CHAPTER 5: AIRPORT LAYOUT PLAN

Background and Purpose

This Chapter presents the Airport Layout Plan (ALP) and associated drawings for the Laurel Municipal Airport (6S8). The ALP drawing set graphically depicts the development of the airport proposed over the 20-year planning period and beyond. The ALP drawings reflect the culmination of the master planning process evaluating aviation demand, airside and landside facility needs, and options for development of airside and landside facilities. The preferred development plan is shown on the ALP drawings located at the end of this chapter. The rationale for preferred development and the public involvement process is documented in **Chapters 2 and 3**.

The ALP is intended to serve as the framework for future development and growth. All airport development must be done in accordance with an FAA-approved ALP. Proposed development must be shown on an approved ALP to be eligible for FAA Airport Improvement Program (AIP) grant funding. Projects must be justified based on safety, security, capacity, planning, environmental and infrastructure needs meeting FAA standards within the next five years to be eligible for AIP funding. Proper environmental approval must also be completed before proceeding to project implementation. More information is available in FAA Order 5100.38, AIP Handbook.

The ALP drawing set reflects airport design standards in accordance with the following documents:

- FAA AC 150/5070-6B, *Airport Master Plans* (Change 2)
- FAA AC 150/5300-13B, *Airport Design*
- FAA ARP SOP No. 2.00, Airport Layout Plan Review Checklist (October 2013)
- FAA ARP SOP No. 3.00, Exhibit 'A' Airport Property Map Review Checklist (October 2013)

These drawings will be submitted to the FAA Montana DOT Aeronautics Division for their review and comment. FAA approval of the ALP indicates that the existing facilities and proposed development depicted on the ALP conforms to the FAA airport design standards in effect at the time of the approval. Approval indicates the FAA finds the proposed development to be safe and efficient.

The airport has an FAA grant assurance obligation to keep the ALP document current. Periodic "as-built" updates should be completed during the closeout of projects to update existing conditions. The Master Plan and accompanying ALP drawing set should be updated every 10 years at a general aviation airport to evaluate aviation needs and the development plans.

ALP Drawing Set

The ALP drawing set contains several sheets depicting the existing facilities, planned development, and other pertinent information concerning the airport. The following sections describe the specific elements found on each sheet with the ALP drawing set, along with significant changes from the previously approved Laurel Municipal Airport ALP (2016). The 6S8 ALP drawings in this planning study include:

- Sheet 1: Title Sheet

- Sheet 2: Airport Data Sheet
- Sheet 3: Airport Layout Plan (Existing)
- Sheet 4: Airport Layout Plan (Future)
- Sheet 5: Airport Layout Plan (Ultimate)
- Sheet 6: West Terminal Area (Existing, Future & Ultimate)
- Sheet 7: Central Terminal Area (Existing, Future & Ultimate)
- Sheet 8: East Terminal Area (Existing, Future & Ultimate)
- Sheet 9: Inner Portion of the Approach Surface – Runway 4 (4R) End (Existing & Future)
- Sheet 10: Inner Portion of the Approach Surface – Runway 4R End (Ultimate)
- Sheet 11: Inner Portion of the Approach Surface – Runway 22 (22L) (Existing, Future & Ultimate)
- Sheet 12: Inner Portion of the Approach Surface – Runway 4L End (Future, Ultimate)
- Sheet 13: Inner Portion of the Approach Surface – Runway 22R End (Future, Ultimate)
- Sheet 14: Inner Portion of the Approach Surface – Runway 14 End (Existing, Future & Ultimate)
- Sheet 15: Inner Portion of the Approach Surface – Runway 32 End (Existing, Future & Ultimate)
- Sheet 16: Inner Portion of the Approach Surface – Runway 9-27 (Existing)
- Sheet 17: Airport Airspace Drawing (Future & Ultimate)
- Sheet 18: Runway Departure Surface (Existing, Future & Ultimate)
- Sheet 19: Airport Land Use Drawing
- Sheet Ex A-1: Exhibit 'A' Parcel Inventory Map
- Sheet Ex A-2: Exhibit 'A' Parcel Inventory Tables

Sheet 1: Title Sheet

The title sheet is an index to the ALP drawing set. It also provides pertinent information such as the airport sponsor, airport name, grant number the project is funded through, location and vicinity maps, revision numbers and the date the plan was completed. The title sheet also includes the airport wind coverage tables and wind roses for space purposes.

Sheet 2: Airport Data Sheet

The data sheet provides technical information on airport facilities and design standards for the existing and future airport configurations. Elements include an airport data table and runway data table.

The data tables for this ALP depict several development phases. These include existing (E), future (F), and ultimate (U). These have been identified to better match with the development sequence identified in the Master Plan. A description of the features is included in the Airport Layout Drawing discussion.

There is are no FAA Modifications to Airport Design Standards for the airport.

Sheets 3, 4 & 5: Airport Layout Plan

The Airport Layout Drawing is a graphical depiction of the airport facilities and design standards. Existing conditions and future development phases are distinguished.

The Existing sheet provides a depiction of all three existing runways 4-22, 14-32 and 9-27.

The Future sheet provides a depiction with the removal of Runway 9-27 and the addition of Runway 4L-22R which is a turf parallel runway with a 300 foot centerline separation from the primary Runway 4R-22L. It also continues to include Runway 14-32. Also the realignment of Taxiway A and all the terminal

development is also included on the Future sheet even though the development of hangars is always based on demand.

The Ultimate sheet has only one difference from the Future sheet. The Ultimate sheet shows the extension of Runway 4R-22L by 1,000 feet to the west end. All other items are the same as the Future sheet.

Sheets 6, 7 & 8: Terminal Area Plans

The Terminal Area Plan drawings provides a large-scale view of areas with significant terminal facility development, so that features such as aprons, buildings, hangars, and parking lots are easily discernable. Dimensions are included to clearly depict clearance from objects. All hangar development is based on demand and is expected to occur in different areas at different times depending on the needs of particular tenants.

There are infrastructure projects that will be proactive efforts by the airport such as the realignment of Taxiway A, the extension of taxilanes and aprons and the addition of a terminal building. When these are completed they will allow for other development to occur.

Sheets 9 through 16: Inner Portion of the Approach Surface

This drawing provides plan and profile views of the portions of approach surfaces that are typically to a point on the approach slope 100 feet above the runway threshold elevation. Several approach surfaces are shown including FAR Part 77, FAA threshold siting, and glidepath qualification surface approach surfaces.

Roadways and railroads assume a standard mobile vehicle per Part 77 criteria. Standards include 10 feet for private roads, 15 feet for public roads, 17 feet for interstate highways and 25 feet for railroads. These heights are added to the ground elevation.

There are sheets developed for each runway threshold because any obstruction issues must be examined specifically for each approach surface. Triggering events are noted for when objects that may be obstructions are dealt with.

Sheet 17: Airport Airspace

This drawing shows the FAR Part 77 Imaginary Surfaces for the ultimate layout of the Airport. The Part 77 surfaces are the basis for identifying obstructions to the airspace around an airport. The FAA determines if any of the obstructions to Part 77 surfaces are hazards to air navigation.

Part 77 defines five distinct surfaces, each with a different size and shape. The dimensions of these surfaces are based on the type of runway and the type of approach ultimately planned for the Airport. The imaginary surfaces are defined below.

Primary Surface - The primary surface is rectangular, is centered on the runway, extends 200 feet beyond a paved runway, and has a width that varies based on airport-specific criteria. The elevation of the primary surface corresponds to the elevation of the nearest point of the runway centerline.

The width of the existing primary surface of Runway 4-22 is 500 feet which will remain the same through the planning period. With the addition of Runway 4L-22R the primary surface for the combined parallels will widen by 175 feet in the area of the new parallel runway. Existing Runway 9-27 is not depicted

because it will be removed soon and the surfaces are generally protected within the other runway surfaces. The width of the Runway 14-32 primary surface remains at 250 feet for a visual utility runway.

Approach Surface - Each runway end has an approach surface. The approach surface is centered on the extended runway centerline, starts at the end of the primary surface, and has a width equal to that of the primary surface. Approach surfaces slope upward and outward from the runway ends.

The ultimate planned approach surfaces at the Airport reflect a non-precision approaches (1 mile) for Runway 4-22 (4R-22L). It has an inner width of 500 feet, extends outward 5,000 feet to an outer width of 2,000 feet, and rises at a slope of 20:1The other approach surfaces remain visual utility, with an inner approach surface width of 250 feet, extending outward 5,000 feet to an outer width of 1,250 feet, and rises at a slope of 20:1.

Transitional Surface - The transitional surface is a sloping 7:1 surface that extends outward and upward at right angles to the runway centerline from the sides of the primary surface and from the sides of the approach surfaces.

Horizontal Surface - The horizontal surface is a flat, elliptical surface at an elevation 150 feet above the established airport elevation (3,692.8' MSL). The extent of the horizontal surface is determined by swinging arcs of a 5,000-foot radius from the center of each end of the primary surface for other-than-utility runways.

Conical Surface - The conical surface extends outward and upward from the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet. The conical surface rises to a maximum elevation of 3892.6' MSL. The obstacle data is based on an aeronautical survey performed in October 2018.

Sheet A-18: Runway Departure Surface

The Runway Departure Surface Drawing depicts the plan and profile views of runways with instrument departure procedures. Each departure surface at the Airport begins at the departure end of the runway at a width of 1,000 feet, extends outward 10,200 feet to an outer width of 6,466 feet, and slopes up at 40:1. The departure surface applies to all existing, future, and ultimate runway end locations for Runway 4-22 (4R-22L). Runway 14-32 and 4L-22R are exempt as they are not designated for instrument departures.

Sheet 19: Airport Land Use

The Airport Land Use Drawing depicts both on- and off-airport land uses and zoning in the area around the airport. Land uses around airports should be compatible with airport operations. The airport should enact zoning to control land uses from incompatibility activities. Examples of land use compatibility issues at airports include:

- Aircraft Noise
- Nearby Lighting
- Glare, Smoke, and Dust Emissions
- Wildlife Attractions and Landfills
- Airspace Obstructions
- Electromagnetic Interference
- Concentrations of People
- Structures Near Runway Ends

Sheets Ex A-1 & Ex A-2: Exhibit 'A' - Airport Property Map'

This sheet serves as an Airport Property Map and Exhibit 'A'. The Exhibit 'A' is a snapshot of the inventory of parcels that make up dedicated airport property. The Exhibit 'A' provides boundary information on airport property interests and encumbrances upon airport property. Detailed information is provided on airport property interests, released, or sold property, recorded or unrecorded encumbrances. All land shown on an Exhibit 'A' constitutes the airport property federally obligated for compliance. The airport property map builds upon the Exhibit 'A' information by depicting property to be acquired to support the future and ultimate development of the airport. The property map and tables are depicted on separate sheets for clarity. A separate booklet has been prepared containing property documentation.

The existing Airport encompasses 492 .232 acres owned in fee and 22.150 acres of property controlled through avigation easements. It is currently proposed that an additional 0.87 acres are needed in easements to control the FAA Runway Protection Zone.

This Exhibit A meets FAA SOP 3.00 standards. The previous ALP included an airport property map but did not include an official Exhibit 'A' drawing.