8 Airport Layout Plan

This chapter presents the Airport Layout Plan (ALP) for the recommended development at Blue Glass Airport (LEX or Airport). The ALP illustrates the recommended future airport facilities and airspace and serves as the official development plan for the Airport. Several drawings are also included to illustrate the surrounding airspace and land uses in the vicinity of the Airport. The combined set of drawings is termed the "ALP drawing set." This chapter contains a summary of the Recommended Plan and a description of the ALP drawing set. The ALP can be found in **Appendix N.**

8.1 Summary of the Recommended Plan

The recommended airport developments for LEX were previously presented in **Chapter 5, Figure 5-64.** The plan includes recommendations for the airfield, general aviation (GA), passenger terminal, aprons, passenger parking and access, and support facilities (i.e., air traffic control tower, fuel farm, etc.). The recommended plan illustrates short- and long-term plans for the Airport, particularly desired improvements to accommodate forecast traffic levels.

8.2 Airport Layout Plan

The ALP drawing set illustrates all development projects identified at LEX throughout the 20-year planning horizon. Upon approval by the Federal Aviation Administration (FAA), the ALP becomes the official planning document for the Airport. The FAA requires that all new airport facilities be consistent with the ALP. As such, keeping the drawings updated to accurately reflect the current conditions at the Airport should be of high priority. Furthermore, any future development to be funded by Airport Improvement Program funds must be on an approved ALP prior to approval for grant issuance. At a minimum, the FAA recommends that the ALP be updated at least every five years. Although the ALP is the only drawing that is signed by the FAA, it is part of a larger drawing set that includes the sheets listed below.

Table 8-1
Airport Layout Plan Drawing Index

Sheet Index	
Sheet No.	**Description**
1	Cover Sheet
2	Airport Data Sheet
3	Existing Airport Layout Plan
4	Future Airport Layout Plan
5	Airspace Plan (1 of 2)
6	Airspace Plan (2 of 2)
7	Centerline Profile – Runway 4-22 (1 of 2)
8	Centerline Profile – Runway 4-22 (2 of 2)
9	Centerline Profile – Runway 9-27
10	Inner Approach Surfaces – Runway 4
11	Inner Approach Surfaces – Runway 22

Sheet Index	
Sheet No.	**Description**
14	Inner Approach Surfaces – Runway 27
15	Departure Surface – Runway 4
16	Departure Surface – Runway 22
17	Departure Surface – Runway 27
18	Obstruction Tables
19	Terminal Area Plan (Passenger Terminal Building)
20	Terminal Area Plan (East General Aviation)
21	Terminal Area Plan (WestLEX)
22	Land Use Plan
23	Property Map
24	Property Map Parcel Data (1 of 2)

Sheet Index	
Sheet No.	**Description**
12	Inner Approach & Departure Surfaces – Existing Runway 9
13	Inner Approach & Departure Surfaces – Future Runway 9

Sheet Index	
Sheet No.	**Description**
25	Property Map Parcel Data (2 of 2)

Source: CHA, 2024.

The Lexington-Fayette Urban County Airport Board (LFUCAB) and the FAA maintain full-size copies of the final approved ALP set. Each of the drawings is described below in the subsequent sections. The following publications were used during the preparation of the drawing sets:

- FAA Advisory Circular 150/5300-13B, Airport Design
- FAA Advisory Circular 150/5070-6B, Airport Master Plans
- Title 14 Code of Federal Regulations (CFR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace

8.2.1 Cover Sheet (Sheet No. 1)

The Cover Sheet is the introduction to the full ALP drawing set. This sheet includes a vicinity and location map to illustrate the location of the Airport, a sheet index similar to **Table 8-1**, and reserves space for the signed FAA Approval Letter along with signature blocks for both the FAA and LFUCAB.

8.2.2 Airport Data Sheet (Sheet No. 2)

The Airport Data Sheet lists the design FAA standards and setbacks applicable to the Airport. This sheet includes:

- Runway data
- Taxiway data
- Runway and taxiway safety area data
- Approach surface types and slope information
- Departure surfaces
- Modifications to standards
- Wind coverage [visual and instrument flight rules (VFR and IFR) and all-weather conditions]

The information establishes the criteria for existing and future design requirements and is contained and reflected graphically throughout the ALP drawing set.

8.2.3 Existing Airport Layout Plan (Sheet No. 3)

The Existing ALP sheet is the first drawing sheet of the ALP drawing set and depicts the Airport as it exists today. This drawing identifies all key FAA airfield design standards [e.g., Runway Safety Areas (RSA), Object Free Areas (OFA), Object Free Zones (OFZ), Runway Protection Zones (RPZ), approach surfaces, etc.] and illustrates all landside facilities. Existing facilities are denoted by their respective ID and identified in the facilities table.

8.2.4 Future Airport Layout Plan (Sheet No. 4)

The Future ALP sheet includes all features of the Existing ALP, as well as all proposed facilities, airfield improvements, and recommendations. This drawing is reviewed by several offices within the FAA for consistency with airport design standards, flight procedures, airspace, and environmental requirements. Approval indicates the FAA's endorsement of the proposed project types and locations, but development may still be predicated upon environmental approvals and demand/capacity justification.

It should be noted that projects illustrated on the Future ALP do not commit the LFUCAB to pursue the development, nor does depiction ensure that FAA funding will be available. Rather, the proposed development projects are intended to depict the potential build-out of the Airport within the 20-year planning period through Planning Activity Level (PAL) 4 and to protect identified areas for future development. Also note that the FAA considers ALP approval as 'conditional,' pending environmental review under the National Environmental Policy Act (NEPA).

Future Runway Improvements

The Future ALP depicts numerous projects for both the primary runway (Runway 4-22) and the secondary runway (Runway 9-27). While Runway 4-22 currently satisfies Runway Design Code (RDC) D-III standards, rehabilitation is required within the planning period. For the Airport to temporarily continue supporting commercial aircraft operations during the reconstruction of Runway 4-22, a proposed 1,900-foot extension to Runway 9-27 is recommended to achieve a total length of 5,900 feet. To support these operations, Runway 9-27 would temporarily transition from RDC B-II to RDC C-II. Additionally, it is recommended that Runway 9-27 is widened from 75 feet to 100 feet to adhere to ARC C-II design standards.

Future Taxiway Improvements

In conjunction with the Runway 9-27 extension, alterations to Taxiway F and its associated connectors are reflected on the Future ALP to provide full access to the extended runway while adhering to FAA standards (e.g., pavement geometry, removal of middle third taxiway crossings, runway to taxiway separation, hot spot mitigation, clear runway safety areas, etc.). The Future ALP also depicts a partial realignment of Taxiway A to ensure that the entirety of the taxiway adheres to the current runway to taxiway separation standards. Taxiway B is shown widened to 50 feet in accordance with Taxiway Design Group (TDG) 3 standards and extended to the end of Runway 4. The southwestern portion of the future Taxiway B depicts an alignment to avoid the Runway 4 Runway Visual Range (RVR) and glideslope antenna. An Instrument Landing System critical area "hold short" line is depicted on the taxiway. Future Taxiway 'A' and 'B' improvements also include updated pavement geometry and removal of middle third taxiway crossings.

Future Runway 9 Easements

As shown on the Future ALP, portions of the Runway 4-22 and Runway 27 approach corridors extend beyond the airport property boundary. The Airport maintains control of these areas through avigation easements.

Although the existing Runway 9 RPZ is located within the Airport's property boundary, a future avigation easement is depicted to ensure continued protection of the future Runway 9 Approach and Departure Protection Zones.

Terminal Area Improvements

While future development of the terminal area, east GA area, and WestLEX area are depicted on the Future ALP, they are portrayed in greater detail within the Terminal Area Plan sheets, which are further discussed in a subsequent section within this chapter.

8.2.5 Airspace Plan (Sheet No. 5 & 6)

Sheets 5 and 6 of the ALP drawing set illustrate the airspace requirements described in the Code of Federal Regulations 14 Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace.* Part 77.19 identifies a series of geometric planes (i.e., imaginary surfaces) that extend outward and upward from civil airports' runways and define the obstruction-clearing requirements. These surfaces identify the maximum acceptable height of objects by defining three-dimensional areas surrounding all sides of the airfield. When an object penetrates an imaginary surface, it is considered an airspace obstruction, and all obstructions are treated as potential hazards to air navigation (unless an FAA aeronautical study determines otherwise).

Imaginary Surfaces

Part 77.19 details five civil airport imaginary surfaces: primary surface, horizontal surface, conical surface, approach surface, and transitional surface. The height and dimensions of the imaginary surfaces are determined by the airfield and runway end elevations, the type of aircraft using the facilities, and the availability of instrument approaches to the runway ends (approach type and visibility minimums). The first sheet of the Airspace Plan provides an overall depiction of these surfaces, while the second sheet focuses on the approach and transitional surfaces for the primary runway (Runway 4-22).

Primary Surface

The primary surface is longitudinally centered on each runway and extends 200 feet beyond the usable runway ends. The width of the primary surface for precision runways (i.e., Runway 4 and Runway 22) is 1,000 feet.

For non-precision runways, such as Runway 9 and Runway 27, the width of the primary is dependent on whether the runway is a utility runway or other than a utility runway. A utility runway is intended for use by propeller-driven aircraft with a maximum gross weight of 12,500 pounds or less. Runway 9-27 is listed as a non-utility runway with visibility minimums greater than 0.75 statute miles, (i.e., design aircraft with a maximum gross takeoff weight of over 12,500 pounds); therefore, the width of the primary surface is 500 feet.

In the future, the primary surface of Runway 9 will increase to 1,000 feet due to a lower visibility minimum of 0.75 miles. Due to the future Runway 9 Part 77 category, the future primary surface for Runway 27 will also be 1,000 feet.

The elevation of the primary surface is equal to the elevation of the nearest point of a runway centerline. The highest point of the primary surface determines the official airport elevation [i.e., for LEX: 979.3 feet above mean sea level (MSL)].

Horizontal Surface

The horizontal surface consists of the horizontal plane 150 feet above the Airport's elevation of 979.3 feet MSL; therefore, the horizontal surface at LEX is 1,129.3 feet MSL. The shape of the surface is created using radial arcs of 10,000 feet from the ends of the primary surface of the existing and future runways at LEX, connected by lines tangent to the arcs.

Conical Surface

The conical 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. At LEX, the elevation of the outer edge of the conical surface is 1,329.30 feet MSL.

Approach Surface

The Part 77 Approach Surface is considered of high importance, as this area facilitates the arrival of aircraft. Approach surfaces are longitudinally centered on the runway centerlines and extend outward and upward from the ends of the primary surfaces. The inner edge of the approach surface is the same width as the primary surface and extends uniformly to a designated width dependent on the type of runway (i.e., utility, civil, visual, precision, non-precision, etc.). The approach

surface extends for a horizontal distance at a specified slope, also dependent upon whether the runway is a visual, non-precision instrument, or a precision instrument runway. For LEX, the dimensions and slopes of the existing and future approach surfaces are listed in **Table 8-2** and **Table 8-3**, respectively.

Table 8-2
Approach Surface Dimensions (Existing)

Runway End	Inner Width (Ft)	Outer Width (Ft)	Length (Ft)	Slope
Runway 4 (Precision)	1,000	16,000	10,000 (+40,000)	50:1 (40:1)
Runway 22 (Precision)	1,000	16,000	10,000 (+40,000)	50:1 (40:1)
Runway 9 (Non-Precision)	500	3,500	10,000	34:1
Runway 27 (Non-Precision)	500	3,500	10,000	34:1

Source: CHA, 2024.

Table 8-3
Approach Surface Dimensions (Future)

Runway End	Inner Width (Ft)	Outer Width (Ft)	Length (Ft)	Slope
Runway 4 (Precision)	1,000	16,000	10,000 (+40,000)	50:1 (40:1)
Runway 22 (Precision)	1,000	16,000	10,000 (+40,000)	50:1 (40:1)
Runway 9 (Non-Precision)	1,000	4,000	10,000	34:1
Runway 27 (Non-Precision)	1,000	4,000	10,000	34:1

Source: CHA, 2024.

Transitional Surface

Transitional surfaces extend outward and upward at right angles from the sides of the primary and approach surfaces at a slope of 7 to 1 (7:1), with the transitional surfaces terminating at the overlying horizontal surface.

The overall Airspace Plan illustrates the full dimensions of the Part 77 surfaces and obstructions located within the outer portions of the approach, horizontal, and conical surfaces. These drawings use a small scale, as they depict a large area extending from the runway ends.

8.2.6 Centerline Profiles (Sheet No. 7-9)

The runway centerline profile for Runway 4-22 is presented in Sheets 7 and 8, while Sheet 9 depicts the centerline profile for Runway 9-27. Runway centerline profiles provide a view of the runways' elevation at various points and illustrate the line-of-sight for each runway. As shown within the ALP drawing set, two centerline profiles for Runway 4-22 are shown to depict the current condition before rehabilitation/reconstruction to preserve pavements and to correct line-of-sight deficiencies.

8.2.7 Inner Approach & Departure Surfaces (Sheet No. 10-17)

The inner approach surface of each existing and potential future runway end is depicted on Sheet 10 (Runway 4), Sheet 11 (Runway 22), Sheet 12 (Existing Runway 9), Sheet 13 (Future Runway 9), and Sheet 14 (Runway 27) of the ALP drawing set. The inner portion of the surface extends outward to the point where the approach reaches 100 feet above the runway end elevation. In addition, the departure surfaces for these runway ends are illustrated on Sheet 15 (Runway 4), Sheet 16 (Runway 22), and Sheet 17 (Runway 27).

These sheets illustrate approach obstructions in a greater level of detail to identify specific objects (i.e., trees, poles, and building penetrations). Significant objects within the approach surfaces that are not obstructions are also shown to illustrate the Airport operating environment. As is common to most airports, the drawings identify several penetrations to the surrounding airspace.

8.2.8 Obstruction Tables (Sheet No. 18)

Sheet 18 contains obstruction tables for the approach surfaces (current and future), the departure surface, and traverse ways for all four runway ends at the Airport. Each obstruction is given an Object ID, as well as its object type (i.e., tree, antenna, utility pole, road, etc.), location, height (MSL), and the number of feet that they penetrate that particular surface.

8.2.9 Terminal Area Plan (Sheet No. 19-21)

The Terminal Area Plan is depicted across three sheets (Sheets 19, 20, and 21) and illustrates existing and future infrastructure within the passenger terminal building area, east GA area, and WestLEX area.

Facilities depicted within the Terminal Area Plan sheets reflect those depicted on the Future ALP but at a smaller scale and provide greater detail. Highlights of the proposed new facilities on the Terminal Area Plan include:

- New two-level terminal building (arrivals & departures)
- Concourses including FIS swing gates for a relocated FIS facility
- Expanded surface parking
- A second parking garage
- Expanded two-level terminal loop road
- Expanded Terminal Apron
- Expanded GA with additional hangars on East GA Apron
- Relocated fixed-base operator on East GA Apron
- Fuel farm expansion
- Expanded WestLEX Apron
- Additional hangar space on WestLEX Apron
- Relocated Aviation Museum of Kentucky to the WestLEX Apron

8.2.10 Land Use Map (Sheet No. 22)

The Land Use Map is depicted on Sheet 22. As discussed in **Chapter 6**, the land surrounding the Airport contains a diverse mix of uses, including:

- Agricultural/Rural (Zone A-R)
- Neighboring Business (Zone B-1)
- Single Family Residential (Zone R-1A)
- Planned Neighborhood Residential (Zone R-3)

The majority of the land surrounding the Airport is within Zone A-R.

Airport development has the potential to impact sensitive areas such as residences, schools, churches, etc.; however, airports are typically considered to be compatible with commercial, industrial, and agricultural activities.

8.2.11 Property Map (Sheet No. 23) and Property Map Parcel Data (Sheet No. 24 & 25)

The final sheets of the ALP drawing set are the Airport Property Map (Sheet 23) and associated Property Map Data Tables (Sheet 24 and 25). The Property Map drawing is often called "Exhibit A" because the property map is a required attachment for FAA grant applications and is attached as Exhibit A.

The primary purpose of this drawing and the associated data tables is to provide information regarding the acquisition of airport property (i.e., federal programs, local funds only, etc.). The map assists with the identification of current and future aeronautical uses of properties acquired with federal funds. The map also identifies each location that is proposed or planned for ultimate acquisition. Exhibit A is for illustration purposes and does not constitute a property boundary survey or other legal documentation.

The Property Map drawing reflects the Airport's current "Exhibit A," which was previously updated in 2020. All properties, airport boundaries, and land have been updated to reflect existing conditions.

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