



---

# Airport Master Plan

**South St. Paul Municipal Airport –  
Fleming Field**

**South St. Paul, Minnesota**

**June 2015**



**Submitted by:**  
Bolton & Menk, Inc.  
12224 Nicollet Avenue  
Burnsville, MN 55337  
P: 952-890-0509

**Airport Sponsor:**  
City of South St. Paul  
125 Third Ave. N.  
South St. Paul, MN 55075  
P: 651-554-3200



## TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

1.	INTRODUCTION .....	1-1
1.1.	Purpose.....	1-1
1.2.	Background.....	1-1
1.3.	Areas of Emphasis .....	1-1
1.4.	Structure of a Master Plan.....	1-2
1.5.	Public & Agency Outreach .....	1-2
2.	AIRPORT INVENTORY .....	2-1
2.1.	Location .....	2-1
2.2.	History of the Airport .....	2-1
2.3.	Airport Setting .....	2-2
2.4.	Socioeconomic.....	2-3
2.5.	Airport Role .....	2-5
2.6.	Airport Management.....	2-9
2.7.	Aviation Activity .....	2-9
2.8.	Airport Design Standards & Obstructions .....	2-11
2.9.	Climate.....	2-15
2.10.	Airside Facilities .....	2-16
2.11.	Landside & Support Facilities .....	2-20
2.12.	Facilities Summary .....	2-23
2.13.	Land Use & Development .....	2-23
2.14.	Environmental Overview .....	2-27
3.	AVIATION FORECASTS .....	3-1
3.1.	Introduction.....	3-1
3.2.	User Survey Summary .....	3-1
3.3.	Aviation Trends .....	3-4
3.4.	Existing Based Aircraft & Annual Operations .....	3-6
3.5.	Based Aircraft Forecast .....	3-7
3.6.	Annual Operations Forecast.....	3-8

3.7. Future Critical Design Aircraft ..... 3-13

3.8. Summary ..... 3-14

4. FACILITY REQUIREMENTS ..... 4-1

4.1. Introduction..... 4-1

4.2. Airfield Capacity & Demand Analysis ..... 4-2

4.3. Instrument Approaches ..... 4-3

4.4. Runway Facility Requirements ..... 4-4

4.5. Airport Visual Aids & Navigational Aids ..... 4-11

4.6. Taxiway & Taxilane Facility Requirements ..... 4-12

4.7. Aircraft Apron & Tie-Down Requirements ..... 4-13

4.8. MN State Aviation System PAn (SASP) Airside Recommendations ..... 4-15

4.9. Landside Facility Requirements ..... 4-15

4.10. Support Facility Requirements ..... 4-18

4.11. Land Use & Acquisition Considerations ..... 4-19

4.12. MN SASP Landside Recommendations ..... 4-20

4.13. Summary ..... 4-20

5. FACILITY IMPLEMENTATION PLAN ..... 5-1

5.1. Funding Information ..... 5-1

5.2. Project Schedule ..... 5-2

**LIST OF FIGURES**

Figure 2-1 Regional Airport Location ..... 2-1

Figure 2-2 Local Airport Location..... 2-2

Figure 2-3 Airport Elements Overall ..... 2-3

Figure 2-4 2011 Pavement Condition Index Rating ..... 2-4

Figure 2-5 Airport Building Elements ..... 2-5

Figure 2-6 Existing Land Use ..... 2-6

Figure 2-7 Environmental Information ..... 2-7

Figure 3-1 Drive Time & Service Area ..... 3-15

Figure 4-1 Planning Considerations..... 4-22

Figure 4-2 Proposed Actions ..... 4-23

Figure 4-3 Airfield Alternative 6a ..... 4-24

Figure 4-4 Airfield Alternative 6b ..... 4-25

Figure 4-5 Airfield Alternative 6c ..... 4-26

Figure 4-6 Airfield Alternative 7 .....4-27  
Figure 4-7 Preferred Alternative - Stopways .....4-28  
Figure 4-8 Future Taxiway Improvements .....4-29  
Figure 4-9 Terminal Area Concept .....4-30  
Figure 5-1 Short-term (Present – 5 years).....5-13  
Figure 5-2 Mid-term (6 – 10 years) .....5-14  
Figure 5-3 Long-term (11 – 20 years).....5-15

**LIST OF APPENDICES**

Appendix A Airport User Surveys & Summary  
Appendix B Runway Protection Zone Alternative Analysis  
Appendix C Airport Layout Plan  
Appendix D 2015 Capital Improvement Program (CIP)  
Appendix E South St. Paul Municipal Airport Strategic Business Plan  
Appendix F Noise Contours



## **EXECUTIVE SUMMARY**

The Airport Master Plan for the South St. Paul Municipal Airport (Fleming Field) evaluates the needs of the existing and future users of the airport over the next 20 years. The City of South St. Paul last completed an Airport Master Plan in 1973 and an update to the Airport Layout Plan in 2002. Numerous elements have changed on the airport since 2002 that require an update to these documents. The areas of emphasis for this update include the following:

- Evaluate opportunities to maximize the runway length and reduce impacts to surrounding landowners while meeting the needs of the existing and future users of Fleming Field.
- Analyze existing airspace obstructions and land use incompatibilities to determine the impacts to the surrounding landowners.
- Conduct a financial feasibility analysis to evaluate capital funding sources, net operating revenues, cash reserves, airport operating revenues/expenses, and evaluate projected operating revenues/expenses based on the preferred airport implementation plan.
- Develop a public involvement plan to allow airport stakeholders and the general public opportunities to provide input on the future development at the airport.

The Airport Master Plan is a joint effort between the South St. Paul City Council, South St. Paul Airport Advisory Commission, Federal Aviation Administration (FAA), and MnDOT Office of Aeronautics (MnDOT). An Airport Master Plan includes discussion of the existing inventory at the airport, the results of the user survey submitted to the service area around the airport, the forecasts of aircraft activity including based aircraft and operations, the facility recommendations to meet the forecasted needs of the users of the airport, alternatives of the recommended facilities, and the implementation plan.

### **Airport Inventory**

The City of South St. Paul is located 15 miles southeast of Minneapolis and six miles south of St. Paul in the southeastern portion of the Twin Cities Metropolitan Area. The airport is located in the southernmost part of the City. Fleming Field is located east of 7<sup>th</sup> Avenue South/Cahill Avenue East, west of County Highway 56 (Concord Boulevard), north of County State Aid Highway 26 (70<sup>th</sup> Street) and south of South Street. The main airport access is located at the corner of Henry Avenue and Airport Road at the northeast corner of airport property. The airport is a general aviation facility serving primarily business owners and recreational pilots that use single-engine and multi-engine propeller driven aircraft in addition to small business jets.

There are currently 261 based aircraft at the airport. There is a public terminal building, two T-hangars for based aircraft storage, six public conventional hangars, 75 private hangars, 13 apron tie-downs, and 17 grass tie-downs available for aircraft parking. There is an automobile parking lot located near the terminal building and 100LL and Jet A fuel are available for aircraft.

Fleming Field has one runway, Runway 16/34, which is 4,002 feet long by 100 feet wide with a bituminous surface. There is a Global Positioning System (GPS) approach to Runway 34 and a full parallel taxiway on the east side of the runway which connects the runway to the building area.

There are existing airspace obstructions and land use incompatibilities around the airport that are required by FAA design standards to be mitigated in order for the City of South St. Paul to continue to receive federal funding for capital improvement projects at the airport. An analysis was completed documenting

the mitigation plan for these items. The airspace obstructions and land use incompatibilities were included in an Environmental Assessment which was finalized in February 2015. The City of South St. Paul can begin to mitigate the airspace obstructions and land use incompatibilities.

**Aviation Forecasts**

The aviation forecasts show growth in based aircraft over the next 20 years to 363 aircraft in 2032, which represents a growth of 102 aircraft. The annual operations are estimated to be 62,640 growing to 87,120 over the next 20 years.

The safety standards used at the airport are based on the type of approaches planned for the airport over the next 20 years and the critical design aircraft, or group of aircraft that use Fleming Field at least 250 times per year. Through the aviation activity forecasts, it was determined that aircraft with approach speeds between 91 and 121 knots, wingspans between 49 and 79 feet, tail heights between 20 and 30 feet, and weigh greater than 12,500 pounds is the biggest group of aircraft that will use the airport more than 250 times per year. Examples of this type of aircraft include the Beechcraft Super King Air 300, Cessna Citation CJ4, and the Cessna Citation Excel. A photo of the Beechcraft Super King Air 300 is on the right. All future development at the airport will consider the design standards for this type of aircraft.



**Facility Requirements**

Based on the 20 year forecasts, facility recommendations were developed. According to the FAA Advisory Circular (AC) titled *Runway Length Requirements for Airport Design*, a runway of 4,700 feet is recommended at Fleming Field in order to serve 75 percent of the large aircraft classification that use the airport. This includes the list of aircraft mentioned in the aviation forecasts that currently use the airport.

However, based on the physical constraints around the airport and discussions with existing and potential users of Fleming Field, it was determined that a runway length of 4,300 feet would be acceptable to maximize the capacity and use of the aircraft currently using the airport. Aircraft require the most runway length during their takeoff roll. Because of the physical constraints around the airport including local roadways and residential property, the selected alternative includes adding stopways to each runway end instead of extending the runway threshold. Although stopways are not constructed to the full pavement strength of a runway, it allows pilots to calculate a greater distance for takeoff operations.

Other airside facility requirements determined from the Master Plan analysis include completing the parallel taxiway on the west side of the airport, realigning the east parallel taxiway to meet the Runway 34 end at a 90 degree angle, and strengthening the runway pavement.

Additional landside needs were identified for Fleming Field including construction of additional hangar space, an apron expansion to allow for additional aircraft parking, and expansion of the automobile parking lot.

**Facility Implementation Plan**

The final chapter of the Airport Master Plan takes a look at the timing and funding necessary to develop the facilities recommended to accommodate the existing and future users of the airport. This includes a

reference to the Strategic Business Plan prepared for the South St. Paul Municipal Airport and included as an appendix to this document.

Further discussion of the facility requirements, project impacts, and details of the forecast analysis for the South St. Paul Municipal Airport can be found within the Airport Master Plan document.