



Chapter 10: ALP and E-ALP Description Version A



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10 AIRPORT LAYOUT PLAN DRAWINGS

10.1 Introduction

The 2040 ABIA Master Plan Study has evolved through the analytical efforts described in previous chapters. The analysis in Chapter 5, *Alternative Development and Analysis*, resulted in selection of an airport development plan for ABIA that accommodates the high-case forecast demand through the next 20-year (2037) period.

This chapter presents the preferred ABIA development plan in a set of detailed drawings, referred to as the Airport Layout Plan (ALP) set, that depict the recommendations for airfield layout, disposition of obstructions, and future use of land on the airport. This set of plans includes the following drawings that are presented in reduced format at the end of this chapter:

- Sheet 1: Cover Sheet
- Sheet 2: Airport Data Sheet
- Sheet 3: Airport Layout Plan - Existing
- Sheet 4: Airport Layout Plan - Future
- Sheet 5: Hazard Zoning Map Airspace (FAR Part 77) Plan
- Sheet 6: Runway 17R Protection Zone - Plan and Profile
- Sheet 7: Runway 35L Protection Zone - Plan and Profile
- Sheet 8: Runway 17L Protection Zone - Plan and Profile
- Sheet 9: Runway 35R Protection Zone - Plan and Profile
- Sheet 10: Runway 17C Protection Zone - Plan and Profile
- Sheet 11: Runway 35C Protection Zone - Plan and Profile
- Sheet 12: Runway Centerline Profiles
- Sheet 13: ATCT Line of Sight
- Sheet 14: Terminal Area Plan - North
- Sheet 15: Terminal Area Plan -South
- Sheet 16: Airport Land Use Plan – Existing
- Sheet 17: Airport Land Use plan - Future
- Sheet 18: Property Map

The ALP set has been prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular 150/5300-13A, *Airport Design*, and the FAA Standard Operating Procedure (SOP) 2.00, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)*.

10.2 Airport Layout Plan (ALP) Drawing Set

The following section describes the major components of the ALP drawing set. The ALP is a planning tool for the FAA's review of airport development grant applications under the Airport Improvement Program (AIP). The FAA refers to the ALP in its review of proposed construction projects that may affect navigable airspace. The ALP also serves as a planning tool for use by surrounding jurisdictions to address land use, zoning, and resource planning issues.

10.2.1 Sheet 1: Cover Sheet

The Cover Sheet serves as an introduction to the ABIA plans set. It includes the following:

- Name of the Airport
- Name of the Study
- Period of the Study
- Index of the included Drawings
- Approval Blocks

10.2.2 Sheets 3 and 4: Airport Layout Plans (ALPs)

The ALP drawings graphically presents the existing and future airport facility layout. It depicts the recommended improvements that will enable ABIA to meet the high-case forecast demand through the 20-year planning period.

The Existing ALP (Sheet 3) is a base drawing that solely depicts the existing airport facilities anticipated to be operational by the end of 2019. The Future ALP (Sheet 4) depicts the proposed airport improvements for both the airside and landside areas "on top of" the existing airport facilities. The proposed future airport development program recommends the following major projects be completed within the 20-year (2037) planning period.

- New North Terminal Building
- New 32-Gate Midfield Concourse
- Additional ADG-V Taxiways/Taxilanes
- New Entrance Roadway Intersection with SH 71
- New and Expanded Remain Overnight (RON) Apron Areas
- New ADG-VI Taxiway 'D'
- General Aviation Expansion
- Expansion of various Support Facilities (Catering, ARFF, Belly Freight, Airport Maintenance, etc.)
- New Central Utility Plan
- Land Acquisition
- Expansion of Miscellaneous Utilities

In addition, the Future ALP depicts a long-range (Post 20-year) new 10,000-foot long Runway 17C-35C and the relocation of SH 71 to the north. It is anticipated that the new Runway 17C-35C will not be needed until approximately year 2048, or when the airport reaches approximately 445,000 annual operations with an average 10-minutes of delay per operation. ABIA will continue to coordinate with TxDOT on the future relocation of SH 71 with no specific timeline.

10.2.3 Sheet 5: Hazard Zoning Map Federal Aviation Regulation (FAR) Part 77 Airspace Plan and Obstruction Data Tables

Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, prescribes airspace standards that establish criteria for evaluating navigable airspace around airports. This sheet presents FAR Part 77 standards and their relationship to the physical features and terrain on and around ABIA. The FAR Part 77 surfaces and limiting heights and evaluations for future development adjacent to ABIA are shown on this sheet.

The intent of FAR Part 77 is to protect the airspace and approaches to each runway from hazards that could affect the safe and efficient operation of aircraft. These Federal criteria have also been established for use by local jurisdictions to control the height of objects in an airport vicinity. For example, FAR Part 77 can be utilized in zoning ordinances to enhance area land use compatibility. These drawings are also used to identify potential obstructions that are located within the imaginary surfaces of the airport. Ideally, an obstruction should be removed or lowered beneath the imaginary Part 77 surfaces. In some cases, it is appropriate to mark and light the obstruction in accordance with AC 70/7460-1K, *Obstruction Marking and Lighting*. All obstructions must be reviewed by the FAA to determine if they are a hazard to air navigation and to determine which course of action is appropriate.

The FAR Part 77 imaginary surfaces are established relative to the airport and runway system. The size of each imaginary surface is based on the runway approach category (visual, non-precision, or precision). Each of the Part 77 surfaces is described in the following subsections.

- **Primary Surface** – The primary surface is located closest to the runway environment. It is a rectangular area symmetrically located about the runway centerline and extends a distance of 200 feet beyond each runway threshold. Its elevation is the same as the runway centerline at a point perpendicular to the runway centerline. The width of the primary surface depends on the type of runway approach capability (visual, non-precision, or precision). All existing ABIA runways have precision approach capability.

The primary surface must remain clear of most objects to allow unobstructed passage of aircraft. Objects are only permitted if they are no taller than two feet above the ground, and if they are constructed on frangible (breakaway) mounts. The only exception to this rule is for objects for which location is “fixed by function,” such as navigational and visual aid facilities (glide slope, precision approach path indicator, windsock, etc.).

- **Approach Surface** – An approach surface is also established for each runway end. The approach surface has the same inner width as the primary surface, and then flares (gets wider) as it rises upward and outward along the extended runway centerline. The approach surface begins 200 feet beyond the runway end. The slope of the rise and the

length of the approach surface is dictated by the type of approach available to the runway (visual, non-precision or precision), and by the approach category of the aircraft for which the runway is designed. All existing ABIA runways have precision approach capability.

- **Transitional Surface** – Each runway has a transitional surface that begins at the outside edge of the primary surface, and at the same elevation as the runway centerline. There are three transitional surfaces: the first is off the sides of the primary surface, the second is off the sides of the approach surface, and the third is outside the conical surface and pertains to precision runways only. The transitional surface rises at a slope of one-foot vertically for each 7 feet of horizontal distance (7:1) up to a height, which is 150 feet above the highest runway elevation.
- **Horizontal Surface** – The horizontal surface is established at 150 feet above the published airport elevation. This is an oval-shaped flat surface that connects the transitional and approach surfaces to the conical surface at a distance of 10,000 feet from the primary surface.
- **Conical Surface** – The conical surface begins at the outer edge of the horizontal surface. The conical surface continues for a distance of 4,000 feet horizontally at a slope of one-foot rise for each 20 feet of horizontal distance (20:1).

10.2.4 Sheets 6 through 11: Runway Approach Plans and Profiles

These Runway Approach Plan and Profiles sheets show both plan and profile views of the approaches to each of the existing and future runways. The plan and profile views facilitate identification of obstructions located within the areas that should be void of objects that may endanger safe aircraft flight during takeoff and landing.

10.2.5 Sheet 12: Runway Centerline Profiles

The sheet shows the centerline profiles for the two existing Runways 17R-35L and 17L-35R, along with the preliminary centerline profile for new Runway 17C-35C. The new Runway 17C-35C centerline profile is an approximation and will need to be better determined during the conceptual design stage of development.

10.2.6 Sheet 13: ATCT Line-of-Sight

A preliminary line-of-sight study was conducted from the existing Air Traffic Control Tower (ATCT) cab to the existing and future airfield “movement areas” based on the proposed airport development projects. An ATCT eye-level elevation of 696.7 MSL (cab floor elevation of 691.2 MSL) and preliminary future building elevations were used in this analysis. Based on this information, there should be no line-of-sight issued from the existing ATCT to existing or future airfield “movement areas.”

10.2.7 Sheets 14 and 15: Terminal Area Plans - North & South

These two North and South Terminal Area Plan sheets show additional detail of the proposed New North Terminal Building and Midfield Concourse complex development that includes the following major projects:

- North Terminal Building
- Midfield Concourse
- North Terminal Curbfront
- Airport Entrance Roadway
- Aircraft Parking Apron
- Taxiways/Taxilanes
- Person Rapid Transit System
- High Capacity Transit Line
- Auto Parking Areas
- Support Facilities

10.2.8 Sheets 16 and 17: Airport Land Use Plans - Existing & Future

The purpose of developing an on-airport land use plan is to achieve an arrangement of land uses within the airport’s boundary that best utilizes available property for existing and future airport needs; it should also be compatible with the surrounding environment. The Future Airport Land Use Plan provides adequate growth for all airport functions and provides for the potential to develop non-aviation related development that could generate additional revenue for ABIA.

10.2.9 Sheet 18: Property Map

The purpose of a Property Map is to represent all real property currently owned and previously owned by the Airport. Specific data is maintained for each numbered parcel presented in the Property Map. The data includes physical description of parcel, grantee information, type of interest acquired, and public land record references. The Property Map also includes information, such as project number, specific to FAA funded projects. The Property is maintained by the Airport and must be provided to the FAA to receive funding for airport projects.

Exhibit 10.2-1: Cover Sheet

Exhibit 10.2-2: Airport Data Sheet

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Exhibit 10.2-5: Hazard Zoning Map Airspace (Part 77) Plan

Exhibit 10.2-6: Runway 17R Protection Zone – Plan and Profile

Exhibit 10.2-7: Runway 35L Protection Zone – Plan and Profile

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Exhibit 10.2-9: Runway 35R Protection Zone – Plan and Profile

Exhibit 10.2-10: Runway 17C Protection Zone – Plan and Profile

Exhibit 10.2-11: Runway 35C Protection Zone – Plan and Profile

Exhibit 10.2-12: Runway Centerline Profiles

Exhibit 10.2-13: ATCT Line-of-Sight

Exhibit 10.2-14: Terminal Area Plan – North

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Exhibit 10.2-16: Airport Land Use Plan – Existing

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Exhibit 10.2-18: Property Map