6 of 18) presents the plan view of all Federal Aviation Regulation (FAR) Part 77 surfaces based on the ultimate runway length. The Sussex County Airport’s existing runway length of 5,000 feet is recommended to be extended to 6,000 feet. The current USGS 7.5 minute quad sheet was used for the base map.

The **Inner Portion of the Approach Surface Drawings** (sheets 7 through 13 of 18) for Runway 4-22, existing 13-31, and proposed 10-28 are projected as plan and profile views for each runway end. The sheets include obstruction tables for the existing and ultimate inner portion of the approach area for each runway end.

The **Generalized Land Use Maps** (sheets 14 and 15 of 18) present off-airport land uses surrounding the Sussex County Airport. Noise exposure contours for the 65, 70, and 75 DNL are also shown for the existing and future planning horizons.



The **Airport Property Map** (formerly Exhibit “A”) (sheets 16 and 17 of 18) depicts the boundaries of the existing airport property and identifies owners of each adjacent property. Sheet 17 contains tables providing the historical transaction data and preliminary data for proposed land acquisitions.

The **Environmental Resource Sheet** (sheet 18 of 18) depicts the known environmental conditions in relation to the existing and proposed airport layout. Areas of potential environmental impact may also be depicted on this map.

## **B. AIRPORT LAYOUT DRAWING AND TERMINAL AREA PLAN**

This section discusses details concerning the development of the ALD and the TAP. The ALD and TAP are discussed interchangeably, since both represent existing and future development for the Sussex County Airport. The following narrative briefly describes future development and phasing for the 20-year planning period.

### **1. Runways**

#### **Runway 4-22**

Runway 4-22 is 5,000 feet in length and 150 feet wide. The ALP depicts a runway extension of 1,000 feet planned during Phase II as recommended in Chapter Three.

#### **Runway 10-28**

Runway 10-28 is currently closed, but is depicted in the ALP as being reconstructed during Phase I to replace Runway 13-31 as the secondary, or crosswind runway.

#### **Runway 13-31**

Once Runway 10-28 is open to aircraft operation, Runway 13-31 will be closed and temporarily converted to a taxiway.



## **2. Taxiways**

### **Runway 4-22**

The parallel taxiway for Runway 4-22 is extended and by-pass taxiways are constructed at each end. This development is planned for Phase II in conjunction with the runway extension.

### **Runways 13-31 and 10-28**

Runway 13-31 will be used as a taxiway for Runway 10-28 throughout Phase I, and then demolished following construction of a parallel taxiway and associated connectors for Runway 10-28 during Phase II.

## **3. NAVAIDS**

Navigation aids (NAVAIDS) are a system of electronic aids that assist pilots in navigating their aircraft in a safe and orderly manner during take-off, approach, and landings.

### **Runway 4-22**

Runway 4 has been designated as the airport's primary precision instrument approach and will be equipped with an Instrument Landing System (ILS). The ILS glideslope and localizer will include a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The GPS and VOR approaches are expected to remain for this runway. An Omni-Directional Approach Lighting System (ODALS) will be installed on Runway 22 for enhanced visual approach guidance.

### **Runway 10-28**

During Phase I, Runway 10-28 is intended to be approved for a GPS WAAS approach offering non-precision minimums with visibility greater than or equal to one mile.



#### **4. Visual Aids**

##### **Runway 4-22**

The existing VASI units have been replaced with 4-unit Precision Approach Path Indicators (PAPIs) on both Runways 4 and 22 to provide improved visual glide path guidance from the start of descent to the runway threshold. The REILs on Runway 4 will be removed with the installation of the MALSR.

##### **Runway 10-28**

Two-unit PAPIs will be installed on Runways 10 and 28. Additionally, REILs will be installed on both runway ends.

##### **Rotating Beacon**

The airport's rotating beacon has been relocated to an existing elevated tower structure at the northwest corner of the airport.

#### **5. General Aviation / FBO Hangar Development**

It is important to note that the timing of hangar development is subject to demand. The construction of hangar space typically aids an airport in increasing revenue and, possibly, attracting additional aircraft. Dimensions for conventional hangars proposed in this plan are approximate and will vary according to the particular needs of each tenant.

##### **a. Conventional Hangars**

Given the recent interest in additional conventional hangar space expressed by corporate operators, the ALP includes development of several 10,000 square foot units south of the terminal building and three units up to 18,000 square feet at the north end of the existing terminal area. Additional conventional hangar development is depicted on the east side of the airfield for ultimate land use planning.



**b. T-Hangars**

Three 10-unit T-hangars are proposed south of the terminal building. Additional T-hangar development is proposed in the south of Runway 10-28 where a new FBO facility might be ultimately located.

**6. Ancillary Facilities and Development**

This section describes the ancillary facilities and developmental items shown on the Airport Layout Drawing and Terminal Area Plan. These facilities support overall airport operations.

**a. Centralized Fuel Farm Facility**

It is the desire of airport management to centralize all airfield fuel storage capacity and a location immediately east of the Airfield Maintenance Building has been selected for the ultimate development of this facility.

**b. Snow Removal Equipment Building**

A snow removal equipment building is proposed to be located southeast of the County paramedic facility.

**7. Airport Access and Parking**

Primary access to the commercial aeronautical services and the northern perimeter of the airport is via U.S. Highway 9 east from Georgetown, connecting to local Route 319, or Airport Road. The truck route for U.S. Highway 9 (local Route 318 connecting to Route 321) circles the airport to the south and east and provides direct access to the Airport's Industrial Air Park.

**a. General Aviation Automobile Parking**

There is adequate space adjacent to proposed facilities to provide for additional automobile parking as required.



**b. Terminal Automobile Parking**

Additional automobile parking for the general aviation terminal is planned and illustrated in the open area west of the terminal. This area is anticipated to meet demand throughout the planning horizon.

**C. PHASED DEVELOPMENT PROGRAM**

The Phased Development Drawing (sheet 3 of 18) depicts the phasing of the proposed development during the 20-year planning period and beyond. The phases are defined as Phase I (2005-2009), Phase II (2010-2014), and Phase III (2015-2024). Longer range development plans are also depicted throughout the ALP drawing set to assist in community long term planning and compatible land use planning near the airport. Development proposed beyond Phase III is identified as Ultimate. Facility requirements, based on the existing and forecasted aviation demand, and applicable federal aviation regulations and advisory circulars are illustrated on this sheet by phase in order to satisfy the short and long term needs of the aviation community.

- Acquire property to clear and retain control of the existing and future RPZs. *Phase I*
- Install PAPIs on Runways 10 and 28. *Phase I*
- Install REILs on Runways 10 and 28. *Phase I*
- Relocate rotating beacon to elevated tower structure. *Phase I*
- Construct snow removal equipment building. *Phase I*
- Upgrade electrical vault. *Phase I*
- Rehabilitate and reopen Runway 10-28 to meet ARC B-II design criteria. *Phase I*
- Construct T-hangars to meet demand. *Phases I, II, III*
- Construct parallel taxiway for Runway 10-28. *Phase II*
- Extend Runway 4-22 and maintain 150-foot width to support ARC C-III aircraft. *Phase II*
- Close Runway 13-31. *Phase II*
- Shift Runway 22 threshold to the southwest as necessary to accommodate required ROFA. *Phase II*





- Improve Runway 4-22 safety areas to meet ARC C-II design criteria. *Phase II*
- Rehabilitate Runway 4-22 to provide necessary maintenance. *Phase II*
- Install ILS with MALSR on Runway 4. *Phase II*
- Upgrade Runway 4-22 markings to precision. *Phase II*
- Construct new parallel taxiway for Runway 4-22, 400 feet from runway centerline. *Phase III*
- Construct additional exit taxiways from Runway 4-22 to the new parallel taxiway. *Phase III*
- Replace MIRLs with HIRLs for Runway 4-22 in conjunction with an ILS. *Phase III*

#### **D. AIRSPACE AND OBSTRUCTION ANALYSIS**

Federal Aviation Regulations (FAR) Part 77 “Objects Affecting Navigable Airspace” establishes criteria for evaluating obstructions. This section presents a discussion of FAR Part 77 standards and their relationship to the physical features and terrain on and around the Sussex County Airport. A plan sheet has been prepared to depict FAR Part 77 Surfaces (sheet 6 of 18) and limiting heights and elevations for approximate future development adjacent to the airport.

##### **1. FAR Part 77 Surfaces**

Airport Imaginary Surfaces (Part 77) are established relative to runways at the airport. The size of each imaginary surface is based on the runway category and the existing/proposed approaches (visual, non-precision or precision). The slope and dimensions of the respective approach surfaces are determined by the most precise existing or future approach for the runway end. The following is a definition of the individual surfaces:

- **Primary Surface** – A rectangular area symmetrically located about the runway centerline and extending a distance of 200 feet beyond each runway threshold. Its elevation is the same as that of the runway. The ultimate Runway 4-22’s primary surface is 1,000 feet and 500 feet for Runway 10-28.



- **Horizontal Surface** – An oval-shaped, level area situated 150 feet above the established airport elevation. Its dimensions are governed by the runway service category.
- **Conical Surface** – A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward from the outer edge of the horizontal surface for a distance of 4,000 feet measured horizontally, and slopes up at a rate of one foot vertically for every 20 feet horizontally.
- **Transitional Surface** – Transitional surfaces extend from the edges of the primary surface up to the horizontal surface and from the sides of approach surfaces. All transitional surfaces slope up at a rate of seven feet vertically for every one foot horizontally, measured perpendicular to the runway centerline.
- **Approach Surface** – These surfaces begin at the ends of the primary surface and slope upward away from the runway end. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and width of the outer ends are governed by the runway service category and existing or proposed instrument approach types.

## 2. **FAR Part 77 Airspace Drawing**

The FAR Part 77 Imaginary Surfaces for the Sussex County Airport are superimposed on a United States Geologic Survey (USGS) 7.5 minute quadrangle (1"=2,000') composite for the area around the airport. These surfaces include the ultimate approaches to Runways 4-22 and 10-28. The Airspace drawing also provides a profile view of the ultimate imaginary surfaces. Actual close-in obstructions to airspace around the airport are shown on the runway inner approach plan and profile sheets (sheets 7 - 13 of 18).



### **3. Inner Approach Surface Sheets**

The Inner Approach Surface Sheets analyze the airspace for each runway end. The runway protection zone is also shown for each runway end. The runway protection zone is defined as an area to protect people and property on the ground, and the FAA requires Airport management to maintain sufficient interest in such property to be able to control its land use.

The primary purpose of the Inner Approach Surface Sheets is to evaluate each runway end for existing or potential future obstructions. Both the plan view and profile view are shown for each runway end. Obstructions are noted in each of the views and listed in an obstruction table. Roadways and railroads are also evaluated according to criteria outlined in FAR Part 77. Part 77 criteria requires a minimum clearance beneath the specified imaginary surface of 10 feet for private roadways, 15 feet for public roadways, 17 feet for interstates, and 23 feet for railroads.

The approach slope for each runway end varies with the aircraft approach visibility minimums. A precision instrument approach has a 50:1 (horizontal:vertical) slope, a non-precision instrument approach has a 34:1 slope, and a visual approach has a 20:1 slope.

Items such as trees, buildings, power poles, towers, terrain, and roads, etc. were evaluated as possible obstructions and identified on the sheet in the plan and profile views. As the analysis is based on aerial photogrammetry, ground surveys and/or field verification should be conducted prior to removal of identified obstructions off airport property.

### **E. AIRPORT PROPERTY MAP**

The Airport Property Map (APM) depicts the existing boundaries of the airport property and documents the transaction history of land acquired for use by the airport. Future property



acquisitions, both in fee simple and avigation easement, are also shown on the property map. Like the ALD, it is critical to keep this document current. As additional property is acquired, the APM should be revised accordingly.

The Sussex County Airport property map documents approximately 720 acres of land currently dedicated to airport use. The ALD and APM identify an additional 118 ± acres to be acquired to achieve control of the airfield by protecting the RPZs at three runway ends.

## **F. ENVIRONMENTAL RESOURCE SHEET**

The Environmental Resource Sheet (sheet 18 of 18) depicts the known environmental conditions in relation to the existing layout and proposed airport development. Locations of wetlands and archaeological areas are depicted to graphically illustrate areas of potential impact to these resources.

