



Chapter 1: Introduction

Introduction

The Black Hills Regional Airport - Clyde Ice Field (SPF) undertook this Airport Master Plan under the leadership of both Lawrence County and the City of Spearfish. The work began in 2014 for this Airport Master Plan and because of various issues encountered in the planning process continued for several years concluding in 2020. The work was accomplished through three different Airport Improvement Program (AIP) airport planning grants issued by the Federal Aviation Administration (FAA). Specific components of this project were accomplished in each of these grants and are summarized as follows:

- AIP 3-46-0065-022-2014 (Contract Executed September 2014)
 - All standard Airport Master Plan elements
 - Chapters 1, 2, 3, 4, 5 and 6 as well as All Appendices except Appendix R - Runway Protection Zone Analysis
 - Airport Layout Plan
 - Determined that additional analysis was needed of the proposed Runway 5 RPZ, additional environmental evaluation was needed for the proposed Runway 5/23, and the feasibility of an instrument approach to proposed Runway 23 needed evaluation
- AIP 3-46-0065-023-2017 (Contract Executed September 2017)
 - Cultural Survey (with Tribal walk-through)
 - Wetlands Delineation
 - Runway Protection Zone Analysis
 - Feasibility for Instrument Approach to proposed Runway 23
 - Amendments to Appendix N - Crosswind Runway Analysis, P - Environmental and R - Runway Protection Zone Analysis
 - Determined there were impacts on cultural resources with the proposed Runway 5/23 and the crosswind runway needed to change to a proposed Runway 8/26
- AIP 3-46-0065-025-2019 (Contract Executed September 2019)
 - Evaluate a proposed Runway 8/26
 - Review alternative layouts of the terminal area considering a change in the crosswind runway
 - Update Chapters 5 and 6 and Appendix N
 - Update the Airport Layout Plan with new preferred alternatives for the airfield and terminal area

Report Layout

The required and recommended contents of Airport Master Plans are detailed in FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans. Effective airport master plans are based on the analysis of significant amounts of data, and many airport master plans typically present not only the planning conclusions, but all data and accompanying analysis in considerable



detail. Quite often, the important planning elements are lost in the volume of detail and it may be difficult for a reader to identify those important elements.

This airport master plan presents a new approach to documentation. All elements required by the FAA Master Plan AC are included in this master plan. However, the body of the master plan is written to define the airport's issues and present a plan to resolve those issues. The extensive data required to support the plan and the detailed analyses of that data have been moved to a series of appendices. As the reader moves through the narrative descriptions, there are frequent references/links to specific appendices to provide additional details and information.

An example of this is throughout the master plan and supporting documents, there are numerous references to aircraft operating characteristics and runway design standards. The characteristics and standards are typically represented by an alphanumeric designation, such as B-II or C-III. Rather than continually repeating the specifics, the alphanumeric codes will frequently be used as a "shorthand" reference in discussions about runway and airport design. A comprehensive discussion of the codes and the aircraft characteristics or runway design standards they represent is found in **Appendix D - Airport Classification**.

Project Scope

Several meetings occurred between Airport staff, the Lawrence County Airport Board (the airport owner at the beginning of the study) and KLJ representatives between the summer and fall of 2014. Out of these meetings specific objectives for this master planning effort (2014) were developed. These include the following items:

- Evaluate the airport's unpaved crosswind runways and determine the justification and need for the unpaved crosswind runways and a paved crosswind runway.
- Evaluate existing primary runway design code and the need for any changes.
- Evaluate the existing layout of hangars and buildings and determine a layout that makes the best use of airport property, meeting long term development needs and enabling business/user expansion
- Evaluate ground vehicle access options for the airport and determine an optimum access points to connect the airport with the community
- Evaluate and report on financial options for completing improvements at the airport.

Study Design

An airport master plan is a comprehensive study of the airport and typically describes short-, medium-, and long-term plans for airport development, which attempts to answer the questions/objectives outlined above. A master plan is broken up into specific chapters, with each chapter detailing the various components of the airport.

The chapters outlined below provide an overview of the research and analysis behind the updated Airport Master Plan document and its related changes; for more detailed information on master planning please see **Appendix B - Master Plan Process**.



- Existing Conditions The purpose of this task is to collect and map baseline data regarding airport facilities and aviation activity. This data provides benchmarks to measure against aviation forecasts and airport facility requirements prepared in subsequent tasks.
- Forecasts The purpose of this task is to project short, medium, and long-term critical aviation activity (based aircraft, operations, etc.) The forecasts are used to identify the airport's future facility requirements.
- Facility Requirements Assess the ability of the existing airport, both airside and landside, to support the forecast demand. Identify the demand levels that will trigger the need for facility additions or improvements and estimate the extent of new facilities that may be required to meet that demand.
- Facility Alternatives Based upon the facility requirements identified, alternatives to meet future demand will be developed and evaluated. Selection of a preferred alternative will be based on several factors including functionality, ease of implementation, potential environmental impacts, and development cost.
- Capital Improvement Plan The purpose of this task is to formulate realistic implementation strategies and funding mechanisms for the capital improvements.
- Environmental Review The purpose of this task is to briefly review the proposed capital improvements for potential environmental consequences in order to determine what type of environmental clearance may be required.
- Airport Layout Plan This is a graphical representation on full size drawings of the preferred alternative which meets technical standards established by the Federal Aviation Administration and serves as the basis for capital improvement projects for the future.

In addition to the chapters noted above, greater detail regarding the background on certain subject areas and details relevant to Black Hills Airport - Clyde Ice Field are provided in appendices. The appendices will be referenced in through the chapters and are as follows (not all letters are used):

- Appendix A - Glossary of Terms
- Appendix B - Master Plan Process
- Appendix C - Public Involvement
- Appendix D - Airport Classification
- Appendix E - Airport Funding
- Appendix F - Airport Background
- Appendix G - Airfield Pavements
- Appendix H - Airfield Design
- Appendix K - Navigational Aids
- Appendix L - Airspace and Instrument Approaches
- Appendix N - Crosswind Runway Determination
- Appendix P - Environmental
- Appendix R - Runway Protection Zone Analysis



Public Involvement

Planning and operating the Black Hills Airport - Clyde Ice Field substantially affects the community. For that reason, airport development must be a grassroots effort, involving the area's citizens to the greatest extent possible in the planning process.

Community involvement also has the positive effect of building consensus for the growth of aviation and support of efforts to further develop Black Hills Airport - Clyde Ice Field. Airport development often involves the commitment of extensive community resources and is critical to the successful implementation of the Master Plan Update.

The Lawrence County Airport Board and City of Spearfish recognizes the need for community involvement and support in the preparation of this Master Plan Update. To that end, the Board directed KLJ to reach out to airport users and community representatives to assist in the planning process.

The Lawrence County Airport Board and City of Spearfish also has provided public outreach through the following efforts:

1. Draft chapters were placed on the County and City websites.
2. An electronic survey was established on the County and City websites to gather feedback.
3. Public meetings

Appendix C - Public Involvement details the efforts taken throughout this master plan to include many different perspectives in the community and to ensure that this master planning effort had broad support.