



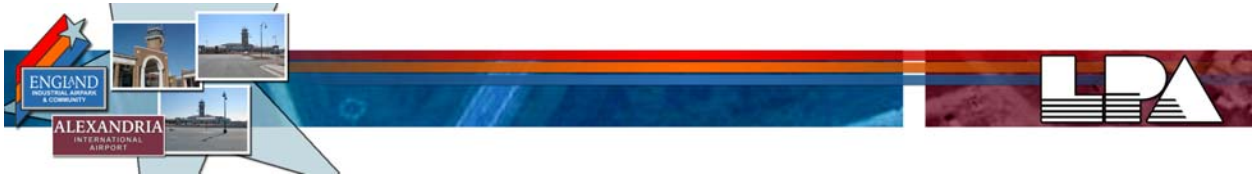
## Chapter 7 Airport Plans

The purpose of a Federal Aviation Administration (FAA) approved Airport Layout Plan (ALP) is to serve as the blueprint for future airport development, and is generally necessary for the FAA to fund improvement projects under the Airport Improvement Program (AIP). For Alexandria International Airport (AEX), the updated development recommendations presented in this Master Plan Update are pictorially summarized in the ALP Drawing Set, including preferred concepts for runway and taxiway expansion, apron and hangar development, and the establishment of a well-balanced land use plan for future development both on and off the airport property. The ALP Drawing Set represents a scaled, graphic presentation of AEX's twenty-year development program, thereby providing the England Authority with a feasible improvement plan that would increase the capability and safety of aircraft operations, promote compatibility with existing and proposed developments, and further upgrade the airport to effectively serve as a ready site for military deployment and disaster relief missions within the Louisiana/Gulf Coast Region of the United States (including for wartime deployment, hurricane relief, etc.). Various drawings depict the recommendations of this Master Plan Update with regard to aviation development for the short, intermediate, and long-term.

The dimensional information provided in the drawings demonstrates compliance with minimum airport design standards established by federal, state, and local authorities. The ALP Drawing Set was developed in accordance with the guidance outlined in the FAA **Advisory Circular (AC) 150/5070-6, *Airport Master Plans*, AC 150/5300-13, *Airport Design***, and other supporting circulars and orders. The drawings were prepared in conformance with FAA established criteria, and the completed FAA ALP Checklist is provided in at the end of this chapter.

The ALP Drawing Set includes the following individual drawing sheets:

- Cover Sheet (Sheet 1)
- Airport Layout Drawing (Sheet 2)
- Airport Layout Drawing Data Sheet (Sheet 3)
- Terminal Area Drawing (Sheet 4)
- Inner Portion of Runway 14 Approach Surface Drawing (Sheet 5)
- Inner Portion of Runway 32 Approach Surface Drawing (Sheet 6)
- Inner Portion of Runway 18 Approach Surface Drawing (Sheet 7)
- Inner Portion of Runway 36 Approach Surface Drawing (Sheet 8)
- Airport Airspace Drawing 1 (Sheet 9)
- Airport Airspace Drawing 2 (Sheet 10)
- Airport Airspace Drawing 3 (Sheet 11)



- Airport Airspace Drawing 4 (Sheet 12)
- Airport Airspace Drawing 5 (Sheet 13)
- Land Use Plan (Sheet 14)
- Airport Property Map (Sheet 15)

Reduced size reproductions of the drawing sheets are provided at the end of this chapter for illustration purposes only. A full-size set (30" by 42" format) of the drawings will be submitted to the FAA for approval. As described in **Chapter 4, Demand Capacity/Facility Requirements**, future updates to the ALP Drawing Set should include conversion to Geographic Information Systems (GIS) format. According to **Draft AC 150/5300-18B, General Guidance and Specifications for Submission of Aeronautical Surveys to National Geodetic Survey: Field Data Collections and GIS Standards**, while airport surveys are typically developed using CADD software, conversion to GIS format is beneficial since it allows for the input of metadata, or data about the data, within the program itself. For example, any number of unique attributes about each drawing feature (e.g., Runway 14-32 or Building 2502) can be input using GIS, such as last rehabilitation date, current tenant, lease terms, contact person, etc., thus allowing for much greater functionality and also serving as an effective management tool. For these reasons, the FAA is encouraging the development of ALP Drawing Sets, specifically the Airport Layout Drawing, in GIS format.

## 7.1 Cover Sheet (Sheet 1)

The Cover Sheet (Sheet 1) serves as the introduction to the ALP Drawing Set. It includes the airport name, a location map, vicinity map, and an index of drawings included in the ALP Drawing Set. Also highlighted on the Cover Sheet are the project name, federal and state grant numbers, and sponsor name and logo.

## 7.2 Airport layout Drawing (Sheet 2)

The Airport Layout Drawing (Sheet 2), also referred to the ALP, depicts all existing facilities and proposed development, to scale, over the twenty-year planning period for AEX, and represents the official document which must be approved by the FAA prior to authorizing federal funding for improvement projects. The ALP provides clearance and dimensional information required to show conformance with applicable FAA design standards as outlined in **FAA AC 150/5300-13, Airport Design**. The ALP also reflects changes in the physical features on the airport property and critical land use changes near the airport property that may impact navigable airspace or the ability of the airport to operate. The features of the ALP include, but are not limited to: runways, taxiways, hold aprons, lighting, navigational aids, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements.

Key dimensional criteria are included for the airfield geometry, based on FAA design standards associated with Airport Reference Code (ARC) D-V (e.g., Boeing 747) for Runway 14-32 facilities and D-IV (e.g., C-130/Boeing 737) for Runway 18-36 facilities. This includes, but is not limited to, the size of the runways and various taxiways, runway



safety areas and runway object free areas, building restriction lines, and navigational aid critical areas, and other dimensional data recommended by the FAA. Airport coordinates, runway end elevations, runway high and low points, and true azimuths for each runway, are also included on the Airport Layout Drawing. Supplemental tables, as required by the FAA ALP Checklist, are depicted in the Airport Layout Drawing Data Sheet (Sheet 3), including the Airport Data Table, Runway Data Table, and Building Data Table.

As described in **Chapter 6, *Airpark Alternatives***, airside recommendations include extensions to both Runways 14 and 18, associated taxiway improvements, and hangar and apron development, in addition to upgrading the precision instrument approach to a Category II (CAT II) on Runway 14. Additional long-term airfield improvements include the installation of a Local Area Augmentation System (LAAS) and associated approach lighting (MALSR) upgrades on Runways 18, 32 and 36. In addition to airfield improvements, the following support and landside facility improvements were recommended including the relocation of the fuel farm facility, new hangar development, terminal automobile parking improvements, and airfield service road improvements. Recommended property acquisition is also depicted on the Airport Layout Drawing beyond the extended ends of Runways 14 and 18, as well as acquisition to the west of the airport for industrial park development.

### **7.3 Airport Layout Drawing Data Sheet (Sheet 3)**

The Airport Layout Drawing Data Sheet (Sheet 3) identifies pertinent information about the AEX's airside and landside facilities in tabular format, as required by the FAA ALP Checklist, including wind roses for All Weather and Instrument Flight Rules (IFR) conditions which depict wind coverage percentages for Runways 14-32 and 18-36, as well as existing and proposed characteristics of the runways (e.g., dimensions, coordinates, and approach capability) and airport buildings. The following tables are depicted on this sheet: Airport Data Table, Runway Data Table, and Building Data Table.

### **7.4 Terminal Area Drawing (Sheet 4)**

The Terminal Area Drawing (Sheet 4) presents an enlarged portion of the Airport Layout drawing, and therefore provides additional dimensional details, including apron areas (existing and proposed) that are not shown in the ALP. This drawing denotes the short and long-term developments and improvements within the vicinity of the passenger terminal complex at AEX, as well as around fixed base operator (FBO) terminal. For the most part, there are no recommendations for the passenger terminal complex itself, since the facility was recently constructed, with the exception of additional automobile parking for the long-term. The general recommendations for the passenger terminal include reserving the surrounding areas for future expansion if ultimately necessary. On the south apron, the detail of the recommended aircraft parking plan in front of the FBO terminal is depicted, in addition to the apron expansion consisting of approximately 5 acres.



## 7.5 Inner Portion Approach Surface Drawings (Sheets 5-8)

The Inner Portion of the Approach Surface Drawings (Sheets 5-8) show both plan and profile views of the approach surfaces beyond each runway end (Sheet 5 depicts Runway 14, Sheet 6 depicts Runway 32, Sheet 7 depicts Runway 18, and Sheet 8 depicts Runway 36). The purpose of these plans is to locate and document existing objects, which represent obstructions to navigable airspace and the existing and proposed approach slopes for each runway. Additionally, the drawing shows the ground profile and terrain features along the extended centerline of each runway end.

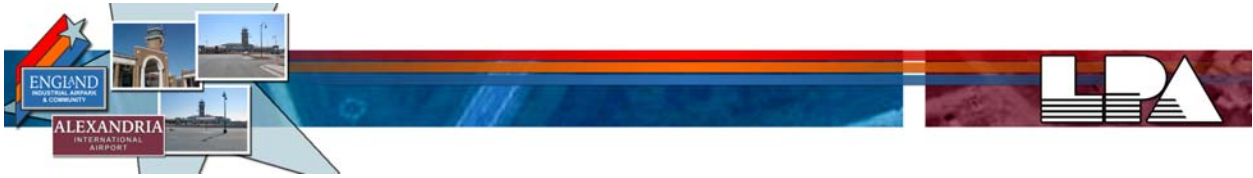
Any controlling structures, such as roadways, natural ground elevations, and trees, are also shown on the Inner Portion of the Approach Surface Drawings, if applicable. Additionally, fixed objects located along the extended runway centerlines are also illustrated on the sheets to provide an indication of the relative distance to the approach surfaces. Any known obstructions to navigable airspace are listed in an Obstruction Chart with the recommended action for each obstruction.

As shown in Sheet 5, the existing 50:1 precision instrument approach surface beyond Runway 14 does not contain obstructions, although various trees, buildings, and roadways within the existing approach are marked with a “trim/remove” or “relocate” disposition to identify necessary actions for the implementation of the proposed runway extension. With the proposed 2,648 foot extension to Runway 14, the associated approach surface would contain scatters of trees that would require trimming or removal.

As shown in Sheet 6, both the existing 34:1 nonprecision instrument approach surface and the proposed 50:1 precision instrument approach surface (i.e., upgraded LAAS approach) beyond Runway 32 do not contain obstructions at this time; however, to prevent trees from penetrating the ultimate precision approach surface, and to control overgrowth, selective tree trimming or removal is recommended beyond Runway 32.

As shown in Sheet 7, the 34:1 nonprecision instrument approach surface beyond the existing end of Runway 18 does not contain obstructions, although several trees are marked with a “trim/remove” disposition to identify necessary actions for the implementation of the proposed runway extension. With the proposed 1,007 foot extension to Runway 18, and the associated upgrade to a 50:1 precision instrument approach surface (i.e., upgraded LAAS approach), several trees would penetrate the future approach surface, thus requiring tree trimming or removal as part of the runway extension project.

As shown in Sheet 8, both the existing 34:1 nonprecision instrument approach surface and the proposed 50:1 precision instrument approach surface (i.e., upgraded LAAS approach) beyond Runway 36 do not contain obstructions at this time; however, to prevent trees from penetrating the ultimate precision approach surface, and to control overgrowth, selective tree trimming or removal is recommended beyond Runway 36.



Overall, it appears that there are no obstructions within the existing runway approach surfaces at AEX. However, with the proposed extensions to Runways 14 and 18, and the upgraded LAAS precision instrument approaches for Runways 18, 32, and 36, some tree trimming or removal would ultimately be necessary.

## 7.6 Airport Airspace Drawings (Sheets 9-13)

**Federal Aviation Regulations (FAR) Part 77**, *Objects Affecting Navigable Airspace*, prescribes airspace standards, which establish criteria for evaluating navigable airspace. Airport imaginary surfaces are established relative to the airport and runways. The size of each imaginary surface is based on the runway category with respect to the existing and proposed visual, non-precision, or precision approaches for that runway. The slope and dimensions of the respective approach surfaces are determined by the most demanding, existing or proposed, approach for each runway. For both Runways 14-32 and 18-36 at AEX, the imaginary surfaces are applicable to precision instrument approaches, the most demanding category generally associated with large commercial airliners. The imaginary surfaces definitions include:

- **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. For runways with an existing or proposed precision instrument approach, including both Runways 14-32 and 18-36 at AEX, the width of the primary surface is 1,000 feet.
- **Horizontal Surface** – An oval shaped, flat area situated 150 feet above the published airport elevation of 88.5 feet at AEX. Its dimensions are determined by using 10,000-foot arcs for non-utility runways (centered 200 feet beyond each runway end) connected with a line tangent to those arcs. The horizontal surface elevation for AEX is 238.5 feet above mean sea level (AMSL).
- **Conical Surface** – A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward for a distance of 4,000 feet measured horizontally, and slopes upward at 20:1. AEX’s conical surface extends upward to an elevation of 438.5 feet AMSL.
- **Transitional Surface** – A sloping area beginning at the edges of the primary and approach surfaces and sloping upward and outward at a ratio of 7:1 until it intersects the horizontal surface.
- **Approach Surface** – This surface begins at the ends of the primary surface and slopes upward at a predetermined ratio while at the same time flaring out horizontally. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and outer width are determined by the runway service category and existing or proposed instrument approach procedures.

The Airport Airspace Drawings are depicted in Sheets 9-13. Based on data from the *FAA’s Digital Obstacle File (October 19, 2008)*, Sheet 9 identifies the overall presence of towers and other objects within AEX’s proposed imaginary surfaces. Sheet 10 provides a zoom-in



on the imaginary surfaces beyond Runways 36 and 32, whereas Sheet 11 provides a zoom-in beyond Runways 14 and 18. On Sheets 12 and 13, profile views of the imaginary surfaces are depicted, and an Obstruction Data Table is provided on Sheet 12. Of the 59 objects identified in the Airport Airspace Drawings, only one tower (Tower #49 which reaches 210 feet AMSL) penetrates the approach surface to Runway 18. According to the *FAA's Digital Obstacle File*, this tower is not currently lighted; thus obstruction lighting is recommended to mitigate the penetration.

### **7.7 Land Use Plan (Sheet 14)**

The Land Use Plan (Sheet 14) designates various sectors of the property for specific uses (open space, institutional, aviation, commercial, etc.), and also provides suggested land uses for adjacent, off-airport properties. This plan was developed based on the vision for the England Authority to create a balanced, self-sustaining, and physically coherent mixed use community that attracts investment, capitalizes on emerging market trends, and anchors quality growth for the Alexandria region. For those reasons, the Land Use Plan expresses a broad vision for landside development of the airport property, blending future public and private developments, and serves as an overall benchmark for the highest, best, and most sustainable plan for the airport and adjoining lands.

The utilization of this land is represented by several use categories, including Industrial/Aviation, Business/Commercial, Institutional, Residential, Open Space/Recreation, Part 150 Noise Acquisition Area as identified in the recent Federal Aviation Regulations (FAR) Part 150 Noise Study for AEX, and Property Acquisition. Additionally, the existing (2007) and future (2027) noise contours have been superimposed on the drawing, including the 65 Day-Night Average Noise Level (DNL) contour, to ensure that appropriate aviation-compatible zoning is maintained. The FAA has established national guidelines for land use compatibility related to airport-generated noise impacts. In most cases, noise sensitive land uses are considered incompatible if located within the 65 DNL noise contour (or higher), unless noise mitigation measures are undertaken.

### **7.8 Airport Property Map (Sheet 15)**

The Airport Property Map (Sheet 15) defines the existing and proposed airport boundaries in a graphical and tabular form. The purpose of the drawing and associated tables is to identify historic and future property obtained with federal funds and illustrates major airport facilities, both existing and future, for reference purposes. The property map also identifies contiguous property. Proposed property acquisition includes: 187 acres for the extension to Runway 14, 103 acres for the extension to Runway 18, and 120 acres for the planned industrial park on the western side of the airport property; therefore, the Airport Property Map identifies a total of 410 acres of property for ultimate acquisition by the England Authority. Additionally, to promote compatible development, acquisition or easement of the property within all RPZs is shown in this drawing.



## 7.9 Summary

The ALP Drawing Set is intended to depict AEX's capital development program in graphical form. Preliminary plans were presented to England Authority management, technical advisory committee members, and the public for review and approval. This data was incorporated into the ALP Drawing Set to reflect approved airport development for the twenty-year planning period.



**Insert Airport Layout Plan Drawing Set (Reduced Size)**