Chapter One inventoried the existing facilities and their condition and services at Blosser Municipal Airport (Airport). Chapter Two established the aviation demand forecasts for the Airport. The next step in the Master Plan process is to investigate the capability of the Airport facilities and services to accommodate the forecasted aviation demand.

The objective of Chapter Three is to translate the projected future aviation demand levels into specific aviation facility and service requirements that can serve and meet the projected demand at the Airport then recommend what new facilities and/or services are needed and when.

Once Airport facility and service requirements are established in this Chapter, Chapter Four then defines alternatives for how those requirements can be developed. Several alternatives will be formulated to determine the most cost effective method of addressing the minimum needed aviation requirements at the Airport.

## DETERMINING PRUDENT AIRPORT REQUIREMENTS

Each airport in Kansas and throughout the United States has a unique set of facilities and services that it offers to aviation users and to the general public. Often, the development of facilities and provision of airport services is based on available funding and long-term planning goals, which may leave an airport lacking much needed features.

An airport that lacks essential facilities and services may not fully serve its local community, and thus other investments in facilities at that airport may not have their intended benefits. For example, an airport may have the runway dimensions and navigational equipment to accommodate business jet aircraft, but without jet fuel or ground transportation to serve those aircraft; such aircraft could choose to use other airports.

Through this comprehensive planning process, goals for minimum facilities and services at Blosser Municipal Airport (Airport) have been researched and identified. Now in Chapter Three, objectives for development of landside facilities, airside facilities and services for the Airport are specifically identified. These objectives can be viewed as the minimums for facility development and provision of aviation services to which the Concordia community and the City of Concordia (City) should strive to accomplish at the Airport.

Also, the *Kansas Airport System Plan 2009* (KASP) evaluation of Kansas airports determined minimum facility and service objectives and measured the ability of each Kansas airport to fulfill its role in the Kansas airport system. The specific facilities and services needed at each airport depend on the role that the airport plays, with more extensive facilities needed at airports that serve larger, more sophisticated aircraft.

Before determining the objectives for development of airside facilities, landside facilities and services at the Airport, it is first important to summarize determinations and goals for minimum facilities and services to appropriately accommodate aviation demands at the Airport.

## REVIEW OF DETERMINATIONS AND GOALS

The aviation vision and related goals for the Concordia community and surrounding area must be considered as basic fundamental guides to further enhance and develop Blosser Municipal Airport (Airport). In addition, development at the Airport is to be accomplished at minimum cost to user and non-user alike, without detrimental effects on the environment, and in concert with prevailing local, regional, State of Kansas (State) and Federal goals and development plans. Therefore, the overall objective of this Airport Master Plan is to continue providing the Concordia community with a modern airport facility that is:

- Safe;
- Economically viable;
- In fulfillment of broad local, National, State and regional goals;
- Environmentally acceptable with respect to surrounding land uses;
- Acceptable to user and non-user alike; and
- Substantially user-supported.

During formulation of this Airport Master Plan, the current and planned future role of the Airport to support the Concordia community, North Central Kansas Region, State airport system, and United States airport system were prudently considered. In summary, the following Airport roles and needs will be carefully considered in this Chapter while formulating enhancement and development recommendations for the Airport:

- Aviation and development enhancements shall not decrease the utility of the current or ultimate Airport and no future addition or modification will adversely affect the access to or use of the Airport.
- The Airport is part of the *National Plan of Integrated Airport Systems* (NPIAS) and is categorized in that as a *General Aviation* (GA) airport with a subcategory of *Basic Airport.*

The National Plan of Integrated Airport Systems (NPIAS) identifies nearly 3,400 existing and proposed airports that are significant to National air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP).

- The *Kansas Airport System Plan 2009* (KASP) determined that the Airport is deemed a *Business Airport* in the Kansas system of Airports and should be further developed as such.
- The KASP determined that the Airport infrastructure should be enhanced to a level giving the Airport full capability of supporting air ambulance services utilizing fixed wing aircraft.
- The existing aviation infrastructure at the Airport meets the demands of physician aircraft as defined by the KASP. However, the KASP airport specifications for accommodating physician aircraft do not meet the primary runway length specification of 5,000 feet that is desired by the *University of Kansas (KU) Medical Center Outreach Aircraft Program* and other such medical and/or air ambulance services utilizing fixed wing aircraft requiring that primary runway length specification.

- The *Kansas Aviation Economic Impact Study 2010 (*KAEIS) determined that the airport has a Total Economic Output of $437,000 per year. That estimated economic impact by the Airport is overall very positive for the City of Concordia (City), Concordia community, State of Kansas, and the United States. The Airport's ability to economically do that should be protected and enhanced.
- The highway system in the North Central Kansas Region demands that the Airport have an appropriate ground transportation link to that.
- The Concordia community is in a remote rural location where access to a resourceful local airport that can accommodate modern aircraft operations is a key component to the stabilization and future growth and prosperity of the community.
- Data and engineering analysis of the Airport conducted in Chapter Two determined the following:
    - o The largest critical aircraft based at the Airport is the Piper PA-23, an Airport Reference Code (ARC) A-I category aircraft.
    - o The ultimate critical aircraft utilizing the Airport is the Beech King Air B-200 which is an ARC B-II category aircraft.

### GENERAL AVATION AIRPORT

The Airport is part of the *National Plan of Integrated Airport Systems* (NPIAS) and is categorized in that as a General Aviation (GA) airport. General Aviation includes every type of civil flying other than the certificated air carriers, and, as such, the General Aviation system is characterized by a relatively low profile. Most of the general public enjoys the benefits of General Aviation while many remain unaware of its existence. Businessmen flying to meetings, plant visits or new site inspections; travelers using commuter airlines to make connections with major airlines; emergencies such as a doctor rushing a badly burned child to a distant hospital; intercity passengers flying between communities not served by major airlines; a restaurant owner bringing in fresh seafood; local, state and Federal law enforcement agencies patrolling areas and transporting prisoners; a contractor shipping a needed part for a stalled earthmover; a farmer spraying or seeding his crops; a rancher receiving cattle serum; a future pilot undergoing aircraft flight training under a flight instructor's supervision; and private pilots avoiding fuel and traffic problems by minimizing travel time while on vacation. Those things and more are the world of General Aviation.

Tens of thousands of General Aviation aircraft, including business jets, medical evacuation helicopters, and airplanes owned by individuals for business and personal use are flown in the United States. In fact, three (3) out of every four (4) takeoffs and landings at U.S. airports are conducted by General Aviation aircraft, and most of these flights occur at General Aviation airports.

General Aviation airports provide a variety of public benefits to the surrounding service area. The most substantial of these are the time saved and cost avoided by using air transportation. It is no coincidence that General Aviation has contributed to the United States (U.S.) trend which

is seeing some industry move away from the larger metropolitan areas to smaller communities. Smaller communities can offer industry lower taxes and labor costs, closer access to raw materials and natural resources, and a superior working environment and workforce. General Aviation provides a time saving link for business travel that can make the shift of major business to an area such as Concordia and Cloud County an attractive, productive and cost effective alternative.

In May 2012, The Federal Aviation Administration (FAA) completed an 18 month study titled, *General Aviation Airports: A National Asset.* The study determined four (4) new categories for grouping General Aviation airports those being National, Regional, Local, and Basic. The Airport is classified as a *General Aviation Basic Airport.* According to FAA, a *Basic Airport* is often serving critical aeronautical functions within local and regional markets. Such airports have moderate to low levels of aviation activity and average having at least 10 propeller-driven aircraft based at the airport. A *Basic Airport* supports General Aviation activities such as emergency service, charter or critical passenger service, cargo operations, flight training, and personal flying. There are 668 *General Aviation Basic Airports* in the United States with 18 of those located in Kansas.

General Aviation is the largest and, in many ways, the most significant element of the National air transportation system. An estimated 65 percent (65%) of General Aviation flights are conducted for business and public services that need transportation more flexible than the airlines can offer. That flexibility can be a hometown businessman flying his own small airplane to see four (4) clients on a one-day, 700-mile circuit, or it can be a Chief Executive Officer (CEO) and five (5) staff members working at 30,000 feet while en route to a major meeting. More than 90 percent (90%) of the roughly 240,000 civil aircraft registered in the United States are General Aviation aircraft and of the Nation's approximately 625,000 pilots, an estimated 500,000 fly General Aviation airplanes. There are nearly 4,000 General Aviation airports with paved runways open to the public in the U.S. By contrast, scheduled airlines serve less than 500 airports. Thus, General Aviation is definitely a major contributor to local communities and their economies and the National air transportation system.

### BUSINESS AIRPORT

The analysis process in the *Kansas Airport System Plan 2009* (KASP) discovered that there is a large area located in the North Central Kansas Region not served by an airport that meets the requirements and deliver the services of a KASP defined *Business Airport.* Blosser Municipal Airport (Airport) is centrally located in that *Business Airport* vacuum deemed as an underserved area. See Exhibit 1D located on page 1-26 of this Master Plan for a graphic depicting that underserved area. The Airport infrastructure currently does not meet the required specifications of a *Business Airport* but can be enhanced to do that.

Businesses around the United States and the world are increasingly employing business jets and other aircraft to enhance their ability to quickly and efficiently conduct business with regional operations, clients, and suppliers. Kansas airports that can accommodate these aircraft benefit their communities through increased access by large corporations with business aircraft fleets. Similarly, airports that can act as a base for business aircraft are assets to their respective communities, and can be used to help attract new businesses.

Business aircraft users generally require a certain set of aviation facilities for safe and convenient operations at an airport. Those required facilities are a primary runway at least 5,000 feet in length, jet fuel availability, and a precision or Localizer Performance with Vertical Guidance (LPV) approach.

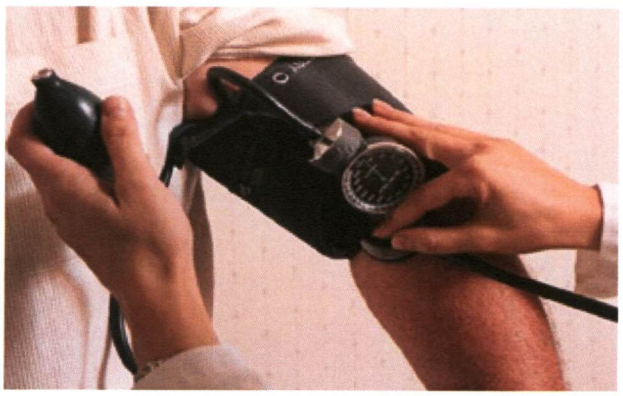
### AIR AMBULANCE SERVICES UTILIZING FIXED WING AIRCRAFT

Due to the geography of Kansas and rural distribution of the state population, the speedy access to emergency medical care is paramount to the State of Kansas (State) and its citizens. Airports that serve communities with hospitals or clinics promote the quality of life while enhancing medical support throughout the state. The *Kansas Airport System Plan 2009* (KASP) analysis of the airport system indicates that all Kansas communities that have a hospital and/or clinic are currently served by an airport. The KASP target established for this Kansas airport system benchmark is to maintain this coverage.

The analysis process in the KASP discovered that there is a large area located in the North Central Kansas Region not served by an airport that meets the KASP requirements for air ambulance services. Blosser Municipal Airport (Airport) is centrally located in that air ambulance service vacuum deemed as an underserved area. See Exhibit 1E located on page 1-29 of this Master Plan for a graphic depicting that underserved area. Also, the current Airport infrastructure does not meet the requirements for air ambulance services utilizing fixed wing aircraft. Therefore, the KASP recommends that the Airport should ideally be improved to meet the air ambulance target area coverage.

### PHYSICIAN AIRCRAFT SUPPORT

While emergency medical access via air ambulance and hospitals served by a local airport are key to the health and welfare of all Kansans, many rural and remote communities rely on doctors from larger metropolitan areas that visit for specialty clinics and routine medical care. Frequently, small towns in rural areas are served by perhaps a handful of general practitioners, with few, if any, local specialists. While this generally means that patients with ongoing medical problems have little or no access to nearby specialist care, it also occasionally leaves entire communities without local opticians, dentists, and other standard-care specialists.



Fortunately, many doctors avail themselves of either personal aircraft or those of services that work to shuttle doctors by air to hold specialty clinics in rural communities. Airports that possess facilities and services to accommodate these doctors naturally enable convenient access to their communities for their services. Utilizing Federal Aviation Administration (FAA) runway design standards for aircraft and data such as the maximum daily hot temperature and elevation, the *Kansas Airport System Plan 2009* (KASP) determined runway dimensions needed to accommodate physician aircraft for airports in Kansas.

The existing aviation infrastructure at Blosser Municipal Airport (Airport) meets the basic demands of physician aircraft as defined by the KASP. However, some medical services providing physician support via aircraft transportation, such as the *University of Kansas (KU) Medical Center Outreach Programs*, require a primary runway length that is longer than the KASP specification.

## AIRSIDE REQUIREMENTS

Airside requirements include the needs for those airport facilities such as runways, taxiways, airfield marking and lighting, and navigational aids. Airside facilities are designed and established utilizing standard Federal Aviation Administration (FAA) guidelines and standards.

Chapter One identified that the Airport is presently utilized by a wide variety of General Aviation aircraft ranging from small Airport Reference Code (ARC) A-I single-engine piston aircraft to larger ARC B-II type aircraft. An inventory of various aircraft utilizing the Airport is shown in Table 1F located on page 1-41 of this Master Plan. The Airport is frequently utilized by twin-engine and turboprop aircraft and it is anticipated that operational growth by those types of aircraft will continue during the planning period once some additional airside facilities upgrades are in place.

As stated in Chapter Two the selection of the appropriate FAA design standards for the development of the airfield facilities is based primarily upon the characteristics of the aircraft that are expected to use Blosser Municipal Airport (Airport). The most critical characteristics are the approach speed and the size of the critical design aircraft anticipated to use the Airport now or in the future because

these design standards are used to plan separation distances between facilities. From Chapter Two, it was concluded that the *Beech King Air B-200* is the most critical aircraft that utilizes the Airport. The *Beech King Air B-200* is an ARC B-II aircraft.

Under unusual circumstances, FAA may make adjustments to the Substantial Use Threshold of 500 total annual itinerant operations after considering the circumstances of a particular airport. Two (2) examples are airports with demonstrated seasonal traffic variations, or airports situated in isolated or remote areas

FAA funded projects require that critical design aircraft have at least 500 or more annual itinerant operations at an airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes. This is called the Substantial Use Threshold. Under unusual circumstances, adjustments may be made to the 500 total annual itinerant operations threshold by FAA after considering the circumstances of a particular airport. Two (2) examples are airports with demonstrated seasonal traffic variations, or airports situated in isolated or remote areas that have special needs.

The airfield facility requirements outlined in this Chapter correspond to the FAA design standards detailed in FAA Advisory Circular (AC) 150/5300-13 *Airport Design* including Changes 1 through 14. The following airfield facilities are outlined to describe the scope of facilities that are necessary to accommodate the role of the Airport through the planning horizon.

### AIRFIELD CAPACITY

A demand/capacity analysis measures the capacity of the airfield facilities, such as runways and taxiways, in order to identify and plan for additional development needs.

The capacity of the airfield is affected by several factors, such as: airfield layout, taxiway configurations, runway Navigation Aid (NAVAID) instrumentation, meteorological conditions, aircraft mix, touch-and-go operations and aircraft arrivals. Annual Service Volume (ASV) is a measure of the annual capacity of an airport's runway configuration. It is also the estimated maximum number of operations that an airport can accommodate in one (1) year.

A demand/capacity analysis based on the methodology recommended in FAA Advisory Circular (AC) 150/5060-5 *Airport Delay and Capacity* is typically used to determine the ASV for an airport. This methodology uses a combination of variables to provide a realistic measure of an airport's capacity and the delay that may be expected given current and future conditions. This analysis provides three (3) measures of airfield capacity: hourly runway capacity, ASV and aircraft delay.

With respect to the demand/capacity analysis detailed in AC 150/5060-5, the ASV of a single runway configuration similar to that of Blosser Municipal Airport (Airport) normally exceeds 160,000 operations. Because the projected forecasts for the Airport indicate the activity throughout the planning horizon will reach no more than 10,000 to 13,000 annual operations, the capacity of the existing airfield system will meet operational demands for the planning period of this Airport Master Plan.

## RUNWAY ORIENTATION AND WIND COVERAGE

There are currently three (3) runways at the Airport:

- **Runway 17/35** serves as the Airport's primary runway, is 3,600 feet long, asphalt paved and oriented in a north-south direction.
- **Runway 12/30** serves as one of the Airport's crosswind runways, is 2,263 feet long with turf surface and oriented in a northwest-southeast direction.
- **Runway 3/21** serves as the Airport's second crosswind runway, is 1,628 feet long with turf surface and oriented in a southwest-northeast direction.

Ideally, the primary runway at an airport should be oriented as close as practical in the direction of the predominant winds in order to maximize usage of the runway. This minimizes the percent of time that a crosswind speed could make the primary runway inoperable.

FAA AC 150/5300-13, *Airport Design* recommends that a crosswind runway should be made available when the primary runway orientation provides less than 95 percent (95%) wind coverage for any aircraft forecast to use the airport on a regular basis. The 95% wind coverage is computed on the basis of the crosswind component not exceeding a wind speed of:

- 10.5 knots or 12 miles per hour (mph), for Airport Reference Code (ARC) A-I and B-I;
- 13 knots (15 mph) for ARC A-II and B-II;
- 16 knots (18 mph) for ARC C-1 through D-II;
- 20 knots (23 mph) for ARC A-IV through D-VI.

**Table 3A:**

**Wind Data Summary for Existing Runways**

| Existing Runway(s) | | | Wind Coverage Percentage (%) | | | |
|---|---|---|---|---|---|---|
| | | | 10.5 Knots | 13 Knots | 16 Knots | 20 Knots |
| Exist 3/21 | --- | --- | 82.67 | 90.50 | 96.64 | 99.11 |
| Exist 12/30 | --- | --- | 83.03 | 90.90 | 97.12 | 99.38 |
| Exist 17/35 | --- | --- | 92.32 | 96.16 | 98.96 | 99.71 |
| Exist 17/35 | Exist 3/21 | --- | 95.00 | 97.82 | 99.37 | 99.86 |
| Exist 17/35 | Exist 12/30 | --- | 97.46 | 99.18 | 99.82 | 99.95 |
| Exist 17/35 | Exist 12/30 | Exist 3/21 | 99.45 | 99.85 | 99.96 | 100.00 |

Table Notes:
- Crosswind Runway 3/21 Orientation is 37.65 degrees true north
- Crosswind Runway 12/30 Orientation is 132.13 degrees true north
- Primary Runway17/35 Orientation is 359.64 degrees true north
- Source: *National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) located at* Asheville, North Carolina
- Wind Data Used For Analysis Was Collected At Salina, Kansas From 1998-2007

A wind rose analysis is utilized to determine wind coverage. A Wind Rose Diagram was obtained from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) utilizing ten (10) years of available wind data (1998 to 2007) from the Salina,

Kansas weather observation station. That electronic wind data, obtained through NOAA, has been analyzed using the current version of the FAA Airport Design computer software. Table 3A on page 3-8 presents various wind speeds and related wind coverage percentages specific to the Airport for all existing runways.

Exhibit 3A on page 3-10 shows the Wind Rose Diagram for existing runways at the Airport. Existing Runways 17/35, 12/30 and 3/21 combined provide more than adequate coverage at a 13 knot wind speed for the ultimate ARC B-II category aircraft. Primary Runway 17/35, as a standalone runway will provide more than the recommended 95 percent wind coverage at 20, 16 and 13 knot wind speeds but will fall below the 95 percent wind coverage at the10.5 knot wind speed, with a 92.32 percent wind coverage.

After evaluating all runways separately, it was established that no single runway configuration will provide the FAA recommended 95 percent wind coverage at 10.5 knots (12 mph). Configurations of the primary Runway 17/35 and crosswind Runway 12/30 or primary Runway 17/35 and crosswind Runway 3/21are combinations of runways that will provide the recommended coverage of 95 percent or more for the 20, 16, 13 and 10.5 knot crosswinds.

Conclusions that can be reached by these results are as follows:

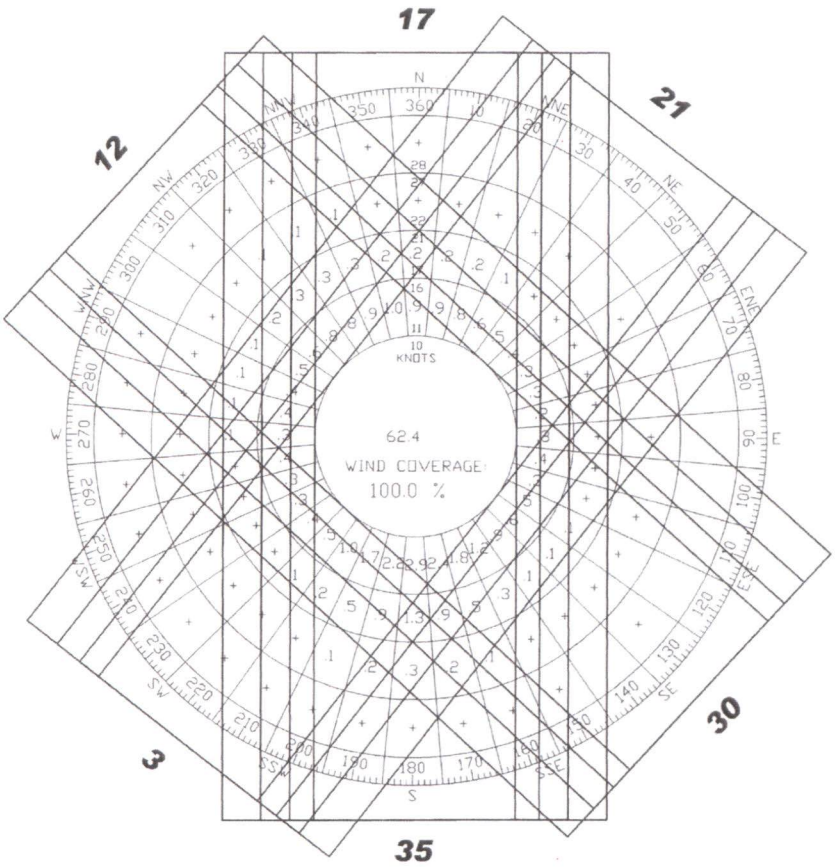
- There is a recommended need for a crosswind runway in addition to the primary runway for smaller aircraft in the ARC A-I and B-I categories.
- The orientation of primary Runway 17/35 is adequate for the critical design aircraft which is an ARC B-II category aircraft; however, the required length for this runway must be determined.
- The orientation of crosswind Runway 12/30 provides adequate coverage as a crosswind runway; however, the critical design aircraft and related required runway length must be determined.
- The orientation of crosswind Runway 3/21 would provide adequate coverage for the recommended 95% wind coverage specification; however, the critical design aircraft and related required runway length must be determined.
- Combination of all existing runway orientations provides more than adequate crosswind wind coverage at the Airport.

### REQUIREMENT FACTORS FOR DETERMINING RUNWAY LENGTH

The current FAA Advisory Circular, (AC) 150/5325-4B *Runway Length Requirements for Airport Design*, was utilized to calculate runway length for this Master Plan report. The five (5) step process as outlined in AC 150/5325-4B was followed

Several factors affect the runway length needed at all types of airports. The six (6) primary requirement factors for determining runway length are as follows:

- Critical aircraft type expected to use the airport.
- Stage length of the longest nonstop trip destinations.
- Mean maximum daily temperature of the hottest month.
- Runway gradient.
- Airport elevation.
- Percent of fleet category.




*Source: National Climate Data Center*
*Period: Feruary 1998 To January 2007*
*for Concordia, Kansas*

| | |
|---|---|
| *Wind Coverage Runway 17/35* | *- 92.32% @ 10.5 Knots* |
| *Wind Coverage Runway 3/21* | *- 82.67% @ 10.5 Knots* |
| *Wind Coverage Runway 12/30* | *- 83.03% @ 10.5 Knots* |
| *Wind Coverage All Runways* | *- 99.45% @ 10.5 Knots* |
| *Wind Coverage Runway 17/35* | *- 96.16% @ 13.0 Knots* |
| *Wind Coverage Runway 3/21* | *- 90.50% @ 13.0 Knots* |
| *Wind Coverage Runway 12/30* | *- 90.90% @ 13.0 Knots* |
| *Wind Coverage All Runways* | *- 99.85% @ 13.0 Knots* |
| *Wind Coverage Runway 17/35* | *- 98.96% @ 16.0 Knots* |
| *Wind Coverage Runway 3/21* | *- 96.64% @ 16.0 Knots* |
| *Wind Coverage Runway 12/30* | *- 97.12% @ 16.0 Knots* |
| *Wind Coverage All Runways* | *- 99.96% @ 16.0 Knots* |
| *Wind Coverage Runway 17/35* | *- 99.71% @ 20.0 Knots* |
| *Wind Coverage Runway 3/21* | *- 99.11% @ 20.0 Knots* |
| *Wind Coverage Runway 12/30* | *- 99.38% @ 20.0 Knots* |
| *Wind Coverage All Runways* | *- 100% @ 20.0 Knots* |

**Exhibit 3A**
**Wind Rose Diagram for Blosser Municipal Airport**

to determine the required runway length for primary and crosswind runways located at Blosser Municipal Airport (Airport).

In Concordia, the mean maximum daily temperature of the hottest month (July) is 90.7 degrees Fahrenheit (90.7 °F). The elevation of the Airport is 1,486 feet above Mean Sea Level (MSL).

The FAA categorizes small airplanes certificated in the United States with less than 10 passenger seats (excludes pilot and co-pilot) into two family groupings according to *Percent of Fleet* namely, 95 percent (95%) and 100 percent (100%) of the fleet. The differences between the two (2) percentage categories are based on the airport's location and the amount of existing or planned aviation activities. The Percent of Fleet categories are defined as follows:

**95 Percent (95%) of Fleet** - This category applies to airports that are primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities. Also included in this category are those airports that are primarily intended to serve low-activity locations, small population communities, and remote recreational areas. Their inclusion recognizes that these airports in many cases develop into airports with higher levels of aviation activities.

**100 Percent (100%) of Fleet** - This type of airport is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area.

Therefore, Blosser Municipal Airport (Airport) is a 95 Percent (95%) of Fleet airport.

### PRIMARY RUNWAY LENGTH DETERMINATION

The five (5) step process as outlined in AC 150/5325-4B was followed to determine the required runway length for primary Runway 17/35 at the Airport.

Blosser Municipal Airport (Airport) is a 95 Percent (95%) of Fleet airport.

**Step #1:** Identify the list of critical design aircraft that will make regular use of the proposed runway for an established planning period of at least five (5) years.

- The list of aircraft based at the Airport was formulated and itemized in Table 1E located in Chapter One on page 1-39.
- As determined in Master Plan Chapter One, the list of aircraft that normally use the Airport was formulated and itemized in Table 1F on page 1-41.

**Step #2:** Identify the aircraft that will require the longest runway length at Maximum Certified Takeoff Weight (MTOW).

- As determined in Chapter Two of this Master Plan, the most critical aircraft in regards to MTOW would be the *Beech King Air B200* at less than 12,500 pounds MTOW which is an Airport Reference Code (ARC) B-II category aircraft. The *Beech King Air B200* has ten (10) or more passenger seats and approach speeds greater than 50 knots.

*Note: The term Useful Load of an aircraft is considered the difference between the maximum allowable structural gross weight and the operating empty weight. Typical operating empty weight includes an aircraft's empty weight, crew, baggage, other crew supplies, removable passenger service equipment, removable emergency equipment, engine oil, and unuseble fuel. Therfore, Useful Load consists of passenger, cargo, and useable fuel. For the type of aircraft that utilize the Airport it will be assumed, for planning purposes, that the aircraft visitng the Airport (such as business type aircraft) will be operating at 60% of their useful loads.*

**Step #3:** On Page 3 of AC 150/5325-4B, use Table 1-1 titled, *Airplane Weight Categorization for Runway Length Requirements* to identify the primary runway *Design Approach and Location of Design Guidelines* for the aircraft type identified in Step #2 above.

- **Design Approach** – Use, *Family Grouping of Small Airplanes* which is 95% of fleet
- **Location of Design Guidelines** – Use, *Chapter 2 of AC 150/5325-4B, Paragraph 205, Figure 2-2*

**Step #4:** Find recommended primary runway length for aircraft generated by Step #3 above in applicable Chapter 2 of AC 150/5325-4B.

- As determined in Master Plan Chapter Two:
  1. Figure 2-2 *Small Airplanes Having 10 or more Passenger Seats (Excludes Pilot and Co-Pilot)* located on Page 8 of AC 150/5325-4B was used to compute runway length.
  2. From Figure 2-2 it is determined that the recommended primary runway length is 4,500 feet.

**Step #5:** Apply any necessary runway length adjustments required such as for a non-zero runway gradient.

- The maximum difference between the high and low centerline elevations on primary Runway 17/35 is 30 feet (highest elevation of 1,497 feet minus lowest elevation of 1,467 feet). The AC 150/5325-4B requires 10 feet be added for each one (1) foot of runway elevation difference, therefore an additional 300 feet needs to be added to the recommended runway length of 4,500 feet.
- Total recommended primary runway length is therefore 4,800 feet.

The term *Useful Load* of an aircraft is considered the difference between the maximum allowable structural gross weight and the operating empty weight. Typical operating empty weight includes an aircraft's empty weight, crew, baggage, other crew supplies, removable passenger service equipment, removable emergency equipment, engine oil, and unusable fuel. Therefore, *Useful Load* consists of passengers, cargo, and usable fuel. For the type of aircraft that utilize the Airport it will be assumed, for planning purposes that the aircraft visiting the Airport (such as business type aircraft) will be operating at 60% of their useful loads.

It is important to note that the *Kansas Airport System Plan 2009* (KASP), commissioned by the Kansas Department of Transportation (KDOT), Division of Aviation (KDOT Aviation), determined that Blosser Municipal Airport (Airport) should fill the performance role of a *Business Airport* classification in the Kansas system of airports (KASP, pages 5-74 through 5-75). That KASP recommendation is because the KASP study process discovered a large area in the North Central Kansas Region not located within 45 minutes of ground transportation time to an airport that meets the aviation needs of business users.

KDOT Aviation defines an airport meeting business user needs as an airport offering a primary runway at least 5,000 feet long, has Jet A-1 fuel, and provides a Precision or Localizer Performance with Vertical Guidance (LPV) primary runway approach. The Airport currently has Jet A-1 fuel and this Master Plan calls for a LPV approach to the primary runway, but only a primary runway length of 4,800 feet is justified for Federal Aviation Administration (FAA) grant funding.

However, the City of Concordia (City) and/or KDOT Aviation funding could be used to complete a primary runway extension of 200 feet to the recommended FAA funding justified primary runway length of 4,800 feet. That would achieve the KASP recommended *Business Airport* standard of 5,000 feet. With that information, the Airport Advisory Board determined that the City should upfront acquire the needed land to accommodate future development of an ultimate primary runway that is 5,000 feet long.

By building a primary runway 5,000 feet long, the Airport will also be able to accommodate most all fixed wing aircraft utilized by air ambulance services and physician outreach services as recommended by the KASP.

Kansas
AVIATION
Kansas Airport System Plan

### CROSSWIND RUNWAY LENGTH DETERMINATION - PAVED SURFACE ALTERNATIVE

**Step #1:** Identify the list of critical design aircraft that will make regular use of the proposed crosswind runway for an established planning period of at least five (5) years.

- As determined in Master Plan Chapter Two:
  1. The list of aircraft based at the Airport was formulated and itemized in Table 1E located on page 1-39.
  2. The list of aircraft that normally use the Airport was formulated and itemized in Table 1F located on page 1-41.

- Since this runway is for crosswind accommodation purposes, only the smaller single-engine aircraft will need to utilize the crosswind runway, particularly aircraft in the ARC A-I category identified in the said Tables.

**Step #2:** Identify the aircraft that will require the longest runway at MTOW.

- The largest critical ARC A-I category based aircraft at the Airport is a *Grumman Ag Cat G-164B* which has a MTOW of 4,497 pounds, a stall speed of 56 knots and less than ten (10) passenger capacity. Also considered is the *Cessna 180H* which has a MTOW of 2,800 pounds, a stall speed of 50 knots and less than ten (10) passenger capacity. With cited aircraft stall speeds both aircraft have an approach speed greater than 50 knots.

**Step #3:** On Page 3 of AC 150/5325-4B, use Table 1-1 titled, A*irplane Weight Categorization for Runway Length Requirements* to identify the crosswind runway *Design Approach* and *Location of Design Guidelines* for the aircraft type identified in Step #2 above.

- Design Approach – Use, *Family Grouping of Small Airplanes which is 95% of fleet*
- Location of Design Guidelines – Use, *Chapter 2 of AC 150/5325-4B, Paragraph 205, Figure 2-1*

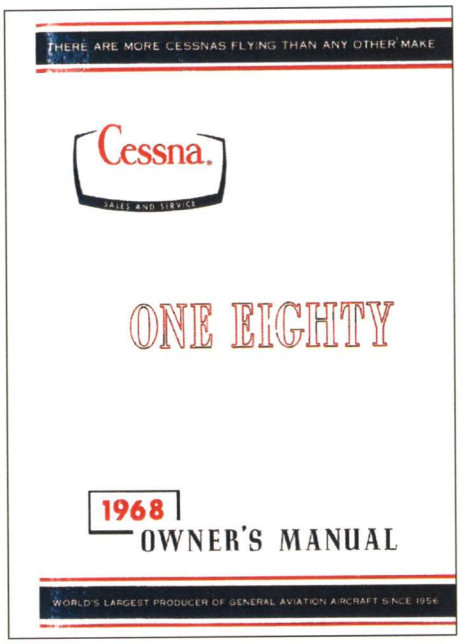
**Step #4:** Find recommended runway length for aircraft generated by Step #3 above in applicable Chapter 2 of AC 150/5325-4B.

- Figure 2-1 *Small Airplanes with Fewer Than 10 Passenger Seats (Excludes Pilot and Co-Pilot)* located on Page 7 of AC 150/5325-4B was used to compute runway length.
- From Figure 2-1 and using 95% of Fleet, it is determined that the recommended crosswind runway length is 3,600 feet.

**Step #5:** Apply any necessary runway length adjustments as required such as for a non-zero runway gradient.

- Multiple crosswind runway options and alignments were considered (refer to Appendix J, Crosswind Runway Development Alternatives). Based on the design requirements for crosswind runway length determination, it was determined that the average runway elevation maximum difference between the high and low centerline elevations of the Crosswind Runway Development Alternatives is approximately 40 feet. AC 150/5325-4B requires that ten (10) feet be added for each one (1) foot of runway elevation difference, therefore an additional 400 feet needs to be added to the recommended crosswind runway length of 3,600 feet determined in Step #4 above.
- Total recommended crosswind runway length is therefore 4,000 feet

## CROSSWIND RUNWAY LENGTH DETERMINATION - TURF SURFACE ALTERNATIVE




An alternative method was also used to determine a crosswind runway length for a requested turf runway. It was determined that one of the largest based aircraft at Blosser Municipal Airport (Airport) to utilize a turf crosswind runway would be a Cessna 180H. For determination of the required runway length, a copy of the Owner's Manual, for the said aircraft, was obtained and the required runway length for this aircraft was determined based on the tables provided in the Owner's Manual. Exhibit 3B located on page 3-16, *Take-Off Data and Maximum Rate-Of-Climb Data* tables and Exhibit 3C located on page 3-17 *Landing Distance* table from the *Cessna 180H Owner's Manual,* dated 1968, were used in the determination of the required runway length.

All values taken from the Cessna 180H data were to account for a worst case scenario or to account for the safest/longest runway length required. Based on the *Take-Off Data Table* for determining the required runway length, the values for a 2,800 pound aircraft, with a zero (0) knot headwind, at an elevation of 2,500 feet and temperature of 50 degrees Fahrenheit (50 °F) were obtained to get initial *Ground Run* length of 750 feet and a *Total to Clear a 50 Feet Obstacle* length of 1,425 feet. A correction factor for the elevation was not known and therefore not applied. However, based on aircraft characteristics, the higher the elevation is the thinner the air, thus creating design requirements for a longer runway length. Therefore, it is believed that using the Exhibit 3B elevation specification of 2,500 feet above Mean Sea Level (MSL), where the Airport elevation is approximately 1,435 feet MSL, shall not provide a deficient runway length determination.

The Table Notes of Exhibit 3B *Take-Off Data* concern takeoff distance correction factors used for other conditions varying from this Table.

- Table Note 1 states: *Increase distance 10% for each 25° F above standard temperature for particular altitude.* The mean maximum daily temperature for Concordia, Kansas is 90.7° F. This would in-turn apply a factor of 1.628 to the *Ground Run* distance and to the *Total to Clear 50 Feet Obstacle* distance.
- Table Note 2 states: *For operation on a dry, grass runway, increase distances (both "Ground Run" and "Total to Clear 50 Feet Obstacle") by 7% of the Total to Clear 50 Feet Obstacle" figure.*

Based on the request by the *Concordia Airport Advisory Board* for the crosswind runway to be turf rather than paved and applying the above temperature and turf surface correction factors to the *Ground Run* length and *Total to Clear 50 Feet Obstacle* length, it would lengthen the turf crosswind runway lengths to approximate 924 feet and 1,756 feet respectively.

LANDPLANE

## TAKE-OFF DATA

LANDPLANE

TAKE-OFF DISTANCE WITH 20° FLAPS FROM HARD SURFACE RUNWAY

| GROSS WEIGHT POUNDS | IAS @ 50' MPH | HEAD WIND KNOTS | AT SEA LEVEL & 59° F | | AT 2500 FT & 50° F | | AT 5000 FT & 41° F | | AT 7500 FT & 32° F | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | GROUND RUN | TOTAL TO CLEAR 50 FT OBS | GROUND RUN | TOTAL TO CLEAR 50 FT OBS | GROUND RUN | TOTAL TO CLEAR 50 FT OBS | GROUND RUN | TOTAL TO CLEAR 50 FT OBS |
| 2000 | 52 | 0 | 295 | 655 | 350 | 745 | 415 | 855 | 505 | 1005 |
| | | 10 | 190 | 475 | 225 | 545 | 275 | 630 | 340 | 750 |
| | | 20 | 105 | 315 | 130 | 370 | 160 | 435 | 205 | 525 |
| 2400 | 57 | 0 | 440 | 895 | 525 | 1040 | 630 | 1215 | 765 | 1465 |
| | | 10 | 295 | 665 | 355 | 775 | 435 | 920 | 535 | 1120 |
| | | 20 | 175 | 460 | 215 | 545 | 270 | 655 | 340 | 810 |
| 2800 | 61 | 0 | 625 | 1205 | 750 | 1425 | 900 | 1700 | 1100 | 2110 |
| | | 10 | 430 | 915 | 525 | 1085 | 635 | 1310 | 790 | 1645 |
| | | 20 | 270 | 650 | 335 | 785 | 420 | 965 | 530 | 1230 |

NOTES: 1. Increase distance 10% for each 25°F above standard temperature for particular altitude.
2. For operation on a dry, grass runway, increase distances (both "ground run" and "total to clear 50 ft. obstacle") by 7% of the "total to clear 50 ft. obstacle" figure.

LANDPLANE

## MAXIMUM RATE-OF-CLIMB DATA

LANDPLANE

| GROSS WEIGHT POUNDS | AT SEA LEVEL & 59°F | | | AT 5000 FT & 41°F | | | AT 10,000 FT & 23° F | | | AT 15,000 FT & 5° F | | | AT 20,000 FT & -12° F | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | IAS MPH | RATE OF CLIMB FT/MIN. | GAL. OF FUEL USED | IAS MPH | RATE OF CLIMB FT/MIN. | FROM S. L. FUEL USED | IAS MPH | RATE OF CLIMB FT/MIN. | FROM S. L. FUEL USED | IAS MPH | RATE OF CLIMB FT/MIN. | FROM S. L. FUEL USED | IAS MPH | RATE OF CLIMB FT/MIN. | FROM S. L. FUEL USED |
| 2000 | 91 | 1765 | 1.5 | 87 | 1450 | 2.6 | 82 | 1125 | 3.9 | 76 | 805 | 5.4 | 72 | 480 | 7.6 |
| 2400 | 93 | 1380 | 1.5 | 89 | 1105 | 2.9 | 85 | 825 | 4.6 | 79 | 550 | 6.8 | 75 | 270 | 10.5 |
| 2800 | 95 | 1090 | 1.5 | 91 | 840 | 3.4 | 87 | 590 | 5.6 | 82 | 335 | 8.9 | 78 | 80 | 16.9 |

NOTES: 1. Full throttle, 2600 RPM, flaps up, mixture leaned for smooth operation above 5000 ft.
2. Fuel used includes warm-up and take-off allowance.
3. For hot weather, decrease rate of climb 30 ft./min. for each 10°F above standard day temperature for particular altitude.

**Exhibit 3B**
**Cessna 180H Take-Off and Maximum Rate-Of-Climb Data**
Source: Cessna 180H Owner's Manual dated 1968

An additional 240 feet was added to each end of the corrected runway lengths for a Runway Safety Area (RSA). This led to an ultimate length of approximately 1,404 feet for the *Ground Run* required length, and 2,236 feet for the *Total to Clear a 50 Feet Obstacle* required length. Based on the worst case scenario, or longest required length, it was determined that the 2,236 feet length should be used for the length of the turf crosswind runway.

The landing distance required for the Cessna 180H was determined in similar fashion as the takeoff distance. The same aircraft characteristics were used for determination of the landing distance required, a 2,800 pound aircraft at an elevation of 2,500 feet MSL and temperature of 50 °F. Along with this table, correction factors will also apply. In Exhibit 3C 180H *Landing Distance Table* the following Table Notes were considered:

- Table Note 1 states: *Distances shown are based on zero (0) wind, power off, and heavy braking.*
- Table Note 2 states: *Reduce landing distances 10% for each 4 knots headwind.*
- Table Note 3 states: *For operation on a dry, grass runway, increase distances (both "Ground Roll" and "Total to Clear 50 Feet Obstacle" by 20% of the "Total to Clear 50 Foot Obstacle" figure.*

Based on these Table Notes, the only one that would apply would be Table Note 3. Table Note 2 would only shorten the required runway length, thus not protecting aircraft for the worst case scenario or provide for a zero (0) knot wind speed landing on the crosswind runway distance. Applying Table Note 3 correction factors to the stated *Ground Roll* distances of 505 feet and T*otal to Clear 50 Feet Obstacle* of 1,445 feet the resulting adjusted runway lengths are 606 feet for Ground Roll and 1,734 feet for *Total to Clear 50 Foot Obstacle.* If you add the Runway Safety Area (RSA) length to those runway lengths, the *Ground Roll* distance lengthens to 1,086 feet and the *Total to Clear 50 Foot Obstacle* lengthens to 2,214 feet.

**LANDING DISTANCE TABLE**

**LANDING DISTANCE WITH 40° FLAPS ON HARD SURFACED RUNWAY**

| GROSS WEIGHT POUNDS | APPROACH IAS MPH | @ SEA LEVEL & 59°F | | @ 2500 FEET & 50° F | | @ 5000 FEET & 41° F | | @ 7500 FEET & 32° F | |
|---|---|---|---|---|---|---|---|---|---|
| | | GROUND ROLL | TOTAL TO CLEAR 50 FT OBS | GROUND ROLL | TOTAL TO CLEAR 50 FT OBS | GROUND ROLL | TOTAL TO CLEAR 50 FT OBS | GROUND ROLL | TOTAL TO CLEAR 50 FT OBS |
| 2800 | 70 | 480 | 1365 | 505 | 1445 | 540 | 1535 | 570 | 1625 |

NOTES:
1. Distances shown are based on zero wind, power off, and heavy braking.
2. Reduce landing distances 10% for each 4 knots headwind.
3. For operation on a dry, grass runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 20% of the "total to clear 50 ft. obstacle" figure.

**Exhibit 3C**
**Cessna 180H Landing Distance Table**
Source: Cessna 180H Owner's Manual dated 1968

Therefore based on the two (2) runway lengths required, a takeoff distance of 2,236 feet and a landing distance of 2,214 feet, it is determined that the takeoff distance required would be the length that governs because it is longer, and therefore determining the ultimate runway length needed for the proposed turf crosswind runway.

**Runway Length Conclusion** - Based on the criteria set forth in AC 150/5325-4B, the ultimate runway lengths used to formulate alternatives for future runway improvements at the Airport will be based on:

- A primary Runway that is 4,800 feet long; and
- A crosswind runway that is 2,236 feet long.

Existing primary Runway 17/35 being 3,600 feet long and crosswind Runway 3/21 at 1,628 feet long are not adequate to meet the requirements of the critical aircrafts in the future. Although crosswind Runway 12/30 meets the length requirement, it does not meet the overall layout requirements of the ultimate configuration for the Airport. Drawings of the three (3) alternatives examined for accommodating a new primary runway that is 4,800 feet long and various crosswind deisgn alternatives are located in Appendix J of this Master Plan

## DECOMMISSIONING A CROSSWIND RUNWAY

In considering development of a new primary runway with a complement of supporting crosswind runway(s) at Blosser Municipal Airport (Airport), it is important to note that the Federal Aviation Administration (FAA) will not provide Federal funding assistance to the City of Concordia (City) to help rehabilitate or further enhance development of two (2) crosswind runways at the Airport. Rather, the City Airport Consultant, *Alfred Benesch & Company* of Manhattan, Kansas (Benesch) and the Airport Advisory Board currently understand that FAA will now only financially support one (1) crosswind runway at the Airport.

Two (2) crosswind runways have been a nice aviation luxury at the Airport, but for ample aviation purposes, only one (1) crosswind runway is really needed at the Airport. That determination was made during the engineering analysis and related discussion contained in this Chapter in the subsection titled, *Runway Orientation* located on pages 3-8 and 3-9. Therefore, for the sake of facilitating frugal public costs to the City, FAA, and Kansas Department of Transportation (KDOT), Division of Aviation (KDOT Aviation), the City and Airport Advisory Board should decommission and close one (1) crosswind runway at the Airport.

The FAA determination concerning Federal funding for crosswind runways at the Airport was known and considered in 1997 when the then Airport Consultants *Bucher, Willis & Ratliff* of Kansas City, Missouri (BWR) and Airport Advisory Board completed a Master Plan for the Airport titled, *Blosser Municipal Airport 1997 Airport Master Plan Update* (1997 Master Plan). In that 1997 Master Plan on page 59, in Table 3.9 titled, *Summary – Airfield Facility Requirements*, turf crosswind Runway 3/31 is slated for closure and turf crosswind Runway 12/30 is slated for enhancement. With Airport Advisory Board recommendation, the City Commission publicly considered and approved the 1997 Master Plan at a Regular City Commission meeting conducted on March 5, 1997.

The process to decommission one (1) of the existing two (2) crosswind runways is as follows:

1. Show the desired crosswind runway as to be abandoned in this Master Plan on the Airport Layout Plan (ALP). That ALP is then reviewed and approved by FAA.
2. At the appropriate time that the City and Airport Advisory Board mutually agree to permanently close the chosen crosswind runway, the City issue a Notice to Airmen (NOTAM) that the crosswind runway is abandoned.
3. City removes all barrels and markings identifying the area as an active crosswind runway.
4. City sends a letter to FAA Airspace indicating that the crosswind runway has been abandoned. The current contact for that communication is:

   Angie Muder, Airports Airspace Specialist
   Federal Aviation Administration
   Central Region, Airports Division
   901 Locust Street, ACE-620F
   Kansas City, Missouri 64106-2325
   Office: (816) 329-2620 Fax: (816) 329-2610 angela.muder@faa.gov

## RUNWAY WIDTH

On existing primary Runway 17/35 and looking south

Primary Runway 17/35 is 60 feet wide while crosswind Runway 12/30 is 265 feet wide, and crosswind Runway 3/21 is 255 feet wide. According to Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13 *Airport Design*, aircraft in the Airport Reference Code (ARC) B-II category (with not lower than ¾ mile visibility minimums) require a minimum runway width of 75 feet while aircraft in an ARC A-I category and B-I category require a minimum runway width of 60 feet. Since primary Runway 17/35 is 60 feet wide, the width will not accommodate future ARC B-II category aircraft. The minimum runway width FAA requires for small ARC A-I category aircraft is 60 feet. Several alternatives are looked at in Chapter Four to address the runway width deficiency such as adding additional width or building a new primary runway and utilize the existing primary runway as a parallel taxiway.

Existing crosswind Runway 12/30 and crosswind Runway 3/21 are turf runways and have no hard prepared surfaces. Therefore the existing turf runway widths are sufficient to accommodate small aircraft that can usually land on turf runways. If either of the crosswind runways were ever to be paved in the future, FAA would require a minimum runway width of 60 feet.

## RUNWAY STRENGTH AND CONDITION

On existing primary Runway 17/35 and looking north

Primary Runway 17/35 has pavement strength of 8,000 pounds Single Wheel Gear (SWG). The current runway pavement consists of approximately four (4) inches of asphalt pavement. Even today several aircraft heavier than the available pavement strength, utilize the Blosser Municipal Airport (Airport) on a regular basis. Aircraft such as the *Beech King Air B200*, with a gross weight of 12,500 pounds SWG frequents the Airport. The *Grumman Ag Cat G-164B*, is currently the largest based aircraft at the Airport and has a maximum takeoff weight (MTOW) of 4,500 pounds. The existing pavement strength of primary Runway 17/35 is sufficient to allow all existing based aircraft to operate on the airfield, but does not allow for potential Airport growth due to larger aircraft desiring to utilize the Airport. Therefore using the *Beech King Air B200* as the critical design aircraft, the existing primary runway pavement strength is not adequate to accommodate the forecasted fleet mix. The ultimate pavement strength for the primary Runway 17/35 at the Airport should be increased to 30,000 pounds SWG. If continued loads above and beyond the existing pavement strength continue to be applied to the primary Runway 17/35 pavement the useful life of the pavement will be drastically reduced.

Primary Runway 17/35 is currently in very good condition. The City of Concordia (City) recently milled and overlaid the runway in 2005. The *Kansas Airport System Plan 2009* (KASP) gave primary Runway 17/35 a Pavement Condition Index (PCI) score of 92 which is deemed *Excellent* in the PCI scoring system. See Table 1B located in Chapter One on page 1-22 for the PCI Scale.

## TAXIWAYS

Before rehabilitation, dilapidated Connecting Taxiway at primary Runway 17/35 looking west to apron area and Terminal Building at Blosser Municipal Airport

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between aprons and runways, whereas others become necessary as activity increases at an airport to provide safe and efficient use of the airfield.

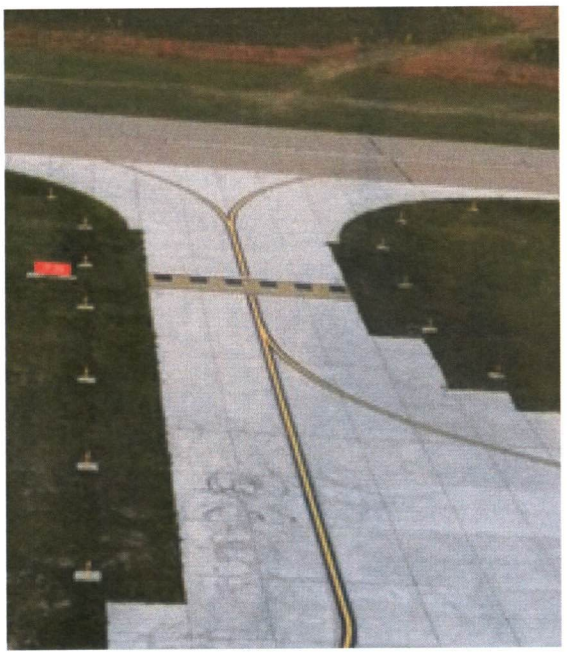
Primary Runway 17/35, turf crosswind Runway 12/30 and turf crosswind Runway 3/21 do not have a parallel taxiway. If in the future a parallel taxiway is added to primary Runway 17/35, according to AC 150/5300-13 *Airport Design*, the required taxiway width for aircraft in the Airplane Design Group (ADG) II category is 35 feet.

Blosser Municipal Airport (Airport) does have one connecting taxiway from primary Runway 17/35 that splits the runway to gain access to the existing apron, Terminal Building, Fueling Facility, Conventional Hangar area, and to 10-place Standard T-Hangars. The connecting taxiway is 50 feet wide and therefore exceeds the criteria for Airport Design Group (ADG) II category aircraft.

Runway to taxiway separation, or the distance from the runway centerline to the taxiway centerline required for Airport Reference Code (ARC) B-II category runways, with visual approach and not lower than ¾ mile visibility minimums, is 240 feet. Therefore, if in the future a parallel taxiway is ever constructed to primary Runway 17/35, the separation distance between the primary runway and taxiway centerline needs to be a minimum of 240 feet.

**Taxiway Rehabilitation Project, Year 2011** – During the process of this Master Plan the City of Concordia (City) applied to the Federal Airport Improvement Program (FAIP) and received entitlement funding for rehabilitation of the dilapidated taxiway and apron area. For just the taxiway portion of the project the Federal Aviation Administration (FAA) 95 percent (95%) cost portion was $356,978.00 and the City of Concordia (City) five percent (5%) local match cost portion was $18,789.00 for a total project cost of $375,767.00. The City completed the formal bid process and the contractor started work during spring 2011. The project was completed then closed on September 30, 2011.

The project entailed removal of approximately 2,630 square yards of existing taxiway asphalt pavement that was in deteriorated condition that connects the primary hangar and Terminal Building areas to primary Runway 17/35. That paved surface then replaced with approximately 3,129 square yards of concrete pavement. The taxiway was designed and constructed according to FAA requirements for ARC B-II category aircraft which is the critical design aircraft for the Airport.



Refurbished connecting taxiway for primary Runway 17/35 at Blosser Municipal Airport

### DIMENSIONAL DESIGN STANDARDS

Airfield dimensional design standards define the widths and clearance requirements to optimize safe aircraft operations in the landing, takeoff and taxiway areas. These dimensional standards vary depending upon the Airport Reference Code (ARC) category for the proposed runway design as well as the approach visibility minimums. The Federal Aviation Administration (FAA), in Advisory Circular (AC) 150/5300-13 *Airport Design* Change 14, established several imaginary surfaces to assist in defining the dimensional areas. Among these areas and surfaces are the Object Free Area (OFA), Obstacle Free Zone (OFZ), Runway Protection Zone (RPZ), Runway Safety Area (RSA) and Taxiway Safety Area (TSA). Table 3B on page 3-22 summarizes key dimensional design standards for the Airport Reference Codes (ARCs) most applicable to Blosser Municipal Airport (Airport) for now and in the future.

The primary runway for Blosser Municipal Airport (Airport) should be planned to the standards of the future critical design aircraft which is an Airport Reference Code (ARC) B-II category aircraft. Taxiway clearances should also be planned to meet ARC B-II category aircraft requirements as well as meeting runway to taxiway separation requirements for a future runway approach with as low as three-fourths (¾) mile visibility minimum. Also a future paved crosswind runway should be designed to meet at least the standards for ARC A-I category aircraft. Runway length and width and taxiway width are discussed on previous pages 3-9 through 3-17.

The following considers those areas where design standards will need to be met on primary Runway 17/35 to meet existing and future operational demands on the Airport:

Object Free Area (OFA) is an area on the ground centered on the runway centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

**TABLE 3B**

**Airfield Design Standards**

| Runway | EXISTING 17/35 | NEW 18/36 | | EXISTING 12/30 | EXISTING 3/21 | NEW 6/24 |
|---|---|---|---|---|---|---|
| Airport Reference Code (ARC) | B-I Paved | B-II Paved | B-II Paved | A-1 Turf Surface for Small Aircraft Exclusively | A-1 Turf Surface for Small Aircraft Exclusively | A-1 Turf Surface for Small Aircraft Exclusively |
| Approach Visibility Minimums | Visual | Not Lower Than 3/4 Mile | Lower Than 3/4 Mile | Visual | Visual | Visual |
| | (Feet) | (Feet) | (Feet) | (Feet) | (Feet) | (Feet) |
| Runway Width | 60 | 75 | 100 | 265 | 255 | 250 |
| Runway Safety Area (RSA) | | | | | | |
| Width | 120 | 150 | 300 | 265 | 255 | 250 |
| Length Beyond End | 240 | 300 | 600 | 0 | 0 | 0 |
| Runway Object Free Area (OFA) | | | | | | |
| Width | 400 | 500 | 800 | 265 | 255 | 250 |
| Length Beyond End | 240 | 300 | 600 | 0 | 0 | 0 |
| Runway Obstacle Free Zone (OFZ) | | | | | | |
| Width | 250 | 400 | 400 | 265 | 255 | 250 |
| Length Beyond End | 200 | 200 | 200 | 0 | 0 | 0 |
| Runway Centerline To: | | | | | | |
| Parallel Taxiway | 225 | 240 | 300 | 150 | 150 | 150 |
| Aircraft Parking | 200 | 250 | 400 | 125 | 125 | 125 |
| Taxiway[1] Width | 25 | 35 | | 25 | 25 | 25 |
| Taxiway[1] and Taxilane[2] Safety Area | 49 | 79 | | 49 | 49 | 49 |
| Taxiway[1] Object Free Area | 89 | 131 | | 89 | 89 | 89 |
| Taxilane[2] Object Free Area | 79 | 115 | | 79 | 79 | 79 |
| Runway Protection Zones (RPZ) RPZ Visual & Not Lower Than 1-Mile | | | | | | |
| Inner Width | 500 | 500 | | 250 | 250 | 250 |
| Outer Width | 700 | 700 | | 450 | 450 | 450 |
| Length | 1,000 | 1,000 | | 1,000 | 1,000 | 1,000 |
| RPZ Not Lower Than 3/4 Mile | | | | | | |
| Inner Width | 1,000 | 1,000 | | 1,000 | 1,000 | 1,000 |
| Outer Width | 1,510 | 1,510 | | 1,510 | 1,510 | 1,510 |
| Length | 1,700 | 1,700 | | 1,700 | 1,700 | 1,700 |
| RPZ Lower Than 3/4 Mile | | | | | | |
| Inner Width | 1,000 | 1,000 | | 1,000 | 1,000 | 1,000 |
| Outer Width | 1,750 | 1,750 | | 1,750 | 1,750 | 1,750 |
| Length | 2,500 | 2,500 | | 2,500 | 2,500 | 2,500 |

Table Designed Per Requirements Of Federal Aviation Administration Advisory Circular 150/5300-13 *Airport Design* Change 14

1. Taxiway is a defined path established for the taxiing of aircraft from one part of the airport to another. Maximum ground speed of aircraft traveling on a taxiway is approximately 20 miles per hour (mph).

2. Taxilane is the portion of the aircraft parking area used for access between taxiways and aircraft parking positions. Lower ground speeds of aircraft on a taxilane area allow for reduced Safety Areas and Object Free Areas.

Like the Runway Safety Area (RSA), the OFA extends beyond the runway ends and an area centered over the runway centerline extending outward. The existing conditions of the OFA, for the primary runway at the Airport, are shown to have an OFA that extends 300 feet beyond the runway ends and a width of 500 feet. Existing conditions meet the specifications for an OFA that supports Airport Reference Code (ARC) B-II category aircraft requirements for visibility requirements of not lower than three-fourths (¾) of a statute mile. Upon completion of upgrading other noncompliant requirements, these lengths and widths will be required to be held constant in order to meet FAA design requirements for ARC B-II category aircraft.

**Obstacle Free Zone (OFZ)** is a three (3) dimensional volume of airspace which protects for the transition of aircraft to and from the runway. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible Navigation Aid (NAVAID) locations that are fixed by function. Additionally, vehicles, equipment, and personnel may be authorized by Air Traffic Control (ATC) to enter the OFZ area using the provisions of FAA Order JO 7110.65U *Air Traffic Control,* Paragraph 3-1-5, *Vehicles/Equipment/Personnel on Runways*. The runway OFZ and when applicable, the inner-approach OFZ and the inner-transitional OFZ, comprise the OFZ. The OFZ for the existing runway 17/35 is 250 feet wide centered on the runway centerline and extends 200 feet past the runway ends. Ultimate Runway 18/36 will have the same OFZ dimensions.

**Runway Protection Zone (RPZ)** is an area off the runway end to enhance the protection of property on the ground and people. This is best achieved through City of Concordia (City) control over the RPZ areas. Such control includes maintaining RPZ areas clear of incompatible objects and activities. FAA AC 150/5300-13 specifically states that land uses such as for residences and places of public assembly (such as churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typify places of public assembly) are prohibited from being located inside a RPZ. Fuel storage facilities also should not be located in a RPZ.

The RPZ is trapezoidal in shape and is centered on the extended runway centerline. The dimensions of the RPZ are a function of the critical aircraft and the approach visibility minimum associated with the runway. Table 3B on page 3-22 depicts the RPZ requirements for the runways with various approach visibilities. Table 3B also discusses the different parts of the RPZ.

**Runway Safety Area (RSA)** is defined as a surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an aircraft undershoot, overshoot, or excursion from the runway. The RSA is centered on the runway and extends beyond both runway ends. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating fire and rescue vehicles, capable of supporting the aircraft itself, and free from all obstacles not fixed for navigational purpose.

The RSA standard for Airport Reference Code (ARC) B-II category aircraft is 150 feet wide and extends 300 feet beyond each runway end. RSA for existing ARC A-I category aircraft with only visual approach minimums is 120 feet wide. The existing RSA for primary Runway 17/35 is approximately 150 feet wide. This currently meets the requirements for serving the existing aircraft and possible future aircraft utilizing the Airport.

**Runway to Taxiway Centerline Separation** is the minimum separation between the runway centerline and taxiway centerline. For ARC B-II category aircraft with not lower than three-fourths (¾) mile visibility minimum that separation is 240 feet. For B-II aircraft with lower than three-fourths (¾) mile visibility minimums the minimum separation is 300 feet. Blosser Municipal Airport (Airport) currently does not have a parallel taxiway to primary Runway 17-35. A parallel taxiway constructed in the future for primary Runway 17/35 would need to be constructed with a separation dimension that exceeds the minimum requirements for an ARC B-II category aircraft with not lower than three-fourths (¾) mile visibility minimum, or 240 feet separation. Due to the existing location of primary Runway 17/35 and existing airside and landside facilities appropriate separation distances may be hard to obtain. If adequate separation distances are not met, alternatives will have to be looked at for the best, most efficient usage of the Airport.

**Runway Blast Pad** is a surface adjacent to the ends of the runway provided to reduce the erosion effect of jet blast and propeller wash. Currently, primary Runway 17/35 is not equipped with blast pads and it is not anticipated to require any during the planning period.

A blast pad is not typically constructed at General Aviation (GA) airports. Most GA airports do not have the aircraft volume to warrant blast pad construction. For example, an airport larger than Blosser Municipal Airport (Airport) such as Manhattan Regional Airport (MHK) located in Manhattan, Kansas (which is a commercial service airport) does not utilize runway blast pads. Unless the Airport would begin experiencing a specific wash out or erosion problem due to the air traffic, it is recommended that blast pads not be constructed. Federal Aviation Administration (FAA) funds would more prudently be spent on higher priority projects at the Airport.

### AIRFIELD LIGHTING SYSTEMS

Airfield lighting systems provide critical guidance to assist pilots in locating Blosser Municipal Airport (Airport) during operations at night or during daytime operations in which visibility is poor due to inclement weather conditions. Airfield lighting also assist in the ground movement of aircraft. FAA Advisory Circular (AC) 150/5340-30G *Design and Installation Details for Airport Visual Aids* provides guidance and recommendations concerning the installation of airfield lighting systems.

**Medium Intensity Runway Lights (MIRLs)** are installed on primary Runway 17/35 and are both local controlled and Air-To-Ground (ATG) radio controlled. A MIRL system is sufficient for the future Non-Precision approaches that are proposed as part of this Master Plan. The existing MIRLs at the Airport should be maintained until the primary runway is widened from 60 feet to the 75 feet minimum Federal Aviation Administration (FAA) required width for the proposed ultimate configuration of the Airport primary runway. The existing, 14 inch high stake-mounted fixture MIRLs shall then be replaced with 24 inch high base-mounted fixture MIRLs. Replacement of the 14 inch stake mounted MIRLs with 24 inch base mounted MIRLs will help

Typical Medium Intensity Taxiway Light (MITL)

with the maintenance of the light assembly and the visibility of the MIRLs during clean up after a snow storm.

Clear or split clear/yellow globes, can be used to mark the runway edge, including Non-Precision Instrument Flight Rule (IFR) runways. Split green/red globes can be used to mark the runway threshold or end, including Non-Precision IFR runways. Blue globes can be used to mark the taxiway edge and there are other light globe colors available for miscellaneous applications.

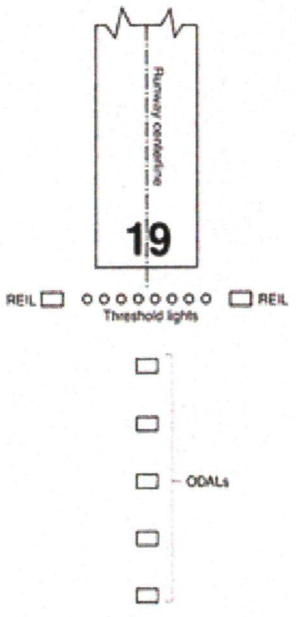
**Medium Intensity Taxiway Lights (MITLs)** are installed on the connecting taxiway from the Terminal Build apron to primary Runway 17/35 and are both local controlled and Air-To-Ground (ATG) radio controlled. With the newly installed MITL lighting system with the year 2011 apron construction project, the system will be adequate for all proposed existing and future taxiway improvements at the Airport.

**Approach Lighting System (ALS)** is used in the runway approaches as additional Navigation Aids (NAVAIDs) for the final portion of Instrument Flight Rule (IFR) approaches and as visual guides for nighttime approaches under Visual Flight Rules (VFR) conditions. Runway approach lighting systems provide the pilot with visual cues concerning aircraft alignment, roll, height and position relative to the runway threshold. ALSs may be installed to lower instrument procedure minimums. Currently the Airport does not have any Approach Lighting Systems installed.

- **Runway End Identifier Lights (REILs)** provide rapid and positive identification of the end of the runway. The system consists of two synchronized flashing lights, uni-directional or omni-directional, one located on each corner of the runway-landing threshold at an angle of 10 to 15 degrees. The uni-directional lights face the approach area. REILs are effective for identification of a runway surrounded by a preponderance of other lighting; identification of a runway which lacks contrast with surrounding terrain; and identification of a runway during reduced visibility.

  A REILs system provides three (3) intensity settings, and has an approximate range of three (3) miles during daylight and 20 miles at night. REILs can be Air-To-Ground (ATG) controlled remotely by the pilot, by sensing the current through the runway edge lights, or manually in the airport control cabinet. If it is operationally acceptable at an airport, the omni-directional REILs provides good circling guidance and is the preferred system. The uni-directional REILs must be installed where environmental conditions require that the area affected by the flash from the REILs be greatly limited.

  It is recommended that two (2) omni-directional REILs be installed at each approach of primary Runway 18/36 when the new primary runway is constructed.



- **Omni-Directional Approach Lighting System (ODALS)** provides visual guidance for aircraft circling, offset, and straight-line approaches to Non-Precision (NP) runways. An ODALS provides visual identification of the the approach end and centerline of the runway for landing aircraft and to further enhance the operation safety of airports. The varable intensity levels of the ODALS seven (7) light system is specifically used for long approaches and/or bad weather conditions. The 360 degree horizontal beam pattern, bright flashes of light, and the seven (7) light sequential flash pattern aids the aircraft pilot in identifying the approach and centerline of the runway in use. Five (5) omni-directional flashing lights in the ODALs system identify the centerline of the runway. Two (2) additional omni-directional flashing lights identify each outer edge of the runway approach. It is recommend that ODALS be installed at each approach of primary Runway 18/36 when the new primary runway is constructed.

There are several more ALSs that are much more sophisicated and primarily used at Commercial Service airports rather than at General Aviation (GA) airports. However, an ALS with a complement of Precision Approach Path Indicators (PAPIs), REILs and ODALs installed at the Airport will suffice to meet the aviation demands at the Airport forcasted over the 20 year planning period.

### PAVEMENT MARKINGS AND SIGNAGE

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5340-1K *Standards for Airport Markings,* provides the standards and guidance necessary for markings used on airport runways, taxiways, and aprons. The signage system on the Airport should be in accordance with AC 150/5340-18F, *Standards for Airport Sign Systems.* Airport pavement markings and signs provide information that is useful to an aircraft pilot during takeoff, landing, and taxiing. Uniformity in airport markings and signs from one airport to another enhances safety and improves efficiency. Airport markings and signage are designed according to the type of approach available (Visual, Non-Precision Instrument and Precision Instrument) on the runway.

**Pavement Markings** on primary Runway 17/35 are Non-Precision markings that include runway centerline markings, runway designator (number) markings and runway threshold markings. The current markings are sufficient for the present Non-Precision approaches.

Taxiway and apron areas have pavement markings to help pilots navigate aircraft along the pavement. Yellow centerline marking strips are painted on all taxiway and apron surfaces to provide guidance to pilots. In correlation with the year 2005 primary runway mill-and-overlay project at the Airport, the runway, turnarounds, and center connecting taxiway were striped. Pavement marking for the remaining portion of the center connecting taxiway leading to the apron area, Terminal Building, Fueling Facility, Conventional Hangers and Standard T-Hangars were not part of the improvements. However, pavement marking improvements were made to these areas in

Pavement markings on the approach of primary Runway 35 looking north

year 2011 as part of the *Taxiway Rehabilitation & Apron Expansion Project* to help pilots navigate at night and in low visibility conditions. Marking these areas is important because it allows pilots to safely navigate through congested areas. In addition, basic taxiway and apron markings should be applied to all new pavements once they are constructed.

**Runway Holding Position Markings** on taxiways identify the location on a taxiway where an aircraft is to stop when the pilot does not have clearance to proceed onto the runway. At airports without Air Traffic Control (ATC) towers, these runway hold position markings identify the location where a pilot is assured there is adequate separation with other aircraft to stop before proceeding onto the runway. Currently there are no holding position markings on the primary Runway 17/35 for either crosswind Runway 12/30 or crosswind Runway 3/21. According to AC 150/5340-18E, for ARC B-II category aircraft with Visual or Non-Precision approaches, holding position marking should be located at a distance of 200 feet from the runway centerline. The holding position markings on the existing center connecting taxiway and on the connecting taxiway stubs at the ends of primary Runway 17/35 at the Airport are 125 feet from the primary Runway 17/35 centerline. The hold position will need to be adjusted in the future to accommodate Airport Reference Code (ARC) B-II category aircraft.


West face of the primary Runway 17-35 hold position sign located on the north edge of the connecting taxiway

**Airfield Signage** provides guidance and direction to pilots on the ground and should be a goal of every airport. There are six (6) types of signs installed on airfields: mandatory instruction signs, location signs, direction signs, destination signs, information signs, and runway distance remaining signs. The signs should be lighted if the runway or taxiway that they are installed for is lighted. Currently, Blosser Municipal Airport (Airport) has one lighted hold position sign located on the center connecting taxiway for primary Runway 17/35. For the current configuration of the Airport, the existing signage is inadequate due to the fact that there are no runway location signs at either end of the runways or for runway to runway intersections. The Airport should have the basic direction signs, mandatory instruction signs and runway and taxiway locations signs installed.

**Runway Distance Remaining Signs** are signs on the runway that show the pilots how much available runway is left during a takeoff or landing operation. It is recommended that all runways used by turbojet aircraft have Runway Distance Remaining Signs. That signage should not be needed at the Airport through the planning horizon. FAA typically considers Commercial Service airports the size of airports that require Runway Distance Remaining Signs. FAA Advisory and Design Circulars allows for these signs at General Aviation (GA) airports, however, it is not standard FAA practice to allow installation of Distance Remaining Signs at GA airports.

## NAVIGATION AIDS

A Navigation Aid (NAVAID) is a visual device on an airport that people and aircraft pilots see or an electronic device on or off the airport that transmits radio frequencies containing navigational data that properly equipped aircraft and pilots translate into point-to-point guidance and position information.

**Visual NAVAID Devices** located at Blosser Municipal Airport (Airport) requiring enhancement or installation in order for the Airport to prudently meet existing and future aviation demands are

- **Segmented Circle with Light Wind Tee** is of 1948 vintage and should be updated and enhanced to accommodate modern aviation standards. Some modern design standards provide that the area contained within the segmented circle is of artificial turf to help minimize maintenance and provide for more visible markings.

  Before doing any work to this equipment, the City of Concordia (City) must keep in mind that the Segmented Circle with Lighted Wind Tee must be relocated if the existing primary Runway 17/35 becomes the parallel taxiway for the new primary Runway 18/36. It is important that a Segmented Circle with Lighted Wind Tee be maintained at the Airport because the Airport is an uncontrolled airport with no Air Traffic Control (ATC) tower.

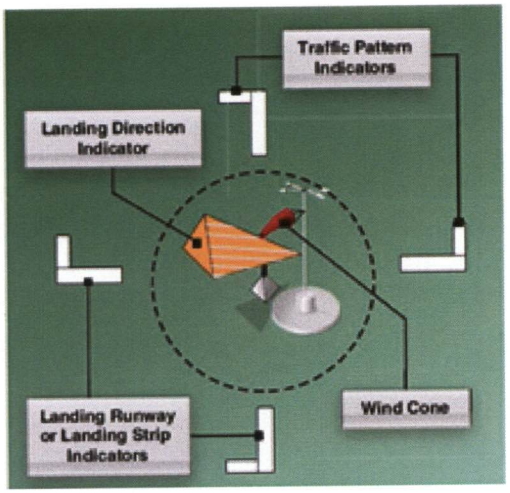



**Exhibit 3D**
**Typical Segmented Circle Layout**

- **Non-Lighted Wind Cone** at the Airport should be replaced with a modern lighted wind cone. However, the City must keep in mind that the existing wind cone must be relocated if the existing primary Runway 17/35 becomes the parallel taxiway for the new primary Runway 18/36. It is important that a lighted wind cone be maintained at the Airport because the Airport is an uncontrolled airport with no Air Traffic Control (ATC) tower.
- **Airport Rotating Light Beacon** is of 1982 vintage and seems to be in good working order. The light beacon should be maintained at the Airport and the City should watch for new illumination and motor technologies that could lower the electricity usage while maintaining the existing visibility standard of approximately 40 nautical miles (NM).
- **Visual Glide Slope Indicators (VGSIs)** are commonly provided at airports to provide aircraft pilots with visual descent guidance information during landings to the runway. There are two (2) forms of these aids that have been regularly installed. They include the Precision Approach Path Indicator (PAPI) and the Visual Approach Slope Indicator (VASI). The difference between a VASI and a PAPI is that a PAPI also has a *slightly high* and a *slightly low* indication. The VASI is slowly being replaced and phased out by the PAPI.

Typical Precision Approach Path Indicator (PAPI) utilizing advanced optical technology and frangible mounts

The PAPI system has an effective visual range of approximately five (5) miles during the day and up to 20 miles at night. The presence of objects in the approach area may present a serious hazard if an aircraft descends below the normal path. This is especially true where sources of visual reference information are lacking or deceptive such as with hilltops, valleys, terrain grades, etc. The PAPI assists the pilot in maintaining a safe distance above hazardous objects. The visual aiming point obtained with the PAPI reduces the probability of undershoots or overshoots.

Currently the Airport is without any visual descent guidance information. It is recommended that the Airport obtain a full PAPI system as part of the future primary runway improvement project at the Airport. Each PAPI unit should have a three (3) lamp configuration and four (4) PAPI units (boxes) should be installed at each approach of primary Runway 17/35. This 4-box PAPI system will support forecasted operations of business jet aircraft at the Airport and help the Airport fulfill its role as a *Business Airport* as recommended by the *Kansas Airport System Plan* 2009 (KASP).

**Electronic NAVAID Devices** available to aircraft pilots for flying aircraft to or from the Blosser Municipal Airport (Airport), requiring enhancement or installation in order for the Airport to prudently meet existing and future aviation demands are:

- **Non-Directional Radio Beacon (NDB)** located at the Airport is of 1978 vintage and stopped operating on Friday evening, October 12, 2012 as the result of a severe lightning storm. On October 13, 2012, the Fixed Base Operator (FBO) at the Airport issued a Notice to Airmen (NOTAM) that the Airport NDB is *Out of Service*. That NOTAM is still in effect as of the first approved publication of this Airport Master Plan.

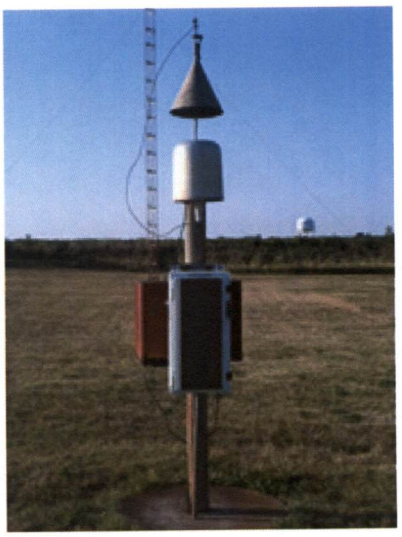
  First discussions by the Airport Advisory Board concerning the future of the NDB at the Airport occurred under New Business on the Agenda for an Advisory Board Special Meeting conducted on November 15, 2011. At that meeting the City of Concordia (City) informed the Airport Advisory Board of the following:

  1. Norbert Slupianek, longtime Support Technician for the NDB is retiring;

2. Slupianek informed the City that new parts for the NDB are no longer available and that used parts are now almost impossible to find.

3. According to the Kansas Department of Transportation (KDOT), Division of Aviation (KDOT Aviation), there are only seven (7) NDBs remaining in the State of Kansas (State) that are still operational. This is largely due to the advent of the new Global Positioning System (GPS) navigation technologies for aviation that are replacing the 1927 vintage NDB navigation. Background information concerning NDB and GPS navigation technologies is located on Pages 1-54 through 1-58 of this Master Plan.

4. KDOT Aviation informed Slupianek that KDOT Aviation and the Federal Aviation Administration (FAA) would no longer fund updating or replacing NDB equipment.



On October 12, 2012, the NonDirection Radio Beacon (NDB)at Blosser Municipal Airport quit operating because of a severe lightning storm

After much discussion by the pilot Members of the Airport Advisory Board, the Advisory Board unanimously voted to keep the Airport NDB operational until the equipment stops working. At future Board meetings, there were subsequent public discussions by the Airport Advisory Board concerning the faith of the NDB. A summary of those public discussions are as follows:

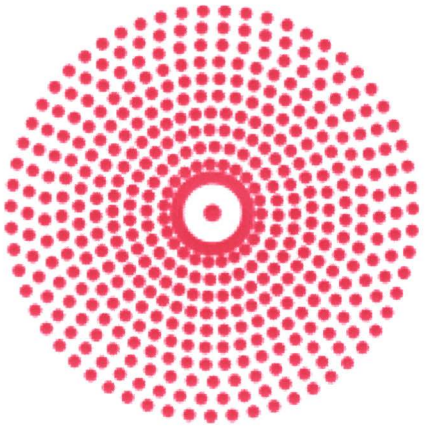
1. March 29, 2012 – The Airport Advisory Board reviewed and discussed a copy of an article from the *Aircraft Owners and Pilots Association (AOPA) Pilot Magazine titled, Dogfight: NDB Approaches* dated September 2011. This article is about the pros and cons of maintaining an NDB at an airport. The Airport Advisory Board also discussed information from KDOT Aviation that estimates by the year 2020 there will be no Automatic Direction Finding (ADF) equipment in aircraft for interpreting NDB navigation signals. General consensus of the Airport Advisory Board was that it seems NDB navigation technology utilized at airports is becoming obsolete and there is no need to spend any amounts of public money on the NDB at the Airport.

2. October 22, 2012 - The City informed the Airport Advisory Board that the Airport NDB stopped working on Friday, October 12, 2012 due to a thunderstorm. In year 2011, The City and Airport Advisory Board previously agreed to not repair the NDB if something like this happened. Therefore, the City caused a NOTAM published that informs pilots that the Airport NDB is currently *Out of Service*. That action did not decommission the NDB; rather, the NDB is just out of service. The Airport Advisory Board decided to place information in *Chapter 3 – Facility Requirements* of the Airport Master Plan detailing what needs to be accomplished in order to officially decommission the NDB. Once the City

Commission approves the Master Plan then the NDB can be decommissioned.

The process to decommission a non-Federal NDB facility is for the Airport sponsor (City) to submit an official letter to the FAA with the following:

1. The name of the Airport, FAA Identifier Code, and Airport location:
   - Blosser Municipal Airport (CNK) located in Concordia, Kansas
2. The NDB facility referenced with its Facility Identification Code:
   - CNK
3. The authority deciding to take the facility out of service:
   - The City of Concordia Commission with the recommendation of the City of Concordia Airport Advisory Board
4. Statement that the City and Airport Advisory Board desire to decommission the Airport NDB facility and remove reference of it from all publications.
5. Statement that the Airport NDB is currently deemed *Out of Service* due to a lightning storm occurring on October 12, 2012 and related Notice to Airman (NOTAM) issued on October 13, 2012.
6. Statement requesting that the required FAA procedures associated with the NDB facility decommissioning begins immediately and related NDB termination of service effective as soon as possible.



If the Non-Directional Radio Beacon (NDB) at Blosser Municipal Airport (Airport) is permanently decommissioned, this symbol will be removed from aeronautical charts concerning the Airport

A signed original of the City letter requesting decommissioning of the Airport NDB may be submitted through regular mail or e-mail to the FAA. The current contact for that communication is:

Natashia M. Jones
Program Implementation Manager - Non-Federal Coordinator for Navigation Aids
Planning & Requirements Group, AJV-C36
Federal Aviation Administration, Air Traffic Organization, Central Service Center
2601 Meacham Boulevard
Fort Worth, Texas 76137
Voice: 817-222-4038 Fax: 917-222-5969 natashia.jones@faa.gov

Upon FAA receipt of a request to decommission a NDB facility, FAA will initiate a Non-Rule Making Airports Study (NRA). It takes approximately 60 to 90 days for the FAA to complete such Study. The NRA is conducted to identify all procedures affected by the decommissioning of the Airport NDB and notify surrounding airports, which will clearly identify any impacts such as the need to re-write procedures.

At the completion of the NRA, an FAA *Letter of Determination* will be sent to the City informing that FAA has either, *Objection, No Objection or Conditional No Objection* with the City request to decommission the Airport NDB. If the FAA has *No Objection or Conditional No Objection* with the request, an approximate date will be given of when the FAA believes the NDB facility could be removed from publication and finally decommissioned.

### INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the Federal Aviation Administration (FAA), using electronic Navigation Aids (NAVAIDs) that assist pilots in locating and landing at an airport, especially during instrument flight conditions. The visibility and cloud ceiling associated with the approach define the capability of an aircraft navigation instrument. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach to the runway. Cloud ceilings define the lowest level of cloud layer, in feet above the ground, which can exist for a pilot to complete the approach. If visibility distances and cloud ceiling heights drop below the minimum prescribed for a particular runway approach, then the pilot will not be able to complete the instrument approach.

With the advent of Localizer Performance with Vertical Guidance (LPV) Global Positioning System (GPS) approaches (LPV-GPS), precision instrument approaches for Blosser Municipal Airport (Airport) can become reality without the need to install expensive instrumentation at the Airport that provides an Instrument Landing System (ILS). However, there are FAA requirements that need to be met in order to qualify the Airport for the LPV–GPS precision or non-precision approaches. These requirements are detailed in Appendix 16 of FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Changes 1-14.

Table 3C on page 3-33 shows specific minimum requirements needed to support approaches with various visibility minimum requirements.

Currently Blosser Municipal Airport (Airport) has GPS published approaches to both Runway 17 and Runway 35. These GPS approaches are also enhanced by the FAA's Wide Area Augmentation System (WAAS). WAAS enhanced GPS approaches are very well suited for aircraft with GPS capabilities. However, for aircraft not yet GPS equipped, this adds no additional assistance, and reason why it is suggested that the Airport obtains a Precision Approach Path Indicator (PAPI) system in a near future improvement project.

**Table 3C**

**Approach Requirements for Approach with Vertical Guidance (APV) and Required Navigation Performance (RNP)**

| Visibility Minimums | Less Than 3/4 Mile | Less Than 1 Mile | 1 Mile | Greater Than 1 Mile | Existing Runway 17/35 |
|---|---|---|---|---|---|
| Minimum Runway Length (feet) | 4200 (paved) | 3200 (paved) | 3200 | 3200 | 3,600 |
| Runway Markings | Precision | Non-Precision (Precision Recommended) | Non-Precision | | Visual |
| Runway Edge Lighting | HIRL[3] or MIRL[2] | | MIRL[3] or LIRL[1] | | MIRL[2] |
| *Approach Lighting | MALS[4], ODALS[5], or SSALS[6] Recommended | | MALS[4], ODALS[5], or SSALS[6] Recommended | | None |
| Parallel Taxiway | Required | | Recommended | | None |
| Holding Position Signs & Marking | Precision | Non-Precision (Precision Recommended) | Non-Precision | | Hold Line Only |

Source: Appendix 16, Federal Aviation Administration Advisory Circular 150/5300-13, Airport Design, Change 12 (Table A16 - 1B)

1 LIRL - Low Intensity Runway Lights
2 MIRL - Medium Intensity Runway Lights
3 HIRL - High Intensity Runway Lights
4 MALS - Medium Intensity Approach Lighting System
5 ODALS - Omni-Directional Approach Lighting System
6 SSALS - Simplified Short Approach Lighting System

In reviewing the requirements addressed in Table 3C, an LPV–GPS approach (with less than one (1) mile visibility) can be implemented and published in the future, provided that the proposed 4,800 feet long primary runway is paved, that runway is marked with non-precision markings, non-precision holding position signs and markings are added, and the new primary runway is constructed at the minimum separation from the parallel taxiway. Though it is not required to add an Approach Lighting System (ALS) to obtain the LPV-GPS approach (with less than one (1) mile visibility), it is recommended that the Airport install an Omni-Directional Approach Lighting System (ODALS).

Installation of an ODALS and PAPI system at the Airport helps the Airport fulfill its role of a *Business Airport* as determined in the *Kansas Airport System plan 2009* (KASP).

## WEATHER OBSERVATION

Blosser Municipal Airport (Airport) currently has a functional Automated Surface Observing System (ASOS) commissioned and operated by the National Weather Service (NWS) as a *Service Level D* facility. The ASOS at the Airport has the full standard instrument cluster plus the optional freezing rain sensor but does not have the optional lightning sensor.

Possible requirement of a freezing rain sensor and/or lightning sensor at an airport is discussed in: Code of Federal Regulations (CFR); Title 15, *Commerce and Foreign Trade*; Subtitle B, *Regulations Relating to Commerce and Foreign Trade*; Chapter 4, *National Oceanic and Atmospheric Administration, Department of Commerce*; Subchapter C, *Regulations of the National Weather Service*; Part 946,

The Automatic Surface Observing System (ASOS) at Blosser Municipal Airport has the optional freezing rain sensor but does not have the optional lightning sensor

*Modernization of the National Weather Service*; Appendix A to Part 946, *National Weather Service Modernization Criteria*; Section D, *Modernization Criteria Unique to Automation Certifications.* In Section D the following is stated:

- **Section D, Item 4c** – Thunderstorm occurrence is reported in the ASOS observation through the use of a lightning sensor (applies to service level D airports only, excluding Homer, Alaska).
- **Section D, Item 4d** – Freezing rain occurrence is reported in the ASOS observation through the use of a freezing rain sensor. Among service level D airports, this criterion is not applicable to Ely, Nevada and Lander, Wyoming.

According to the above language from Appendix A to Part 946, it seems that the ASOS instrument cluster at the Airport should have a lightning sensor, however, final determination of that is beyond the scope of this Master Plan. It is recommended that the City of Concordia (City) and Airport Advisory Board further research this issue and make a final determination. It is important to do this because a good source of

local lightning data helps with the following:

- **Air Traffic Control** - Re-route aircraft around hazardous thunderstorms
- **Airports** - Suspend high-risk activities like fueling during lightning threats
- **Electric Power Sensitive Manufacturing and Processing Operations** - Prepare for storm-caused power outages by switching to back-up power early
- **Electric Power Utilities** - Pre-position field crews for approaching storm threats and to improve engineering and design with lightning analysis
- **Forestry** - Dispatch crews to suspected fire starts for more successful initial attack
- **Hazardous Materials Handling** - Warn personnel working near explosives and flammable materials to evacuate
- **Insurance and Arson** - Investigate lightning as the cause of property damage or fire
- **Outdoor Events and Recreation** - Warn players and spectators to seek safety from storms
- **Weather Forecasting** - Help predict severe weather for public warning

If installation of a local lightning sensor with the ASOS instrument cluster proves to not have merit, Vaisala owns and operates the National Lightning Detection Network (NLDN) that provides cloud-to-ground and in-cloud lightning data to several agencies of the United States Government via

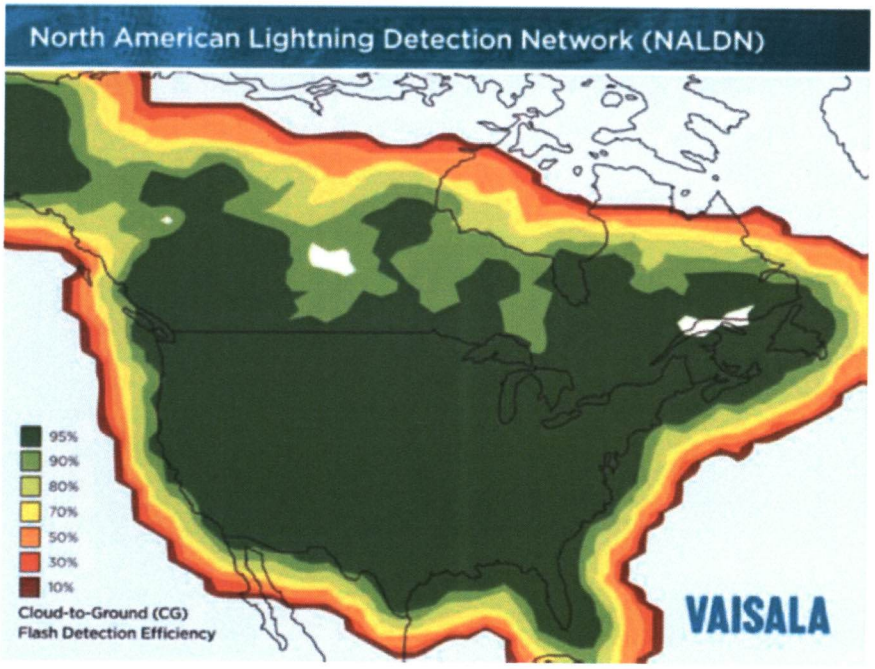



**Exhibit 3E**
**Cloud-To-Ground Flash Detection Efficiency - North American Lightning Detection Network**
Source: Vaisala

annual fee-for-data contracts. Detailed information concerning the NLDN is located in Chapter One on Pages 1-75 through 1-77.

In the main application, lightning warning areas and electric field mills are monitored in real-time. Remote alarm displays, email notifications, and relays are triggered once a lightning warning is issued by the Valsala TWX300 local workstation.

For a fee, needed NLDN equipment and lightning information is also made available to local airports, communities, business safety mangers, etc. to support safety goals, improve operational efficiency, and eliminate the subjective nature of ceasing activities due to lightning in the area of concern. Such a system installed at the Airport could be an option to provide audible and visual lightning alerts at the Airport and e-mail and/or text lightning alerts and all clear alerts to others in the Concordia community such as the City Recreation Department, Cloud County Community College, Concordia Elementary School, Concordia High School, Cloud County Fair Association, etc. Estimated cost for equipment and installation of such a system is approximately $50,000. Annual cost of lightning data, support fees, etc. is approximately $2,700.

Additional weather observation equipment should not be needed through the planning horizon of this Master Plan. However, it is recommended that the Airport Advisory Board and the City keep informed of new weather observation technology and stay abreast of possible ASOS upgrades that the NWS will pay for and install at the Airport.

## LANDSIDE REQUIREMENTS

Landside facilities are those necessary for the handling of aircraft, General Aviation (GA) passengers and cargo while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacities of the various components were examined in relation to projected aviation demand to identify future landside facility needs at Blosser Municipal Airport (Airport).

The primary purpose of this section is to determine the space requirements during the planning period for the following types of facilities normally associated with General Aviation Terminal areas:

- Aircraft Storage Hangars
- Aircraft Parking Apron
- Terminal Building
- Aircraft Maintenance Hangar

### TERMINAL BUILDING

The General Aviation (GA) Terminal Facilities are often the first impression of the Concordia community that private individuals, corporate officials, or vacationers that fly into

Blosser Municipal Airport (Airport) will encounter. Terminal Building space is required for waiting passengers, pilot's lounge, restrooms, concessions, management, storage and various other needs. This space is not necessarily limited to a single, separate Terminal Building, but also includes the space offered by the Fixed Base Operation (FBO) for these functions and services.

The methodology used in estimating the space need for the Terminal Building is based on the criteria set forth in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5360-13 *Planning And Design Guidelines For Airport Terminal Facilities.* Terminal facilities are generally sized to accommodate the peak hourly activity on the busiest day of the busiest month.

North end of Terminal Building located at Blosser Municipal Airport

From the same information used to size the Airport apron area, the busiest month at the Blosser Municipal Airport (Airport) is the month of July. If 40% of the total annual operations (8,740 operations in 2027) are assumed to occur during the busiest month and 30% of the total annual operations are by itinerant aircraft, then the Airport can expect to see approximately 1,049 itinerant operations during the month of July. There are 31 days in July, so on average the Airport will see approximately 33 to 34 itinerant aircraft per day. As a rule of thumb, airports can have peak hour aircraft operations as high as 12 to 20 percent (12% to 20%) of daily total aircraft operations. If it is assumed that 34 itinerant aircraft operations occur during the busiest day and that 20 percent of those occur during the peak hour, the Airport will have just over six (6) aircraft operations during the busiest hour.

AC 150/5360 recommends, as a rule of thumb, that about 150 square feet of gross terminal building area be provided per design peak-hour passenger. Assume six (6) to seven (7) itinerant aircraft during the busiest hour with an average of two (2) passengers per aircraft would require a Terminal Building of 2,100 square feet. The present General Aviation Terminal Building at the Airport is a two story building with approximately 1,600 square feet of space on the first floor (80 feet long by 20 feet wide) and approximately 540 square feet of space on the second floor (27 feet long by 20 feet wide). That total of 2,140 total square feet of space in the Terminal Building more than meets the estimated 2,100 square feet of space needed to accommodate existing and forecasted future aviation demands at the Airport during the 20-year planning period of this Master Plan.

The existing Terminal Building is in excellent condition, as it was recently remodeled in 2008. However, following are recommended needs:

- Optical fiber connection that provides High Definition (HD) television and Internet access that has a high speed and broad band capacity.

- Security cameras and intruder alert security system.
- Install an electric generator interconnection so that the entire electrical system of the whole Terminal Building can be supported by a local electric generator during times of electricity outages.

### AIRCRAFT MAINTENANCE HANGAR

An aircraft Maintenance Hangar that is clean, neat, brightly painted and well equipped with necessary building amenities will help attract and keep a good Fixed Base Operator (FBO) and Airframe and Powerplant (A&P) Mechanic at the Airport which in turn brings aircraft operations to the Airport.

Typical Maintenance Hangar that can accommodate Airport Reference Code (ARC) B-II category aircraft

Currently, there is a potential full service Maintenance Hangar available at the Blosser Municipal Airport (Airport) that is adequate for an FBO to operate and meet the existing aviation demands at the Airport. This Maintenance Hangar has all amenities and facilities required for an FBO to perform maintenance and repair services for Airport Reference Code (ARC) A-I and B-I category aircraft. It is also attached to the Terminal Building which facilitates daily monitoring of airport activities, which would be beneficial to the Airport and Concordia community.

An area equal to at least ten (10) percent of the total hangar space located on the (Airport) should be allocated for aviation maintenance and repair facilities. It is assumed that this needed aircraft maintenance area would be housed in the Conventional Hangar space of the existing Terminal Building. However, the dimensions of that Maintenance Hangar space will not allow the entry of the critical design aircraft of this Airport Master Plan which is an ARC B-II category aircraft.

To solve this problem with minimal building costs it is recommended that an addition 100 feet long by 90 feet wide by 35 feet high sidewall be constructed onto the south end of the existing Maintenance Hangar. The addition would have an opening in the east end that is approximately 84 feet wide by 32 feet high with a bi-fold door. This Maintenance Hangar addition would accommodate an ARC B-II category aircraft. Such aircraft has 49 feet up to but not including 79 feet wingspan and tail height from 20 feet up to but not including 30 feet. In Chapter Two on page 2-17 is a listing of *Airplane Design Groups* and respective aircraft dimensions for each Group. This addition should be well insulated, have good lighting, ample electrical receptacles, floor drains, plumbed for compressed air and water, have heating and a mechanical air ventilation system, and epoxy sealed floors. An overhead carriage hoist that can service the entire floor space should also be considered.

The existing Maintenance Hangar needs a new air compressor and mechanical air ventilation system installed.

### FRANK CARLSON BUILDING

The Frank Carlson Building at Blosser Municipal Airport (Airport) served as the prior location of a local National Weather Service (NWS) Office. The building is structurally sound and the Airport Advisory Board deemed the building worth saving for a possible aviation related prospect to locate at the Airport. However, the Frank Carlson Building is becoming dilapidated and for a prospect to locate in the building the following enhancement and repairs are needed:

- Installation of new energy efficient windows and doors;
- Rather than flat roof, frame a new hip roof and cover with colored steel roofing material;
- Replace heating and air conditioning system;
- Upgrade the restrooms to modern accessibility standards;
- Remodel and paint the building interior;
- Repair exterior wall cracks and paint entire building.

### VACATED RADAR TOWER

The vacated Radar Tower at Blosser Municipal Airport (Airport) has proved to be a valuable Airport infrastructure. The Radar Tower hosts several radio communication antennas and is the location of the Airport Rotating Light Beacon. The Radar Tower seems to be in good repair and no structural work seems to be needed. However, there are several vacated antennas, brackets, cables, etc. that should be removed from the tower. Also, all active antennas and their respective cables should be clearly identified and labeled. Estimated cost to do this work is approximately $1,000.

### AIRCRAFT STORAGE HANGARS

The space required for aircraft hangar facilities is dependent upon the number and types of aircraft to be based at the Blosser Municipal Airport (Airport). For planning purposes, it is necessary to estimate the hangar requirements based upon forecast aircraft operational activity. However, hangar development should also be based upon actual demand trends and financial resource conditions. Hangar requirements for the Airport are based upon an analysis of the General Aviation (GA) facilities and the current demand at the Airport.

Typical Executive Hangar with enclosed office area

Until recently, the number of new GA aircraft manufactured each year has been declining which causes older aircraft to retain their value. In order to protect their investment,

an increasing number of aircraft owners are renting hangar space. In addition, in areas of the United States that can have severe weather throughout the year such as Kansas, the use of hangars is almost a necessity. Therefore, it is assumed that all aircraft based at the Airport will require hangar space.

Having assumed this, it is necessary to determine what percentage of these aircraft will utilize Executive Hangars and open-space communal Conventional Hangars, as opposed to individual, private T-Hangars. A majority of smaller airports have experienced an increase in demand for T-Hangar space. Not only are T-Hangars less expensive to construct, they provide the aircraft owner more privacy and greater ease in obtaining access to their aircraft. Conventional Hangars and Executive Hangars are used mainly for storing large aircraft, storage during maintenance, transient overnight storage, and Fixed Based Operator (FBO) related uses. Executive Hangars also provide private space for individuals and businesses.

On this basis, it has been assumed that all turbine aircraft and ten (10) percent of all other based aircraft will be placed in Conventional Hangars. An area equal to at least ten (10) percent of the total hangar space on the Airport should be allocated for aviation maintenance and repair facilities. The remaining aircraft requiring hangar space will be allocated to T-Hangars. It is also assumed that early in the planning period that an Executive Hangar will be needed for location of an air ambulance critical transport service utilizing one (1) multi engine aircraft, one (1) helicopter and one (1) ground transport unit. Later in the planning period, one (1) additional Executive Hangar is needed that will house one (1) business jet aircraft.


Typical Executive Hangar with inviting exterior office

The final step in the planning process of determining hangar requirements involves estimating the area necessary to accommodate the required hangar space. A planning standard of 1,200 square feet per based aircraft stored in T-hangars was used. Planning figures for Conventional Hangars and Executive Hangars indicate an area of 1,200 square feet for single engine and rotary aircraft, 1,500 square feet for twin-engine piston aircraft, and 2,500 square feet for turbine powered aircraft. These planning figures were then applied to the aircraft to be placed in Conventional Hangars Executive Hangars, and T-Hangars to determine the area to be devoted to respective hangar facility requirements during the planning period.

Current Hangar space at the Airport consists of five (5) existing structures (see Chapter One, Table 1J located on page 1-87) those being: one (1) 10-place Standard T-Hangar, three (3) double entry Conventional Hangars, and one single entry Maintenance Hangar. There is also one (1) Conventional Hangar and two Executive Hangars located off the approach of the Runway 17, which are used for private through-the-fence operations. These privately owned hangars are not accounted for in determining hangar requirements for the Airport and businesses. The City of

Concordia (City) owns all hangars located on Airport property and leases the space to individuals and businesses in need of aviation related space. Hangar lease income is used by the City to help cover Airport operational and capital costs.

Conventional Hangar, Executive Hangars and T-Hangar needs are presented in Table 3D below.

As the data indicates, the existing blend of hangar space at the Airport will be sufficient through the short and intermediate term of the 20-year planning period to meet most all hangar square footage needed to support aircraft based at the Airport with ample storage space. The only projected shortfall of hangar space is the possible need of two (2) Executive Hangars with one (1) developed in the intermediate term of the planning period for an air ambulance service and one (1) developed in the long term of the planning period for a business jet aircraft.

**Table 3D**
**Hangar Stalls and Hangar Space Requirements**

| Based Aircraft (Center) | 2008 | 2013 | 2018 | 2028 |
|---|---|---|---|---|
| Single Engine | 7 | 10 | 11 | 12 |
| Ultra Light | 1 | 1 | 1 | 2 |
| Multi-Engine | 1 | 0 | 2 | 3 |
| Turboprop | 0 | 0 | 0 | 2 |
| Business Jet | 0 | 0 | 0 | 1 |
| Helicopter | 0 | 0 | 1 | 1 |
| **Total Aircraft To Be Hangared** | **9** | **11** | **15** | **21** |
| Hangar Stalls and Space | Available | Required | Required | Required |
| Hangar Stalls | 16 | 11 | 15 | 21 |
| Hangar Space (S.F.) | 19,005 | 13,200 | 18,600 | 28,000 |
| T-Hangar Positions | 10 | 11 | 12 | 14 |
| T-Hangar Space (S.F.) | 9,405 | 13,200 | 14,400 | 16,800 |
| Conventional Hangar Stalls | 6 | 0 | 1 | 4 |
| Conventional Hangar Space (S.F.) | 9,000 | 0 | 1,500 | 6,000 |
| Executive Hangar Stalls | 0 | 0 | 2 | 3 |
| Executive Hangar Space (S.F.) | 0 | 0 | 2,700 | 5,200 |
| Total Aircraft Maintenance Space (S.F.) | 4,800 | 1,320 | 1,860 | 2,800 |

Note: Calculations based on the following Square Feet (SF) per aircraft type: 1,200 SF Per Single Engine and Rotary Aircraft; 1,500 SF Per Multi Engine Aircraft; 2,500 SF Per Turbine Powered Aircraft

It is also noted that the available T-Hanger space per existing T-Hangar stall located at the Airport is approximately 940 square feet and the square footage used in determining required hangar space is 1,200 square feet. The new addition of larger T-Hangars will make the Airport more appealing to aircraft owners and pilots in the local area storing their aircraft elsewhere, and could possibly entice single engine aircraft being stored in communal Conventional Hangars elsewhere to transfer to these aircraft to the larger T-Hangars at the Airport. As the larger T-Hangar stalls become available, it is also likely that some of the aircraft now stored in communal Conventional Hangars at the Airport would occupy the new T-hangars on the sole basis of a privacy issue. Freed up Conventional Hangars could then be used for itinerant aircraft storage and/or other aircraft storage needs.

## AIRCRAFT APRON

An aircraft apron should be adequate for parking at least the number of locally based aircraft that are not stored in hangars, as well as transient aircraft. At the present time all based aircraft are stored in hangars. Therefore, apron space is only required for transient aircraft as well as for based aircraft

operating during the day.

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13, *Airport Design* suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. The FAA created spreadsheet titled, *Apron Size Calculations for Transient Aircraft* with aircraft apron area calculations for the Blosser Municipal Airport (Airport) is attached as Appendix L to this Airport Master Plan. The ultimate apron size was calculated based on the projected annual operations of 8,740 aircraft operations in year 2027.

**Table 3E**

**Aircraft Historical Fuel Sales**
**Blosser Municipal Airport**

| Calendar Year | | | | |
|---|---|---|---|---|
| Month | Gallons Purchased | | | |
| | 2005 | 2006 | 2007 | Total |
| January | 0 | 162 | 432 | 594 |
| February | 0 | 448 | 223 | 671 |
| March | 0 | 311 | 184 | 494 |
| April | 0 | 722 | 460 | 1,182 |
| May | 168 | 610 | 1,036 | 1,813 |
| June | 377 | 826 | 896 | 2,099 |
| July | 281 | 1,134 | 1,228 | 2,643 |
| August | 629 | 505 | 586 | 1,721 |
| September | 410 | 809 | 372 | 1,591 |
| October | 677 | 1,228 | 544 | 2,149 |
| November | 107 | 794 | 397 | 1,298 |
| December | 127 | 407 | 0 | 534 |

At the Airport, it was assumed that 40% of the annual operations occur during the busiest month of the year. The busiest month was determined from aircraft historical fuel sales (in gallons) data from the past three (3) years, provided by the City of Concordia (City). Table 3E on this page illustrates that the busiest month for aircraft fuel sales varies from year to year but, on the average and total overall, the month of July has historically been the busiest month for gallons of aircraft fuel purchased at the Airport.

As stated in Chapter Two, from historical and forecasted data, itinerant aircraft will make up approximately 30% of the operations at the Airport.

The number of aircraft spaces for based aircraft stored in hangars that are moved to the apron during the day assumed to be approximately 20 percent (20%) of the based aircraft. FAA planning criterion of 1,385 square yards per aircraft (for Airplane Design Group (ADG) II category aircraft with taxilane) was applied to the number of itinerant spaces to determine future transient apron requirements. The results of this analysis are presented in Table 3F located on page 3-43.

As Table 3F indicates, the available apron area is not adequate in size for the planning period of this Master Plan. The Airport currently has four (4) useable aircraft tie-downs located in apron pavement. A typical aircraft tie-down location consists of three (3) anchors laid out in a "T" configuration. Therefore, at the present time the Airport does not have enough tie-down locations to meet the aircraft demands on the Airport through the planning horizon.

Based on the existing configuration of the apron (270 feet long and only 60 feet wide) it will be difficult to construct aircraft tie-downs in existing pavement and still allow for taxiways and taxilanes across the apron. Therefore the Airport needs to expand the apron to be able to install

**Table 3F**
**General Aviation (GA) Apron Requirements**

| Descriptions | Available | Current | 2012 | 2017 | 2027 |
|---|---|---|---|---|---|
| Based Aircraft | --- | 9[1] | 11 | 13 | 19 |
| 20% Of Based Aircraft | --- | 2 | 2.2 | 2.6 | 3.8 |
| Total Annual Operations | --- | 3,435 | 4,510 | 6,525 | 8,740 |
| Itinerant Aircraft On Ground[2] | --- | 4 | 4 | 6 | 8 |
| Aircraft Tie-Downs | 4 Useable Individual Tie-Downs | 4 | 4 | 6 | 8 |
| Planned GA Apron Size (Square Yards) | 1,892 | 5,580 | 6,601 | 9,609 | 12,942 |

Note 1 - See Chapter 1, Table 1A
Note 2 - Information derived from Federal Aviation Administration (FAA) Spreadsheet titled *Apron Size Calculations For Transient Aircraft*. Refer to Appendix L of this Master Plan for that spreadsheet with calculations.

the total number of aircraft tie-down areas required to meet the future aviation demands and still allow for proper taxiway and taxilane Object Free Areas (OFAs). Several landside alternatives, showing tie-down layouts, are presented in Chapter Four to illustrate possible tie-down and apron configurations.

Also, the existing apron is too small to allow aircraft to transition to the taxiway if there is another aircraft fueling at the Fueling Facility located on the west edge of the apron. With an aircraft parked for fueling, an aircraft does not have room on the existing apron to travel around the Fueling Facility, so such aircraft is required to go off the apron and use the surrounding turf.

**Apron Expansion Project, Year 2011** - During the process of this Airport Master Plan, the City of Concordia (City) applied to the Federal Aviation Administration (FAA) Airport Improvement Program (AIP) and received entitlement funding for expansion of the existing Terminal apron area. The apron portion of the project had a total cost of $207,709. Of that cost FAA paid 95 percent (95%) which is $197,323 and the City of Concordia (City) paid a five percent (5%) local match which is $10,386. The City completed a formal bid process and the contractor started work during the spring of 2011. The project was completed and closed on September 30, 2011.

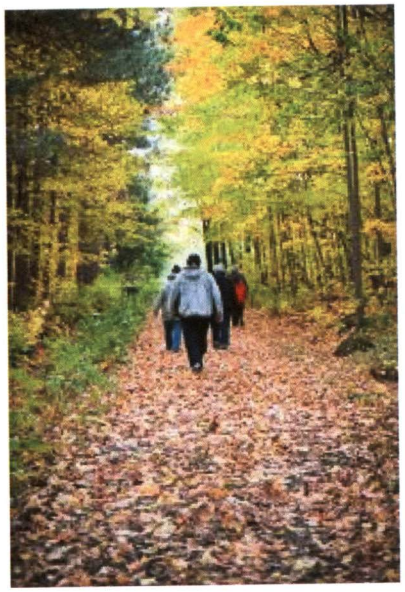
The Apron Expansion Project entailed the construction of an additional 2,630 square yards of concrete pavement adjacent to approximately 2,950 square yards of existing apron of concrete pavement that was salvageable. This 5,580 total square yards of apron with both new and old concrete pavement allows for much better aircraft movement around other aircraft parked on the apron and aircraft fueling. The apron was designed and constructed according to the FAA requirements for the Airport's critical design aircraft which is Airport Reference Code (ARC) B-II category aircraft.

### AIRPORT ACCESS VIA AUTOMOBILE AND WALKING

The Blosser Municipal Airport (Airport) Terminal Building is accessed via an asphalt road that is 15 feet wide and named Blosser Drive. Blosser Drive has direct access to the U.S. Highway 81

Expressway (81 Expressway) via two (2) entrances.

As the Airport Terminal is the gateway to the Concordia community, the access to the Terminal



Building must be aesthetically pleasing. Flow to and from the Terminal Building should allow for a simplified, direct flow for both passengers and visitors. A simple one-way loop system circumscribing the public parking area and passing the Terminal Building in a counterclockwise direction to permit right-side loading and unloading of vehicles is preferred. It is also preferred that the ingress and egress portions of the access roadway system be separated.

Blosser Drive at the Airport is a two way loop road servicing the Airport, the Kansas Army National Guard Armory, Airport Park, Recreational Vehicle (RV) parking, and a camping area. The Terminal Building parking lot is accessed by turning off the Blosser Drive access road.

There is currently no sidewalk and/or designated nature trail walking system located in Airport Park. It is recommended that be accomplished with pedestrian lighting and directly linked to the Terminal Building sometime during the planning period of this Master Plan. Federal and State aviation designated grant funds cannot be used for such development but there are other State and/or Federal grant funds available for such walkways and related lighting. This walking path should be mapped and posted at the Terminal Building to notify aircraft pilots and their passengers of this walking opportunity available in Concordia's Airport Park.

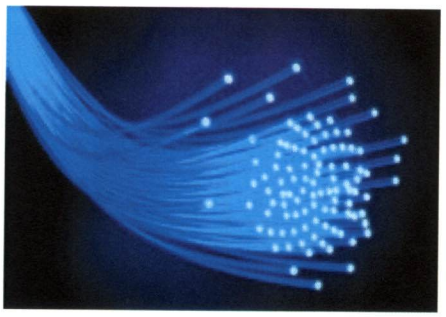
### AIRPORT PARKING AREAS

The current Terminal Building parking lot for vehicles is an asphalt paved lot located adjacent to the north end of the Terminal Building and south end of the Frank Carlson Building. This parking lot is in fairly good condition. It seems to have had a very thin overlay added in recent years. Although it is in fairly good structural condition, its aesthetic appearance is not very beneficial to being the aviation gateway to the Concordia community. A good black overlay and parking lot markings would greatly help the appearance.

Vehicle parking demands have been determined for the General Aviation users. The parking demand requirements are based on the forecasted design hour passengers multiplied by a factor of 1.8. Therefore based on previous discussion regarding forecasted design hour passengers the Airport would need 25 to 26 parking stalls by the year 2027. It is recommended that some additional parking above and beyond 26 stalls be added to account for Airport events that would require some overflow parking.

All vehicle parking areas to be added in the future should be a hard paved surface and appropriately

marked. Additional new parking areas should be considered for location near the existing T-Hangars and Conventional Hangars and where new hangars are to be located. Important to note is that such parking areas located near aircraft hangars must be designed in such a way that vehicles and aircraft do not comingle.



An optical fiber extension is the only utility lacking at Blosser Municipal Airport

## AIRPORT UTILITIES

The Blosser Municipal Airport (Airport) is well serviced by almost a full complement of appropriate and ample utilities. However, it is recommended that the Airport utilities are enhanced by accomplishing the following:

- Obtain an optical fiber extension to the Terminal Building for a connection that provides High Definition (HD) television and Internet access that has a high speed and broad band capacity.
- Install an electric generator interconnection so that the entire electrical system of the whole Terminal Building can be supported by a local electric generator during times of electricity outages.

## SUPPORT SERVICES

Blosser Municipal Airport (Airport) has an abundance of support services not normally available to many rural airports. In the big picture, the Airport grounds are well manicured, facilities and equipment are kept in good repair and on a daily basis the Airport is deemed substantially operational to support aviation users. Most of the support services are provided by the City of Concordia (City) and businesses located in the Concordia community.

The successful operation of the Airport requires the continual maintenance of both the airfield and landside facilities. Markings for runway, taxiways and apron pavement areas, as well as lighting systems require year-round maintenance. During the summer, the turfed areas must be mowed. During the winter months, snow and ice must be cleared from the aircraft operating areas as well as from roads and parking lots.

The City Public Works Department provides mowing services for the Airport and snow removal at the Airport. With anticipated growth of the Concordia community, the City may feel that utilizing the City's regular maintenance crews and equipment for Airport maintenance and upkeep may become insufficient for needs at the Airport. The City might find it beneficial to use the Federal Aviation Administration (FAA) Airport Improvement Program (AIP) General Aviation entitlement funds to purchase equipment to station at the Airport to help with the regular upkeep of the Airport. As existing hangars fill with aircraft and the Maintenance Hangar has more usage for aircraft maintenance and repairs, the City should also consider building a small Maintenance Building to house City equipment, tools, materials etc. used in maintaining the Airport grounds

and facilities.

It is important to note that Airport Rescue and Fire Fighting (ARFF) services at the Airport are currently provided by the City's Fire Department from an off-site location. On-site ARFF personnel and equipment are not required at the Airport since the Airport is not certified under Title 14, Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. See Chapter One, Pages 1-126 to 1-128 for details concerning airport operating certification.

## FIXED BASE OPERATOR

The current Fixed Base Operator (FBO) at the Blosser Municipal Airport (Airport) is providing a very good complement of services for the traveling pilot and passengers. Those FBO services are a good compliment to the Concordia community because many rural airports do not have an FBO and related services available to airport users. As the Airport grows and prospers over the 20-year planning period of this Master Plan, the FBO, City of Concordia (City) and Airport Advisory Board should prudently work to lure prospects to the Airport that can provide the following aviation services:


Having an Aviation Pilot Flight School located at Blosser Municipal Airport (Airport) would be a valuable asset to the Concordia community and the Airport.

- Air taxi and/or air charter operations.
- Aircraft rental and sightseeing.
- Aircraft sales and service.
- Line maintenance services for General Aviation aircraft
- Maintenance and repair of aircraft.
- Pilot Flight School.
- Sale of aircraft parts.
- Scheduled or nonscheduled air carrier services & support service.

Sometime during the Intermediate Term of this Airport Master Plan, it is recommended that the City of Concordia (City) acquire an aircraft tug with towing accessories and integrated Ground Power Unit (GPU) so the Fixed Base Operator (FBO) can provide related services to pilots utilizing the Airport. This equipment is much needed because many aircraft owners and pilots do not like to utilize airports where their aircraft engine has to be started then stopped several times while visiting the airport. For example, having to start/stop cycle an aircraft engine to enter the Maintenance Hangar, then again to fuel, then again to relocate the aircraft on the apron, then again to hangar the

aircraft, etc. The reason this is not desirable is because every start/stop cycle is one (1) more count toward an aircraft engine having to be overhauled which is very expensive.

### AIRFRAME AND POWERPLANT MECHANIC

Blosser Municipal Airport (Airport) has not had a certified Airframe and Powerplant Mechanic (A&P Mechanic) stationed at the Airport fulltime since the departure of Hill Aviation in year 2004. However, the Fixed Base Operator (FBO) at the Airport made arrangements with an A&P Mechanic living in Concordia to accommodate pilots, on a project by project basis, that need very light maintenance and repair. The availability of this A&P Mechanic is happenstance and very limited but is much better than no maintenance and repair service for aircraft available at the Airport.

Having a fulltime A&P Mechanic stationed at the Airport is a need and such an aircraft mechanic with Federal Aviation Administration (FAA) Inspection Authorization (IA) is a want. FAA initiated the issuance of the IA more than 35 years ago. This system of allowing qualified A&P Mechanics the privilege of performing certain aircraft inspections has served well in the maintenance of the United States civil aviation fleet. The attainment of an IA and performance of the duties thereof greatly enhance the privileges and responsibilities of the A&P Mechanic. The IA permits the A&P Mechanic to perform a greater variety of maintenance and alterations than any other single maintenance entity.

Fulltime location of a certified Airframe and Powerplant Mechanic at Blosser Municipal Airport (Airport) will help the Airport grow and prosper

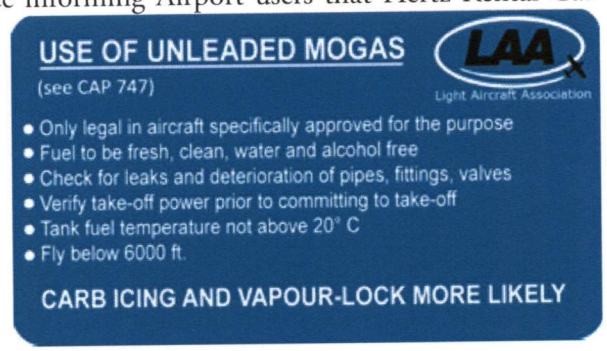
The determination of airworthiness during an aircraft inspection is a serious responsibility. For many General Aviation (GA) aircraft, the annual inspection could be the only in-depth inspection the aircraft receives throughout the year. In view of the wide ranging authority conveyed with the Inspection Authorization, the IA test examines a broader field of knowledge than required for the A&P Mechanic certificate and reflects the emphasis placed on perpetuating air safety.

It is important for the Concordia community that desires for the Airport to grow and prosper to achieve having a fulltime A&P Mechanic with IA that offers and/or has access to and can facilitate a full range of aircraft maintenance, repair and inspection services. That is not easy to accomplish at a rural airport because an A&P Mechanic needs a good volume of aircraft based at the airport plus a good volume of itinerate aircraft operations at the airport to help make the aircraft maintenance, repair and inspection business model of the A&P Mechanic and/or FBO feasible. However, to get ample aircraft based at the Airport and continually increase itinerate aircraft operations at the Airport to a sustainable level an A&P Mechanic is usually needed to help attract that. A common dichotomy at a rural airport is: *What comes first, the aircraft then the mechanic or the mechanic then the aircraft?*

An aircraft Maintenance Hangar that is clean, neat, brightly painted and well equipped with necessary building and shop amenities will help attract and keep a good FBO and A&P Mechanic at the Airport which in turn brings based aircraft and itinerant aircraft operations to the Airport. Most all A&P Mechanics personally own a very good assortment of hand tools and small test instruments to accommodate working on aircraft but do not have all of the required larger shop equipment to have a viable startup business at a rural airport. Because of that, the FBO, City and Airport Advisory Board should study what a good aviation shop should be equipped with then work to formulate enhancing the Maintenance Hangar with the heavy and stationary mechanic equipment needed for aviation maintenance and repair. Such items could be an overhead carriage hoist for lifting large aircraft assemblies, floor hoist for smaller lifts, tire machine, air compressor, parts washer, hydraulic press, airframe and engine stands, jacks, drill press, lathe, certain test equipment, work benches, pressure washer and steam cleaner, electric scissor person lift, work platforms, etc.

### GROUND TRANSPORTATION

The aviation to ground transportation linkage at the Blosser Municipal Airport (Airport) is very good to excellent. For a rural airport, the Airport offers almost a full complement of ground transportation alternatives for pilots and passengers visiting the Airport. However, the ground transportation alternatives at the Airport need to be better advertised in the lobby of the Terminal Building, on the Internet, in aviation publications, etc. Exterior illuminated signage needs to be installed near the Terminal Building entrance informing Airport users that Hertz Rental Car services are available at the Airport. As the Airport grows and prospers a second Courtesy Car may also be needed at the Airport.




### AVIATION FUELING FACILITY

With the projected level of aircraft operations, the present fuel storage capacity of two (2) 6,000 gallon aviation fuel storage tanks should be adequate throughout the planning period based upon maintaining a two (2) week minimum fuel supply. Table 3E located on page 3-42 indicates that in recent years the most fuel purchased in a one (1) month timeframe is less than 2,000 gallons, or one (1) third of the total capacity of one (1) existing tank. The card reader on the fuel dispenser allow pilots that fly into the Airport to fuel their aircraft without calling the part-time Fixed Base Operator (FBO) for service, especially after normal business hours. This is a nice amenity for pilots visiting the Airport and Concordia community.

Over the planning period as operations at the Airport increase, the Airport Advisory Board and City of Concordia (City) may want to consider adding a third fuel storage tank so that unleaded motor fuel (Mogas) can be available for local and itinerant pilots desiring to purchase Mogas. Some aircraft owners and pilots desiring to not use 100 Low Lead aviation fuel, apply to the Federal Aviation Administration (FAA) for a Supplemental Type Certificate (STC) so they can use Mogas

in their aircraft. Currently in the region of the Airport, Salina Municipal Airport (SLN) and Clay Center Municipal Airport (CYW) offer Mogas. That fuel advantage could lure some aviation customers away from the Airport.

Various sizes of aviation oxygen cylinders available for aircraft usage

The City and Airport Advisory Board should research the abilities of the existing card reader and related fuel management system software to see if the aircraft registration number (N Number) can be inputted when a pilot swipes his/her card to fuel their aircraft. Capturing the aircraft N Number is an excellent way to record the types of aircraft visiting the Airport. That information can be very important for future Airport planning and for some aviation grant applications to State and/or Federal agencies.

## OXYGEN FACILITY

Blosser Municipal Airport (Airport) currently does not provide bulk or bottled oxygen for pilots desiring such service. Aircraft currently utilizing the Airport do not seem to support an oxygen inventory and related equipment needed to provide aircraft with needed oxygen. Over the 20-year planning period of this Airport Master Plan, the Fixed Base Operator (FBO) and Airport Advisory Board should monitor aircraft utilizing the Airport that normally require aviation oxygen services and pilot requests for oxygen. That information will help determine if aviation oxygen should be made available at the Airport for sale to aircraft pilots.

## RADIO COMMUNICATIONS

The radio communication equipment located at the Blosser Municipal Airport (Airport) needs to be replaced and expanded to meet the communication demands of a modern airport. A new communication tower approximately 50 feet high needs to be installed to accommodate the Universal Communications (UNICOM) antenna or that antenna could be installed on the vacated radar tower then a boring would be needed under the parking lot to the Terminal Building for the antenna cable. The UNICOM operates on Amplitude Modulation (AM) frequencies. Also, a Frequency Modulation (FM) base station is needed with a full complement of emergency radio communication channels. Several portable radios are also needed at the Airport for use when the FBO is outdoors and directing aircraft, managing a Fly-In, etc. This project needs to be accomplished during the Short Term of the Airport Master Plan period.

The *Kansas Airport System Plan 2009* (KASP) recommends that a Ground Communication Outlet (GCO) is installed at the Airport. Simply, a GCO allows a pilot to use their aircraft radio and access a telephone line. In rural areas this is much needed because many times an aircraft radio, because of too much distance, cannot contact an Air Traffic Control (ATC) tower, Flight Service Station

(FSS), etc. when flight planning. A GCO solves that problem by allowing a pilot to contact ATC, FSS, etc. via telephone. This project needs to be accomplished during the Intermediate Term of the Airport Master Plan period.

### PERIMETER CONTROL

Security at any airport is important for safe aircraft operation. A perimeter fence is important to keep unauthorized individuals, vehicles and large animals from gaining access to the Airport property and in particular the Airport Operations Area (AOA). The Blosser Municipal Airport (Airport) currently does not have any type of continuous perimeter fencing in place. Installation of perimeter fencing at the Airport is highly recommended.

### THROUGH-THE-FENCE OPERATIONS

Blosser Municipal Airport (Airport) currently hosts two (2) through-the-fence operations and it is very important that during development of the Airport that these entities can continue accessing the Airport as needed. If perimeter control fencing is installed, electric controlled access gates with remote control should be installed so that authorized aircraft from these through-the-fence operations can conveniently access and leave the Airport.

On possible future through-the-fence operations, the City of Concordia (City) and Airport Advisory Board should work closely with the Federal Aviation Administration (FAA) and mutually determine if such proposed operations are safe and beneficial to the future of the Airport and the Concordia community. For details concerning FAA policy about through-the-fence operations see Chapter One, Pages 1-103 to 1-104.

### AIRPORT LAND REQUIREMENTS

To facilitate some of the needed facility requirements for Blosser Municipal Airport (Airport) approximately 139 acres of additional land must be acquired for the Airport. This land needs to be acquired both fee-for-title and easement and should occur as the first development action of this

Airport Master Plan. These land needs will be specifically determined in Chapter Six.

## SUMMARY

The intent of Chapter Three has been to outline the facilities, equipment, programs and services required to meet aviation demands projected for Blosser Municipal Airport (Airport) through the year 2032. A summary of the airside, landside and General Aviation facility requirements are presented in Table 3G located on page 3-51 through 3-55. Following the facility requirement determination, the next step is to develop a direction for Airport development that best meets the projected needs at the Airport. The remainder of the Master Plan is devoted to outlining a prudent development direction, related schedule, and associated costs.

**Table 3G**

**Summary of Airport Facility Requirements for Blosser Municipal Airport**

| Item | Existing 2012 | Short Term 2013 to 2017 | Intermediate 2018 to 2022 | Long 2023 to 2032 |
|---|---|---|---|---|
| Runways | Primary Runway 17/35 | New Primary Runway 18/36 | New Crosswind Runway 6/24 | Runway 18/36 and Runway 6/24 |
| | 3,600 feet x 60 feet Paved Surface 8,000 lbs Single Wheel Gear (SWG) | 4,800 feet x 75 feet Paved Surface 30,000 lbs SWG | 2,236 feet x 250 feet Turf Surface | Maintain Standard |
| | | Runway 17/35 | | |
| | | Decommission | | |
| | Crosswind Runway 12/30 | | | |
| | 2,263 feet x 265 feet Turf Surface | Decommission | No Longer Exists | No Longer Exists |
| | Crosswind Runway 3/21 | | | |
| | 1,628 feet x 255 feet Turf Surface | No Changes | Decommission | No Longer Exists |
| Taxiways | Primary Runway 17/35 | New Primary Runway 18/36 | | |
| | Connecting taxiway from Terminal Building apron, no parallel taxiway | Existing connecting taxiway for Runway 17/35 extended east to Runway 18/35, no parallel taxiway | Narrow and rehabilitate former Runway 17/35 to become new full length parallel taxiway with right angle exits | Construct intermediate connecting exit taxiways from parallel taxiway to Runway 18/36 |
| | Crosswind Runways 12/30 and 3/21 | Crosswind Runway 3/21 | New Crosswind Runway 6/24 | |
| | No taxiway, Runway 17/35 used for access | No taxiway, access changes from Runway 17/35 to new primary Runway 18/36 | Access changes from primary Runway 18/36 to new parallel taxiway | Maintain Standard |

**Table 3G (continued)**

**Summary of Airport Facility Requirements for Blosser Municipal Airport**

| Item | Existing 2012 | Short Term 2013 to 2017 | Intermediate 2018 to 2022 | Long 2023 to 2032 |
|---|---|---|---|---|
| Airfield Lighting, Marking, and Signage | Primary Runway 17/35 | New Primary Runway 18/36 | | |
| | Medium Intensity Runway Lights (MIRLs)<br><br>Non-Precision Markings | Medimum Intensity Runway Lights (MIRLs)<br><br>Runway End Identifier Lights (REILs)<br><br>Install Omni-Directional Approach Lighting System (ODALS)<br><br>Non-Precision Markings | Maintain Standard | Maintain Standard |
| | Crosswind Runways 12/30 and 3/21 | Crosswind Runway 3/21 | New Crosswind Runway 6/24 | |
| | No lighting<br>No Markings | No lighting<br>No Markings | No Lighting<br>Non-Precision Markings | Maintain Standard |
| | Connecting Taxiway | | New Parallel Taxiway | |
| | Medium Intensity Taxiway Lights (MITLs) | Add Medium Intensity Taxiway Lights (MITLs) for taxiway extensions to new primary Runway 18/36<br><br>Install elevated edge reflectors | Install new Medium Intensity Taxiway Lights (MITLs) | Maintain Standard |

**Table 3G (continued)**

**Summary of Airport Facility Requirements for Blosser Municipal Airport**

| Item | Existing 2012 | Short Term 2013 to 2017 | Intermediate 2018 to 2022 | Long 2023 to 2032 |
|---|---|---|---|---|
| **Navigation Aids** | Runways 17/35, 12/30, and 3/21 | New Primary Runway 18/36 | | |
| | Segmented Circle<br>Lighted Wind Tee<br>Unlighted Wind Cone<br>Rotating Light Beacon<br>Non-Directional Radio Beacon (NDB) | Install new segmented circle and lighted landing direction indicator<br>Install lighted wind cone<br>Decommission NDB<br>Install 4-Box Precision Approach Path Indicators (PAPIs)<br>Obtain a Localizer Performance with Vertical Guidance (LPV) GPS Approach | Maintain Standard | Maintain Standard |
| | Primary Runway 17/35 | | New Crosswind Runway 6/24 | |
| | Global Positioning System (GPS) approaches enhanced by Wide Area Augmentation System (WAAS) | | N.A. | N.A. |
| **Weather Observation** | Automated Surface Observing System (ASOS) with optional freezing rain sensor | Install optional lighting sensor on ASOS | Maintain Standard | Maintain Standard |
| **Terminal Building** | Have 2,140 total square feet<br>Remodeled in year 2008 | Need total of 1,500 square feet, no new construction required<br>Install optical fiber connection | Need total of 1,800 square feet, no new construction required<br>Install security cameras and intruder alert security system | Need total of 2,100 square feet, no new construction required<br>Install interconnection for electric generator |
| **Maintenance Hangar** | Have 4,800 total square feet<br>Note: Maintenance area will not accommodate Airport Reference Code (ARC) B-II category aircraft | Need 1,320 square feet, no new construction required<br>Install air compressor<br>Acquire aircraft tug with towing accessories and integrated Ground Power Unit (GPU) | Need 1,860 square feet, no new construction required<br>Install mechanical air ventilation system | Need total of 2,800 square feet, however, need shop area that will accommodate ARC B-II category aircraft<br>Construct shop addition that will accommodate ARC B-II category aircraft |

**Table 3G (continued)**

**Summary of Airport Facility Requirements for Blosser Municipal Airport**

| Item | Existing 2012 | Short Term 2013 to 2017 | Intermediate 2018 to 2022 | Long 2023 to 2032 |
|---|---|---|---|---|
| **Frank Carlson Building** | Have 1,830 square feet, building is structurally sound, exterior and interior needs remodeling | Remodel exterior and interior per prospect specifications | Regular Maintenance | Regular Maintenance |
| **Vacated Radar Tower** | Tower is structurally sound; currently has seven (7) communication antennas; needs vacated antennas, brackets, cables, etc. removed | Remove vacated antennas, brackets, cables, etc.; Prudently accommodate additional antennas | Prudently accommodate additional antennas | Prudently accommodate additional antennas |
| **T-Hangars** | Have a total of 10 aircraft spaces | Need a total of 11 aircraft spaces | Need a total of 12 aircraft spaces | Need a total of 14 aircraft spaces |
| **Conventional Hangars** | Have a total of 6 aircraft spaces | Need a total of 0 aircraft spaces | Need a total of 1 aircraft spaces | Need a total of 4 aircraft spaces |
| **Executive Hangars** | Have a total of 0 aircraft spaces | Need a total of 0 aircraft spaces | Need a total of 2 aircraft spaces in 1 Executive Hangar | Need a total of 3 aircraft spaces in 2 Executive Hangars |
| **Apron Area** | General Aviation apron area is 1,892 square yards, expanded to 5,580 square yards in 2011 | Need a total area of 5,579 square yards | Need a total area of 6,601 square yards | Need a total area of 12,942 square yards |
| **Tie-Down Areas** | Have a total of 4 aircraft tie-down areas | Need a total of 4 tie-down areas | Need a total of 6 tie-down areas | Need a total of 8 tie-down areas |
| **Airport Access** | Vehicle access is good but there is no designated walking access for pedestrians | Maintain Standard | Install sidewalks and walking trails in Airport Park that connect to Terminal Building | Maintain Standard |
| **Auto Parking** | Have 24 total stalls | Need 26 total stalls | Need 26 total stalls | Need 26 total stalls |
| **Airport Utilities** | Have all needed utilities except optical fiber extension | Obtain optical fiber extension | Maintain Standard | Maintain Standard |
| **Support Services** | Have good complement of support services | Maintain Standard | Maintain Standard | Maintain Standard |
| **Fixed Base Operator** | Have a fulltime Fixed Base Operator (FBO) | Maintain Standard | Maintain Standard | Maintain Standard |

**Table 3G (continued)**

**Summary of Airport Facility Requirements for Blosser Municipal Airport**

| Item | Existing 2012 | Short Term 2013 to 2017 | Intermediate 2018 to 2022 | Long 2023 to 2032 |
|---|---|---|---|---|
| **Airframe and Powerplant Mechanic** | Have not had an Airframe & Powerplant (A&P) Mechanic with Inspection Authorization (IA) since year 2004 | Obtain a fulltime A&P Mechanic with IA | Maintain Standard | Maintain Standard |
| **Ground Transportation** | Have good complement of ground transportation linkages; need better marketing of these linkages | Install interior and exterior signage on Terminal Building that provides information concerning ground transportation linkages | Maintain Standard | Maintain Standard |
| **Fueling Facility** | Have automatic card reader on fuel dispenser; offer 100 Low Lead (LL) and Jet-A aviation fuel | Upgrade card reader software so that aircraft registration number can be captured | Maintain Standard | Install one (1) new fuel tank and offer Motor Gasoline (Mogas) for aviation purposes |
| **Oxygen Facility** | Do not offer bulk and/or bottled oxygen services for aircraft usage | Monitor aircraft oxygen needs and determine if that should be offered | Monitor aircraft oxygen needs and determine if that should be offered | Monitor aircraft oxygen needs and determine if that should be offered |
| **Radio Communications** | Equipment is operational but needs to be upgraded and enhanced | Install new Universal Communications (UNICOM) AM base station, FM base station with emergency communication channels, new antennas for base stations, obtain portable radios | Maintain Standard | Maintain Standard |
| **Perimeter Control** | Have very little if any perimeter control | No Changes | Install perimeter fencing | Maintain Standard |
| **Through-The-Fence Operations** | Have two (2) through-the-fence operations | Maintain standard; prudently consider additional through-the-fence operations | Maintain standard; prudently consider additional through-the-fence operations | Maintain standard; prudently consider additional through-the-fence operations |
| **Airport Land** | Have ample land for current aviation operations; need additional land for proposed developments | Aquire approximately 139 acres of land, fee-for-title and easement, for proposed aviation developments | Maintain Standard | Maintain Standard |

## PLANNING

Chapter Three identified airside and landside facilities and airport services required to satisfy the demand of a 20 year long-range planning period for Blosser Municipal Airport (Airport). The next step in the planning process is to evaluate a reasonable way to provide those facilities. There are a number of options and combination of solutions, but the alternatives presented are those with the greatest potential for implementation.

Any development proposed for an Airport Master Plan is derived from an analysis of projected needs for a set period of time. Though the needs are determined by the best methodology available, it cannot be assumed that future events will not change those needs. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands over the next 20 years. However, no plan of action should be developed which may be inconsistent with the future objectives and goals of the City of Concordia (City), Concordia community and Airport Advisory Board that have vested interest in the development and operations of the Airport.

The development alternatives for the Airport can be categorized into two (2) functional areas: The airside (airfield) and landside (General Aviation (GA) hangars, apron and terminal area). Within each of those areas, specific facilities are required or desired. In addition, the utilization of the remaining Airport property to provide much needed revenue support to the Airport and to benefit the economic development, prosperity, and well being of the Concordia area must be considered.

Each functional area interrelates and affects the development potential of the others. Therefore, all areas must be examined both individually, then coordinated as a whole to make sure the final Master Plan is efficient, functional and cost effective. The total impact of all these factors on the existing Airport must be evaluated to determine if the investment in the Airport will meet the needs of the community both during and beyond the 20 year planning period.

The alternatives considered are compared using economic and aviation factors to determine which of the alternatives will best fulfill the aviation needs of the Concordia community as well as the Airport service area. With this information, as well as the input and the direction from local government agencies, area citizens, and Airport users, a final Airport concept can evolve into a realistic development plan.

After much study, thought and public discussion, the City and Airport Advisory Board made a planning commitment to remain at the existing Airport location. The City believes that local, Federal and State of Kansas taxpayers have a significant public and private investment at the current location and that there are expansion capabilities and opportunities at the existing Airport to meet the future needs of the Concordia community.

The major concern of the current Airport location is the ever-expanding Concordia community expanding south toward and around the Airport. The expansion of Concordia directly north and south of the Airport could have a significant impact on any future expansion projects at the Airport. It is crucial that the City work together with the Airport Advisory Board and local citizens in establishing a long-term Airport Master Plan that will allow the Concordia community to expand and still not impact the future expansion needs of the Airport. It is the hopes of the City and Airport Advisory Board that not only can Airport facilities be expanded, but that the Concordia community can also grow and ultimately create new jobs and economic opportunities for the citizens and businesses of Concordia and surrounding area.

The City and Airport Advisory Board are excited and have major support from many community organizations and the local public to expand the Airport, within available and prudent local resources, to meet the local aviation demands during the planning period. It seems that full implementation of this Master Plan is the logical, appropriate and prudent action for the Concordia community. However there are three (3) additional development alternatives that seem not as wise of choice for the future of Concordia and its citizens and businesses.

There are three (3) planning alternatives that are not considered to be prudent choices nor are they considered to be viable alternatives. Those alternatives are as follows:

- Do nothing
- Use another system airport
- Relocate the existing Airport to an alternative site

A discussion of these three (3) alternatives follows.

## DO NOTHING

The "do nothing" alternative essentially considers keeping Blosser Municipal Airport (Airport) in its present condition and not providing improvements to the existing facilities. The primary result would be the inability of the Airport to better satisfy current needs of the Airport service area and the projected future aviation demands at the Airport.

The unavoidable consequence of the "do nothing" alternative would especially cause the Airport to inadequately serve the local business users and local medical emergency situations. Business aviation plays a major form of transportation for business leaders. Thus, Airport facilities are often the first impression many business officials will have of the Concordia community. If the Airport does not have the capability to meet aircraft hangar, apron or airfield needs of the potential users, Concordia's capabilities to attract and maintain businesses that rely on air transportation will be greatly diminished.

Furthermore, the Concordia community will lose the ability to quickly evacuate medical emergencies via air ambulance services utilizing fixed wing aircraft. A good airport is a viable asset to the local medical community and links the community to various medical specialties and emergency trauma centers.

An overall impact of the "do nothing" alternative will be the inability to attract new Airport users, especially those businesses and industries seeking locations with adequate and convenient aviation services. Without regular Airport maintenance and additional improvements, potential users and businesses for the community could be lost. To propose no further Airport development would be inconsistent with the community's history and current economic development efforts to attract business and industry to Concordia. Therefore, the "do nothing" alternative is considered unrealistic to meet the long-term goals of the Airport and Concordia community.

## USE OF ANOTHER SYSTEM AIRPORT

As discussed in Chapter One, in the *Area Airports* section on pages 1-122 and 1-123, there are seven (7) airports in the vicinity of Blosser Municipal Airport (Airport) as shown in Exhibit 4A on this page that could possibly absorb the aviation activity from the Airport. However, those airport locations would provide a great inconvenience to local users and businesses that would far outweigh the benefit of transferring Airport aviation activity to any one of those area airports.


**Exhibit 4A**
**Vicinity Airports**

Furthermore, the continuing growth expected by the major employers in the Concordia area (as shown in Table 1Q on page 1-130) as well as the always growing trend of new businesses and industries coming into the Concordia area, demonstrates the need for a highly functional and modern local airport. As stated earlier, Cloud County, in which Concordia is located, is projected to slightly decrease in population, over the 20 year planning period as are most rural counties in Kansas. Although there is a decline in the Cloud County population, it is anticipated total employment, personal income, income per capita, and mean household income to expand over the 20 year planning period. That can be attributed to the growing economic strength of Concordia and the surrounding area.

General Aviation (GA) is a major factor in the way individuals, companies and communities conduct business. With future Airport expansions, the Airport can expect to accommodate business aircraft for existing Concordia companies conducting business or support businesses relocating to the Concordia area.

Concordia maintaining and enhancing a local GA airport provides opportunity for excellent air ambulance services utilizing fixed wing aircraft that can help save precious minutes of emergency transportation time during the *Golden Hour* of a critically injured or ill person. That community ability is a valuable recruitment tool to help lure new individuals, families, senior citizens and businesses to the Concordia community.

## RELOCATION OF EXISTING AIRPORT TO AN ALTERNATE SITE

North face of the Terminal Building.

The development and construction of an entirely new airport facility to meet the aviation needs of the Concordia area would be a large undertaking for the City of Concordia (City) and local community. Land acquisition, site preparation and the construction of an entirely new replacement facility can be very difficult and costly. Significant environmental impacts are often associated with disturbing large land areas when developing a new airport site. Federal, State and local public funds are very limited and the replacement of a functional airport facility would represent an unjustifiable loss of a significant public investment. The development of a new site may be a reasonable alternative provided development around the existing site is very constrained. However, at the current time, the Blosser Municipal Airport (Airport) is not constrained such that a new Airport site is warranted or justified.

With continued improvements, the existing Airport location is fully capable of meeting the long-term aviation demands of the Airport service area. The Airport should be promptly developed in response to those local aviation demands. The Airport has the potential to continue developing as a quality General Aviation (GA) and business airport that can enhance the overall development of the Concordia community and its regional service area.

## PRIVATE AND PUBLIC DEVELOPMENT NEEDING AVIATION SUPPORT

In the most current Federal Aviation Administration (FAA) approved Airport Master Plan for the Blosser Municipal Airport (Airport) titled, *Blosser Municipal Airport 1997 Airport Master Plan Update* (1997 Master Plan), no provisions were made in the local planning process to enhance revenue at the Airport via development income derived from private and/or public entities needing direct aviation support of an airport thus desiring to locate their facilities adjacent to the Airport. This is cause for concern because many General Aviation (GA) airports rely on revenue from lease payments generated from leasing airport land and/or buildings to private and public entities. In reviewing the 1997 Master Plan, major Airport enhancements such as extending the primary runway, installing a parallel taxiway, acquiring all needed land by easement or fee-for-title to construct Airport projects and protect the Airport airspace were not accomplished over the past 16 years.

In visiting with local citizens, pilots, the City of Concordia (City), and Airport Advisory Board (AAB) it was discovered that those major and needed enhancements at the Airport cited in the 1997 Master Plan did not happen mostly because there was not ample local private or public funding to match Federal and State of Kansas grant funding to cover the cost of proposed and FAA approved projects. Without revenue enhancement at the Airport, it is projected that very few of the major needs of the Airport cited in this Master Plan will ever be accomplished. Therefore, as the development alternatives for the Airport are formulated, areas on Airport property and adjacent to Airport property are carefully considered and planned for development by private and/or public entities desiring direct interconnectivity with the Airport. It is hopeful that those planned areas will lure good and prudent development to the Airport that is willing to annually pay the Airport for development locations with appropriate aviation access to the Airport.

This revenue enhancement idea for the Airport is already working because the Cloud County Health Center (CCHC) Board of Trustees unanimously voted at a formal CCHC Board meeting, conducted on November 19, 2010, to pay the Airport an upfront lease payment of $500,000 for approximately 11.5 acres of Airport property needed to construct a new Critical Access hospital on. CCHC needs direct taxiway access to the Airport primary runway for air ambulance services utilizing fixed wing aircraft. That aviation access will provide CCHC the opportunity to greatly enhance local emergency medical services thus helping to save the lives of patients who are critically ill or injured. The $500,000 upfront lease payment from CCHC to the Airport will provide enough local funding match for $4.5 million in grants (10% Local and 90% Federal) from the Federal Airport Improvement Program (FAIP) for capital improvements at the airport. That total of $5 million will help accomplish implementation of approximately 26 percent (26%) of the approximate $18.9 million of needed Airport capital improvement projects recommended in this Master Plan over a 20 year period.

## AIRFIELD DEVELOPMENT ALTERNATIVES

In the airfield alternatives analysis, several different airside and landside alternatives were formulated and reviewed. The airside alternatives include the primary runway, crosswind runways, taxiways and navigational aid systems. The landside alternatives involve the aircraft storage hangars, maintenance hangars, terminal area, aircraft parking apron, and Airport connectivity to developmental areas for private and/or public entities needing ready and direct access to the Airport for their aviation needs.

Of particular importance is the airside runway system since it requires the greatest commitment of land area and often impacts and influences the development of other Airport facilities.

## PRIMARY RUNWAY, CROSSWIND RUNWAYS, AND PARALLEL TAXIWAY

In the facility requirements analysis, the existing primary runway length of 3,600 feet by 60 feet wide for primary Runway 17/35 currently meets the length requirement for the majority of the aircraft that is now utilizing Blosser Municipal Airport (Airport). However, the primary runway length is inadequate to accommodate the future design aircraft of the Airport. That being a *Beech*

*King Air B200* aircraft designated as an Airport Reference Code (ARC) B-II category aircraft. As previously discussed the *Beech King Air B200* requires a runway length of 4,800 feet and runway width of 75 feet.


Approach to primary Runway 17 looking south.

In order for the existing Runway 17/35 to remain the primary runway in the future, primary Runway 17/35 would have to be lengthened and widened in order to meet ARC B-II category aircraft requirements. The existing runway surface would also need to be strengthened since the existing pavement is only rated for 8,000 pounds Single Wheel Gear (SWG) configurations and ARC B-II catagory aircraft can be as heavy as 30,000 pounds SWG.

Therefore, several alternatives were formulated and reviewed regarding the most economical, feasible and effective way to develop a 4,800 feet long by 75 feet wide primary runway. However, the Airport Advisory Board desires an ultimate future primary runway length of 5,000 feet to help meet the *Business Airport* classification determined by the *Kansas Airport System Plan 2009* (KASP) for Blosser Municipal Airport (Airport).

With the increase in business jet, fixed wing air ambulance, and other business air traffic, it is desirable to obtain instrument approaches at the Airport that result in the lowest visibility minimums possible by Federal Aviation Administration (FAA) standards.


Intersection of connecting taxiway and primary Runway 17/35.

As discussed in Chapter Three, *Facility Requirements*, the lower the visibility minimums, the more demanding the airfield design standards become. Please refer to Table 3B on page 3-22 for the airfield dimensional requirements. Runways with less than three fourths (¾) mile approach visibility minimums have more demanding design standards than runways with not less than three fourths (¾) mile approach visibility minimums.

Presently, the Airport has Global Positioning System (GPS) published approaches to primary Runway 17 and primary Runway 35 and a Non-Directional Radio Beacon-A (NDB-A) approach. If possible, it is desirable to reduce the approach visibility minimums as much as possible. Therefore, alternatives were reviewed in regard to the primary runway having a non-precision instrument approach with greater than three fourths (¾) mile approach visibility minimum on one end of the primary runway and also on both ends of the primary runway. Having approach minimums less than three fourths (¾) mile were not analyzed in depth because the Federal Aviation Administration (FAA) and Federal Aviation Regulations (FAR) Part 77, *Objectives Affecting Navigable Airspace* defined primary surface goes from 500 feet wide to 1,000 feet wide when the minimums go as low or below three-fourths (¾) mile visibility minimums. A runway primary surface 1,000 feet wide would have a significant impact on the Airport and would require a significantly larger amount of land acquisition and possible acquisition of homes and businesses in the surrounding area of the Airport.

To obtain an approach visibility minimum greater than three fourths (¾) mile, FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Appendix 16, states that approach lights are required. Therefore, an Omni-Directional Approach Lighting System (ODALS) will be considered for all alternatives utilizing a greater than three fourths (¾) mile approach visibility minimum. ODALS provide a circle of guidance and visual identification of the approach end of a runway to assist landing aircraft and to further enhance the operational safety of a General Aviation (GA) airport.

Primary runway 17/35 currently does not have a full parallel taxiway to the runway. FAA AC 150/5300-13, Appendix 16, states that for runways to have approach visibility minimum greater than three fourths (¾) mile, the runway is required to have a full parallel taxiway. Furthermore, FAA line of sight requirements require that an acceptable runway profile must permit any two (2) points located five (5) feet above the runway centerline to be mutually visible for the entire runway length. However, said FAA AC does state that if the runway has a full parallel taxiway, the runway profile may be such that an unobstructed line of sight will exist from any point located five (5) feet above the runway centerline and another point located above the runway centerline for one half (½) of the runway length. The current runway profile for primary Runway 17/35, without a parallel taxiway meets the line of sight requirements. All new runway extensions or new runway alternatives will be analyzed to account for runway sight profile requirements.

Currently the Airport does not have any displaced threshold on primary Runway 17/35. If displaced thresholds are used, airports must utilize what the FAA calls "declared distances." Displaced thresholds are typically used when runway approach slope clearance is needed over certain obstructions or to allow for the Runway Safety Area (RSA) and Object Free Area (OFA) to be moved into the areas of the runway that are not obstructed. In doing so, the effective length of the runway for takeoff and landing is reduced. The FAA utilizes "declared distances" to evaluate and define usable runway length.

FAA (AC) 150/5300-13, Appendix 14, allows the use of declared distances for cases of existing constrained airports where it is not feasible to meet the design standards. Declared distances are simply defined as the amount of runway that is declared available for certain takeoff and landing operations. The use of declared distances has not been a preferred option of the FAA in the past, but continues to become more predominate because the cost to eliminate displaced thresholds can often be quite high. Where at all possible, the FAA recommends that declared distances are to be avoided and that new facilities be constructed without the use of displaced thresholds. Displaced thresholds can sometimes be confusing to pilots who are not used to flying into a particular airport and trying to locate the end of a runway. The following alternatives will take a look at the cost of implementing the airside upgrades and analyze how the Airport can utilize existing facilities in a cost-effective way to meet the needs of the future Airport demands.

In considering various airside design alternatives many options were considered and evaluated. As discussed earlier, the lowering of runway approach visibility minimums results in more demanding airfield design standards. More demanding airfield design standards directly relate to the need for existing facility upgrades. Once an airside design alternative is chosen, the cost of that development can be associated with upgrading the existing Airport facilities.

Alternatives for making the existing primary Runway 17/35 a future parallel taxiway and constructing a whole new primary runway were analyzed. By making the existing primary Runway 17/35 a future parallel taxiway the existing runway pavement is not wasted and can present cost savings for the City of Concordia (City) by not having to construct a brand new future parallel taxiway.

It was found that upgrading the existing primary Runway 17/35 (to meet Airport Reference Code (ARC) B-II category runway length of 4,800 feet by 75 feet wide) and keeping primary Runway 17/35 as the primary runway was the cheapest alternative. Even though upgrading the existing primary Runway 17/35 is the cheapest alternative it may be the least desirable. If a new primary runway could be constructed with a different orientation or in a different location then the problem associated with the limited expansion ability of the apron area and landside facilities due to the current Airport configuration is eliminated.

Airport expansion is currently very limited because the Federal Aviation Administration (FAA) now requires constructing all buildings and hangars outside of the 35 foot Building Restriction Line (BRL). Existing buildings at the Airport are currently located at approximately 14 feet inside the BRL which is a problem. Also, obstruction checks must be performed to see if the existing buildings are penetrating the seven (7) to one (1) slope (7:1) of the Transitional Surface. If existing buildings obstruct the 7:1 Transitional Surface it would be recommended and FAA required to move all buildings and hangars so not to obstruct the Transitional Surface. For Airport buildings located west of primary Runway 17/35 not to be obstructing the 7:1 Transitional Surface, all buildings would have to be lower than 21 feet in height at the east face of the building and not increasing in height greater than a rate of one (1) foot vertical for every seven (7) feet horizontal.

All airside and landside alternatives presented herein (for cost comparison purposes) look at upgrading the existing facilities directly to the currently justified ARC B-II category configuration. In reality a phased approach would most likely be utilized. A 4,200 feet long by 75 feet wide primary runway would most likely be constructed first, followed by the primary runway upgrades needed to obtain a 4,800 feet by 75 feet runway then a 5,000 feet by 75 feet runway.

The Plan Drawings for the following Airport development alternatives (Airside-Primary Runway Alternatives A-1 through A-3; Crosswind Runway Alternatives C-1 through C-3; Landside Alternatives L-1 through L-3) are located in Appendix J with corresponding cost estimates in Appendix K, both attached at the end of this Master Plan. Pros and cons of each alternative can be found directly on the exhibits. Appendix K also has a list of the major improvements that need to be implemented for each specific runway alternative to be completed.

The *Kansas Airport System Plan 2009* determined, and the Airport Advisory Board concurs that the ultimate primary runway length of 5,000 feet should be acheived at the Airport when local and Kansas Department of Transporation (KDOT), Division of Aviation funding permits.

The total construction costs (with engineering and contingencies) that were developed based upon estimated and probable costs are as follows:

| *Airside (Primary Runway Improvements)* | *Airside (Crosswind Runway Improvements)* |
|---|---|
| **Alternative 1:** $6.78 million | **Alternative 1:** $6.44 million |
| **Alternative 2:** $8.64 million | **Alternative 2:** $7.63 million |
| **Alternative 3:** $8.94 million | **Alternative 3:** $6.06 million |

At this time, no cost estimates were developed for the landside alternatives. The possible landside alternatives are directly related to the airside alternatives that are selected. Once an airside alternative is selected and the Airport Layout Plan (ALP) is developed with landside improvements, costs are then developed for landside improvements in Chapter Seven, *Capital Improvement Plan* of this Master Plan.

### AIRSIDE PRIMARY RUNWAY ALTERNATIVE ONE

Primary Runway Alternative One (P-1) considers upgrading existing primary Runway 17/35 to meet the required runway length and width to accommodate Airport Reference Code (ARC) B-II design aircraft. P-1, the least costly of the primary runway upgrades, utilizes visibility minimums greater than three fourths (¾) mile on the primary Runway 35 approach (south end) and greater than one (1) mile on primary Runway 17 approach (north end).

As shown in the P-1 design drawing located in Appendix J on page 3 of 11, primary Runway 17/35 will have to be extended approximately a total of 1,200 feet to both the north and the south in order to obtain the currently justified runway length of 4,800 feet. Another extension 200 feet south is needed to develop the ultimate primary runway length of 5,000 feet.

Looking South on primary Runway 17/35.

Existing primary Runway 17/35 also needs to be widened from 60 feet to 75 feet to accommodate the future ARC B-II category aircraft. It is estimated that the new primary runway extension would need to be constructed of a four (4) inch aggregate base with a six (6) inch Portland Cement Concrete (PCC) pavement. For the widening along the existing asphalt runway, it is estimated that a full depth six (6) to seven (7) inch asphalt pavement would need to be constructed. Widening with asphalt, in lieu of concrete, should be done in order to eliminate an asphalt-concrete joint located at 15 feet from centerline for the entire existing runway.

Along with the extension and widening to accommodate ARC B-II category aircraft the existing pavement strength needs to be increased from 8,000 pounds Single Wheel Gear (SWG) to the required pavement strength of 30,000 pounds SWG. The existing primary Runway 17/35 is approximately four (4) inch Asphaltic Concrete (AC) pavement and will need to have approximately a four (4) inch asphalt overlay added. As discussed earlier in the *Runway Strength and Condition* section, located in Chapter Three on page 3-19, primary Runway 17/35 is in

fair to good condition. A recent mill and overlay was completed in 2005. It is recommended that any existing joints and/or cracks be sealed prior to any future asphalt overlays.

The existing primary Runway 17/35 and proposed ultimate new primary runway extension will have a new full parallel taxiway constructed at the 240 feet minimum primary runway to taxiway centerline separation. This meets the Federal Aviation Administration (FAA) requirements for Aircraft Approach Category (AAC) - A and ACC - B category primary runways with not lower than three fourths (¾) mile visibility minimums.

P-1 considers upgrading existing primary Runway 17/35 to meet the required runway length and width to accommodate Airport Reference Code (ARC) B-II category aircraft. P-1, the least costly of the primary runway upgrades, utilizes visibility minimums greater than three fourths (¾) mile on primary Runway 35 (south end) and greater than one (1) mile on primary Runway 35 (north end).

In order to construct the pavement upgrades, additional land will first have to be purchased by the City of Concordia (City). It is recommended that existing and planned airspace required for safe and efficient aircraft operations should be protected by acquisition of a combination of zoning, easements, property interests, and other means. The following areas should be located on Airport property: Object Free Area (OFA); Runway Protection Zone (RPZ); Areas under the Code of Federal Regulations (CFR) Title 14, Part 77, *Objects Affecting Navigable Airspace*, Subpart C such as airport imaginary surfaces out to where the surfaces obtain a height of at least 35 feet above the primary surface; and areas other then those which can be adequately controlled by zoning, easements, or other means to mitigate potential incompatible land uses.

### PURCHASE ADDITIONAL LAND FOR ULTIMATE PRIMARY RUNWAY LENGTH OF 5,000 FEET

When the City of Concordia (City) is in the process of purchasing needed land and easements for the now proposed Airport improvements in this Master Plan, it is highly recommended that the City, at that time, go ahead and purchase the additional needed land and easements for the ultimate primary runway length of 5,000 feet. The Federal Aviation Administration (FAA) Airport Improvement Program (FAIP) will not participate in helping the City purchase additional land needed for a primary runway 5,000 feet long because the currently justified design aircraft for the Airport (ARC B-II category aircraft) only warrants with FAA a maximum primary runway length of 4,800 feet. Therefore, project costs eligible for FAIP funding are limited to the development cost of that primary runway length.

The City can use local funds to help cover the costs of the additional land purchase of which the FAIP will not participate. The Kansas Department of Transportation (KDOT), Division of Aviation Airport Improvement Program (KAIP) can help fund the additional land purchase, but that grant application process is very competitive. Year 2012 KAIP funding portions are 75% KAIP and 25% local. If the City uses local funds to purchase the additional land, and 15 or 20 years later, a newly justified design aircraft for the Airport then warrants with FAA a primary runway length of 5,000 feet or more, then the FAIP could reimburse the City at the funding portions used by the FAIP at that time. Year 2012 FAIP funding portions are 90% FAIP and 10% local but that could change over the years.

If the City deems it locally affordable and prudent, it seems wise to upfront purchase all the land and easements needed to support full development of this Master Plan and full development of those items identified for the Airport in the *Kansas Airport System Plan 2009* (especially the *Business Airport* designation). That leadership seems to make good sense now because:

- Land acquisition is sometimes hard enough to accomplish in a positive manner the first time without having to approach landowners a second time.
- Land purchase cost per acre is probably much lower now than many years later.
- Over the years to come, improvements could be built in the areas required for the extension of 200 feet to the primary runway thus forever blocking full development of the ultimately desired primary runway that is 5,000 feet long.
- City local costs could possibly be reimbursed at 75% now with the KAIP, or possibly be reimbursed at 90% or 95% years later by the FAIP.

P-1 shows a sufficient amount of land to be purchased on both the south and north end of the Airport. The land on the south and north end of primary Runway 17/35 needs to be acquired as fee-for-title to eliminate structures that could be built in the proposed Runway Protection Zone (RPZ), Runway Safety Area (RSA), Taxiway (TSA), Object Free Area (OFA), and within the 35 foot Building Restriction Line (BRL) area that extends beyond the Airport's existing south property line.

A much larger approach RPZ is shown on the approach of proposed primary Runway 35 (south end of primary runway). That approach from the south is anticipated to be greater than three-fourths (¾) mile visibility minimum approach whereas the approach of proposed primary Runway 17 (north end of primary runway) is anticipated to be not lower than one (1) mile. The larger RPZ and lower minimum approach could not be implemented on the proposed primary runway 17 approach (north end of primary runway) due to land constraints by the community of Concordia. Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13, *Airport Design,* Change 11, Section 212 a.(2)b., states, *Land use prohibited from the RPZ are residences and places of public assembly.* The smaller RPZ was therefore used on the approach to primary Runway 17 (north end of primary runway) to help ensure no part of that RPZ covers an area that might be occupied by residents. However, on alternative P-1, residents are located within the approach RPZ of primary Runway 35 (south end of primary runway). To achieve the approach minimum desired for option P-1, acquisition of houses and resident relocation would be required on the south end. The reality of resident relocation makes this option unlikely.

All three (3) primary runway alternatives are estimated with installation of new base mounted Medium Intensity Runway Lights (MIRLs) and Medium Intensity Taxiway Lights (MITLs). The new lighting systems should be installed on a new parallel cable circuit installed in duct.

***Additional related costs for primary runway design Alternative One (P-1) upgrades of the existing primary Runway 17/35 are:***

- Earthwork and seeding
- Construction staking
- Drainage structures
- Runway and taxiway marking
- Electrical work for Medium Intensity Runway Lights (MIRLs) and Medium Intensity Taxiway Lights (MITLs)
- New electrical duct and cable
- Electrical vault work (including new regulator)

As stated previously, total design and construction costs for airside primary Runway Alternative P-1 is approximately $6.78 million. P-1 is the least costly of all the primary runway alternatives presented as part of this Master Plan.

### AIRSIDE PRIMARY RUNWAY ALTERNATIVE TWO AND ALTERNATIVE THREE

Primary Runway Alternatives Two (P-2) and Three (P-3) look at utilizing the existing paved primary Runway 17/35 as a future parallel taxiway to a new north-south primary runway located to the east of existing primary Runway 17/35. The major difference of these alternatives is the Runway Protection Zone (RPZ) size used. As shown in the P-2 design drawing located in Appendix J on page 4 of 11, P-2 uses an RPZ for an approach to primary Runway 17 of not lower than one (1) mile on the north end of the primary runway, and P-3 uses an approach RPZ of not lower than three fourths (¾) mile. The use of those in turn affects the location of the primary runway and the amount of utilization the existing primary Runway 17/35 will have.

As shown in the P-3 design drawing located in Appendix J on page 5 of 11, P-3, with the larger proposed approach RPZs, shifts the location of the future potential primary runway to the south, which in turn makes the north portion of the existing primary Runway 17/35 further north than the north end of the proposed new primary runway. This will create un-useable pavement that will most likely be recommended for removal. The use of the smaller approach RPZ will allow for the full use of the entire length of the existing primary Runway 17/35 as the taxiway. By doing this, it will require less concrete and pavement removal, thus cost less. These development alternatives utilize as much of the existing primary Runway 17/35 pavement as possible to offer a significant cost savings for the City of Concordia (City). By making the existing primary Runway 17/35 a future parallel taxiway, no additional grading would be required to upgrade the safety area. If primary Runway 17/35 remained a primary runway significant grading would be required.

P-2 is a slightly lower cost alternative than P-3, as previously shown. P-2 is lower cost primarily due to the fact that less land acquisition is required. The reason there is less land to purchase is P-2 uses

a smaller RPZ than P-3 on the approach to primary Runway 17 (north end of the primary runway). Both alternatives propose the construction of a new 4,800 feet long by 75 feet wide primary runway.

Primary Runway P-2 and P-3 alternatives consider utilizing the existing paved primary Runway 17/35 as a future parallel taxiway to a new north-south primary Runway 18/36 located to the east of existing primary Runway 17/35.

The existing Airport property is again insufficient to be able to construct the pavement upgrades shown in P-2 and P-3. Additional land will first have to be purchased by the City before any Airport improvements can be constructed. Similar to P-1, the land located on the north and south ends of the proposed new primary runway needs to be acquired as fee-for-title to control structures that could be built in the proposed RPZ or within the 35 foot Building Restriction Line (BRL) area that extend beyond the Airport's existing property line.

For both P-2 and P-3, the portions of existing primary Runway 17/35 that are to be utilized as a future parallel taxiway need to be increased from 8,000 pounds Single Wheel Gear (SWG) to the required pavement strength of 30,000 pounds SWG. To achieve that, primary Runway 17/35's approximate four (4) inch Asphaltic Concrete (AC) pavement will need to have approximately a four (4) inch asphalt overlay. As discussed earlier in the *Runway Strength and Condition* section, located in Chapter Three on page 3-19, primary Runway 17/35 is in fair to good condition. It is still recommended that existing joints and cracks be sealed prior to any asphalt overlays. All additional existing primary Runway 17/35 pavement width beyond the needed 35 feet of width for parallel taxiway should be removed so that unneeded pavement will not be a burden to future maintenance costs at the Airport.

All proposed new pavement for the new primary Runway 18/36, connecting taxiway and parallel taxiway extension is estimated to be constructed of a four (4) inch aggregate base with a six (6) inch Portland Cement Concrete (PCC) pavement.

P-3 is a slightly better option in that it provides the Airport with a larger Runway Protection Zone (RPZ) and lower approach visibility minimums to primary Runway 18 (north end of new primary runway). Although the approach extends out 10,000 feet (Non-Precision, greater than three fourths (¾) mile) directly over Downtown Concordia, P-3 provides a greater separation from the primary Runway 18 approach and Concordia residents located on the north end of the new primary Runway 18 RPZ.

P-2 and P-3 require a significant amount of earthwork in order to construct a brand new primary Runway 18/36. The existing terrain surrounding the Airport is fairly flat, but the new primary runway will require some substantial grading in order to pave a runway that meets sight distance and profile criteria.

All options, except P-1, allow for much more ideal landside expansion opportunities at the Airport. By moving the primary runway and corresponding Building Restriction Line (BRL) further to the east, the existing hangar area can be easily expanded to the east. No additional land purchase would be required to expand the hangar area and terminal taxilanes, because some of the land the City owns to protect the existing primary Runway 17/35 could be utilized for the construction of Airport hangars, expansion of Terminal Building, maintenance hangars, etc.

Total construction costs for airside primary runway design P-2 is approximately $8.64 million and P-3 is approximately $8.94 million.

## AIRSIDE CROSSWIND RUNWAY ALTERNATIVE ONE, ALTERNATIVE TWO AND ALTERNATIVE THREE

As discussed earlier in the *Runway Orientation and Wind Coverage* section located in Chapter Three on page 3-8, primary Runway 17/35 cannot be a stand-alone primary runway with respect to meeting the required wind coverage for Airport Reference Code (ARC) A-I and B-I category aircraft at a 10.5 knot wind speed. Ninety five percent (95%) wind speed coverage is recommended by the Federal Aviation Administration (FAA) for runways serving ARC A-I and B-I category aircraft with the crosswind component not exceeding a 10.5 knot wind speed. However, primary Runway 17/35 does provide adequate wind coverage for the future ARC B-II category aircraft with 96.16 percent coverage at a wind speed of 13 knots.

In considering development alternatives for crosswind runway(s) at Blosser Municipal Airport (Airport), it is important to note that FAA will not provide Federal funding assistance to the City of Concordia (City) to help rehabilitate or further enhance development of two (2) crosswind runways at the Airport. Rather, Benesch and the Airport Advisory Board currently understand that FAA will only financially support one (1) crosswind runway at the Airport. For ample aviation purposes, only one (1) crosswind runway is really needed at the Airport, but two (2) crosswind runways have been a nice aviation luxury at the Airport. Therefore, for the sake of facilitating frugal public costs to the City, FAA, and Kansas Department of Transportation (KDOT), Division of Aviation, the City and Airport Advisory Board should decommission and close one (1) crosswind runway at the Airport.

That FAA Federal funding determination concerning Federal funding for crosswind runways at the Airport was known and considered in 1997 when the then Airport consultants *Bucher, Willis & Ratliff* of Kansas City, Missouri and Airport Advisory Board completed a Master Plan for the Airport titled, *Blosser Municipal Airport 1997 Airport Master Plan Update* (1997 Master Plan). In that 1997 Master Plan on page 59, in Table 3.9 titled, *Summary – Airfield Facility Requirements*, turf crosswind Runway 3/31 is slated for closure and turf crosswind Runway 12-30 is slated for enhancement. With Airport Advisory Board recommendation, the City Commission publicly considered and approved the 1997 Master Plan at a Regular City Commission meeting conducted on March 5, 1997.

***With the above information known concerning:***

1. Current and probably future Federal funding is available for only one (1) crosswind runway at the Airport; and

2. Past willingness of the City, Airport Advisory Board, and Concordia community to accept closure of one (1) turf crosswind runway and operate the Airport with only one (1) crosswind runway.

The beginning frame of reference in this Master Plan, concerning formulation of alternatives for crosswind runway development, is based on ultimate Airport development providing only one (1) crosswind runway at the Airport.

Several runway orientations were analyzed for the crosswind runway to partner with the primary runway. As shown in Table 3A – *Wind Data Summary for Existing Runways* on page 3-8, the current existing crosswind Runway 12/30 and crosswind Runway 3/21 wind coverages are 83.03 percent (83.03%) and 82.67 percent (82.67%) coverage respectively for a 10.5 knot wind speed and 90.90 percent (90.90%) and 90.50 percent (90.50%) respectively coverage for a 13 knot wind speed.

Crosswind Alternative One (C-1), as shown in the C-1 design drawing located in Appendix J on page 6 of 12, depicts a northwest-southeast orientation, that being crosswind Runway 13/31. The wind coverage for crosswind Runway 13/31 is approximately 83.04 percent (83.04%) at a wind speed of 10.5 knots.

Crosswind Alternative Two (C-2), as shown in the C-2 design drawing located in Appendix J on page 7 of 12, depicts a northeast-southwest orientation, that being crosswind Runway 7/25. The wind coverage for crosswind Runway 7/25 is approximately 73.47 percent (73.47%) at a wind speed of 10.5 knots.

Crosswind Alternative Three (C-3), as shown in the C-3 design drawing located in Appendix J on page 8 of 12, depicts another northeast-southwest orientation, that being crosswind Runway 2/20. The wind coverage for crosswind Runway 2/20 is approximately 87.13 percent (87.13%) at a wind speed of 10.5 knots.

C-3 is similar to the orientation of the existing turf crosswind Runway 3/21, but slightly skewed to miss most of the existing development and possible new development located near the northeast departure end of existing crosswind Runway 3. Although crosswind Runway 2/20 is the highest percentage of wind coverage of all the crosswind runway alternatives, the combining of primary Runway 17/35 with crosswind Runway 2/20 will not produce the required 95 percent (95%) wind coverage for ARC A-I and B-I category aircraft. This is due to the primary and crosswind runway orientations being too similar, therefore that runway combination will not cover occurring crosswinds at the Airport.

C-3 also has many other negatives to its construction other than not meeting the 95 percent (95%) minimum wind coverage for Airplane Design Group (ADG) - I aircraft. If C-3 is chosen as the crosswind runway, this option would severely limit the ability for landside expansion. With the Kansas Army National Guard Armory located to the northwest already restricting expansion, Landside Alternative Three (L-3) could quite possibly be the most expansion that could occur at the Airport.

Of the three (3) proposed crosswind alternatives, C-2 best utilizes the existing Airport and surrounding conditions and allows for the greatest options for future expansion of the Airport. The existing Airport property is insufficient to construct the crosswind runway upgrades shown in all crosswind alternatives. Additional land will first have to be purchased by the City before any Airport improvements can be constructed. Land, in fee-for-title, needs to be purchased out to the 35 foot Building Restriction Line (BRL) that parallels each runway. Land beyond the ends of runways needs to be acquired in fee-for-title for Runway Safety Areas (RSA), Object Free Areas (OFA), and Runway Protection Zones (RPZ). Land in easement is also required where a RPZ crosses existing or proposed roads.

As discussed earlier in the section titled *Crosswind Runway Length Determination - Paved Surface Alternative* located in Chapter Three on page 3-13, the required crosswind paved runway length to serve small aircraft (with less than 10 passenger capacity) was computed as 4,000 feet. The proposed crosswind runway needs to meet Airport Reference Code (ARC) A-1 category aircraft. Runways for ARC A-1 category aircraft must have a minimum width of 60 feet. Criteria from Non-Precision type approaches are depicted for each end of the proposed crosswind runways. Connecting taxiways and turnarounds twenty five (25) feet wide should be constructed at each end of a new paved crosswind runway.

One of the major improvements that will have to be constructed with any of the paved crosswind alternatives is the relocation of the Cloud County road (N. 150th Road) that runs along the east side of the Airport. C-3 is the alternative with the least cost for the relocation of the N. 150th Road roadway. C-1 and C-2 would probably cause for closure of the roadway and construction of an alternate route for users of N. 150th Road in that area near the Airport. N. 150th Road will have to be closed at two locations as illustrated on the design drawings of the alternative.

For the Concordia community to accommodate the future potential for construction of a private and/or public development requiring direct taxiway access to the Airport primary runway by locating such project in the northwest quadrant of the Airport, the crosswind runway alternatives must be carefully considered. In considering said development option, C-2 with crosswind Runway 7/25 would be the best alternative for a new crosswind runway. With permission of the *Beldon M. Blosser Trust Number One* (see section titled *Airport Land* located in Chapter One on page 1-40) given to the City of Concordia (City), the City could lease said Airport property to a private and/or public entity for locating a development project needing efficient aviation support from the Concordia community. If the Concordia community determined that not allowing private and/or public development projects to locate on Airport property in the northwest quadrant was more beneficial to the Concordia community and the Airport, then C-1 with crosswind Runway 13/31 would be another possibility of an acceptable crosswind alternative.

A fourth alternative not depicted in the alternatives is to leave the two (2) existing turf crosswind runways as is to continue serving the aviation needs of the Concordia community and region. However, to do that, it is recommended that any obstructions penetrating the Runway Protection Zone (RPZ), Runway Safety Area (RSA), and Object Free Area (OFA) of crosswind Runway 3/21 and crosswind Runway 12/30 be removed. This is achieved through Airport owner (City) control over the RPZs, RSAs, and OFAs. Such control includes clearing RPZ and RSA areas and maintaining them clear of incompatible objects and activities. That control is preferably exercised through the acquisition of sufficient property interest in the RPZ and RSA areas. To go about that, the City would have to go through a process of purchasing and relocating all residents and buildings, remove trees, towers, etc. that are located within the RPZ, RSA, and OFA that obstruct all imaginary surfaces surrounding the turf crosswind runways. Although this might be an expensive project without accomplishing much Airport expansion, it will provide compliance with FAA regulations, safety to the pilots using the turf crosswind runways at the airport, and safety to local citizens by relocating residents outside the RPZ and RSA. Important to note, because the Federal Aviation Administration (FAA) will only continue to financially support one (1) crosswind runway at the airport, the Concordia community, City and Airport Advisory Board would have to determine which turf crosswind runway would be designated for continued FAA funding support and which remaining turf crosswind runway would be totally supported with local private and public funding.

Total construction costs for Crosswind Runway Alternative C-1 is $6.44 million, C-2 is $7.63 million, and C-3 is $6.06 million.

### CROSSWIND RUNWAYS – TURF VERSUS PAVEMENT

The Concordia Airport Advisory Board (Advisory Board) studied the notion that a crosswind runway did not have to initially have hard surface pavement. A new crosswind runway could also have a turf runway surface such as the two (2) existing crosswind runways currently serving Blosser Municipal Airport (Airport). The Advisory Board publicly discussed and decided that a new turf crosswind runway is now more beneficial to current Airport users and the Concordia community than the paved runway option. That decision is based on the current needs and wants of those with based aircraft and other aviation users at the Airport.

If the City of Concordia (City) and Advisory Board would eventually desire to have a paved crosswind runway, now is the time to show that option on this Airport Master Plan. The City could now depict an interim turf crosswind runway, with future paved option, on the Master Plan until the City and Advisory Board one day determine that a paved crosswind runway is needed at the Airport and is more beneficial to the Airport and Concordia community. By showing the turf then paved option on the Airport Layout Plan (ALP) in this Master Plan, then obtaining approval for that from the Federal Aviation Administration (FAA), the FAA determined Runway Safety Area (RSA) for the turf and paved crosswind runway options become protected from obstruction(s) possibly occurring during future private development occurring near the Airport but off Airport property.

The best orientation for the turf then possibly paved crosswind runway option is a modified version of Crosswind Runway Alternative Two (C-2). Those modifications to C-2 are as follows:

1. Modify initial paved runway length of 4,000 feet to a turf runway required length of 2,236 feet. Those runway lengths were determined in the *Crosswind Runway Length Determination* sections located in Chapter Three, on pages 3-13 through 3-17.
2. Modify the first proposed crosswind runway orientation of 7/25 to a new orientation of 6/24. That slight skew of crosswind Runway 7/25 to crosswind Runway 6/24 creates an Obstruction Free Area (OFA) off the northeast departure end of crosswind Runway 6. The proposed turf crosswind Runway 6/24 allows residential development, located in the northeast area adjacent to Airport property, to remain and continue because that development is located outside the proposed Runway Safety Area (RSA), and does not obstruct any of the FAA determined primary and transitional surfaces.

The turf option for C-2 is named Crosswind Alternative Four (C-4) and depicted in the C-4 design drawing located in Appendix J on page 9 of 12. A very positive outcome of the C-4 turf runway option is that construction of the new turf crosswind runway would not require the closure, modification, or relocation of the existing Cloud County road (N. 150th Road) located adjacent to Airport property along the entire east side of the Airport. N.150th Road in that area is located in the RSA for the original C-2 option. Total construction cost for the C-2 crosswind runway paved option is approximately $7.63 million and approximately $1.38 million for C-4 crosswind runway turf option.

## LANDSIDE DEVELOPMENT ALTERNATIVES

The primary landside functions include aircraft parking apron, aircraft storage and maintenance hangars, and terminal area to accommodate General Aviation needs and businesses and public entities desiring locations on an airport. The interrelationship of these functions is important in defining a long-range landside layout. As best as possible, landside functions need to be grouped with similar uses that are compatible. Other functions should be separated or at least have well defined boundaries for reasons of safety, efficient operation and security. Each landside use must be planned in conjunction with both the airfield and ground access.

Runway and apron frontage should be reserved for those uses with a high level of interface with the airside. Maintenance Hangars, Terminal Building, Fixed Based Operator (FBO), aviation related businesses, and businesses and public entities desiring aviation support services should have good access to the apron and airside facilities. Uses with lower levels of aircraft movement, such as aircraft storage hangars, can be planned in more secluded areas.

The facility requirements analysis for Blosser Municipal Airport (Airport) determined the need for additional hangar space, especially T-Hangars and Executive Hangars to meet the demands of the planning horizon addressed in this Master Plan. The following landside alternatives provide optional locations for those facilities.

Landside Development Alternatives depict alternatives for developing T-Hangars, Conventional Hangars, Executive Hangars, Terminal Building, and apron areas. As stated earlier, the T-Hangar area can be somewhat isolated from the runway and airside facilities. The proposed layouts are designed to handle both Airplane Design Group (ADG) I (aircraft with wingspans up to but not including 49 feet or tail height up to but not including 20 feet) and ADG II (aircraft with wingspans of 49 feet up to but not including 79 feet or tail height from 20 feet up to but not including 30 feet).

### LANDSIDE ALTERNATIVE ONE

Landside Alternative One (L-1), as shown in the L-1 design drawing located in Appendix J on page 10 of 12, was formulated to be used in conjunction with Primary Runway Alternative One (P-1) where the existing primary Runway 17/35 remains the primary runway. L-1 allows for basically a wide taxilane and does nothing to alleviate the current condition of lack of mobility for multiple aircraft located on apron or aircraft tie-down areas near the Terminal Building. Landside L-1 does expand the apron area to allow aircraft access at multiple points to existing and future hangars.

Federal Aviation Administration (FAA) recommends constructing all buildings and hangars outside of the 35 foot Building Restriction Line (BRL). If L-1 is chosen, obstruction checks must be performed to see if the existing buildings are penetrating the 7:1 transitional surface. If existing buildings obstruct the 7:1 transitional surface it would be recommended and FAA required to move all buildings and hangars so not to obstruct the transitional surface. Existing buildings at Blosser Municipal Airport (Airport) are currently located at approximately the 21 foot BRL. For those buildings not to be obstructing the 7:1 transitional surface, all buildings would have to be

lower than 21 feet in height at the east face of the building and not increasing in height greater than a rate of one (1) foot vertical for every seven (7) feet horizontal. To construct new hangars outside the 35 foot BRL, L-1 would require some additional land acquisition directly west of the existing hangar area. It is proposed to extend the new hangar area to the south of the existing Conventional Hangars. All new hangars constructed in line with the east side of existing buildings are limited to a height of 21 feet on the east face of the new building because of the 21 foot BRL that runs congruent with the east face of existing buildings at the Airport.

L-1 proposes installation of T-hangars and Executive Hangars for both ADG I and ADG II category aircraft. Two (2) new Executive Hangars and one (1) 10-place Standard T-Hangar for ADG II category aircraft are to be constructed directly south of the existing Conventional Hangars at Blosser Municipal Airport (Airport). Access to the new hangars would be via a new taxilane constructed directly in line with the existing center connecting taxiway of primary Runway 17/35 and then via a taxilane, turning and running perpendicular to the existing hangar connecting taxilanes. If Crosswind Alternate Three (C-3) is chosen, no hangar expansion would be allowed south of the existing Conventional Hangar locations.

In total, L-1 would install 12 new hangar stalls for aircraft storage. As stated in Table 3F located in Chapter Three on page 3-43, over the planning horizon it is recommended that the apron area have tie-down locations for eight (8) aircraft. L-1 does not allow for any aircraft tie-down areas due to airside and landside separation requirements.

### LANDSIDE ALTERNATIVE TWO

Landside Alternative Two (L-2), as shown in the L-2 design drawing located in Appendix J on page 11 of 12, was formulated to be used in conjunction with Primary Runway Alternative Two (P-2) or Three (P-3) where the existing primary Runway 17/35 will be utilized as the parallel taxiway for the new primary runway. L-2 also works with Crosswind Alternatives One (C-1) Two (C-2) or Four (C-4)

Landside L-2 varies significantly from Landside L-1. L-2 provides significant improvement for mobility of multiple aircraft operations on the apron. L-2 also allows for addition of the required amount of aircraft tie-down areas to the apron and access to the fueling facility with aircraft located in all aircraft tie-down areas. L-2 provides Airplane Design Group (ADG) II category aircraft access to all proposed hangars. The existing 10-place Standard T-hangar does not have adequate taxilane Object Free Area (OFA) for access by ADG II category aircraft. This option allows for ADG II aircraft operation on the east side of the existing T-Hangars and expands the taxilane to have appropriate OFA for ADG I category aircraft to access the west side of the existing T-Hangar.

L-2 proposes one (1) 10-place T-Hangar and two (2) Executive Hangars to be constructed south of the existing Conventional Hangars. Access to these new hangars would be via the new apron and a taxilane running parallel to the primary Runway 17/35 parallel taxiway. Again, access to all proposed new hangars, can be accessible by ADG II category aircraft. L-2 Executive Hanger layout differs from L-1 in that the Executive Hangers are rotated to face the north rather than the east and positioned side by side in that north/south alignment.

L-2 shows a future apron expansion to the south of the existing center connecting taxiway. The new apron area has eight (8) ultimate in-pavement aircraft tie-down locations, which can serve eight (8) smaller ADG I category aircraft. All ultimate in-pavement tie-down locations are placed outside aircraft parking restriction lines that directly correspond to existing and ultimate runway, taxiway, and taxilane centerlines. Future expansion of the proposed apron and taxiway areas would allow for a different configuration of the aircraft tie-down locations and allow for the addition of tie-down areas for ADG II category aircraft. Or if desired, the current eight (8) aircraft tie-down areas could be decreased in number to allow for a fewer number of tie-down areas for larger ADG II category aircraft.

L-2 also provides a new apron area located between the existing Conventional Hangars and proposed new Executive Hangars. That apron area provides opportunity for future development at Airport Park by private and/or public entities desiring aviation connectivity to the Airport. This apron provides an area for five (5) aircraft tie-downs. This apron will support operations of ADG II category aircraft.

All three (3) landside alternatives are utilizing taxiway OFA for the existing connecting taxiway to primary Runway 17/35 that are based on specifications for ADG II category aircraft. This ensures that no buildings, hangars, or objects get built too close to the connecting taxiway, so larger ADG II category aircraft can access the apron area.

### LANDSIDE ALTERNATIVE THREE

Landside Alternative Three (L-3), as shown in the L-3 design drawing located in Appendix J on page 12 of 12, shows all ultimate hangar expansions to be on existing Airport property. As stated previously, L-3 is only feasible if primary Runway 17/35 is relocated to the east as in Landside Alternative Two (L-2). L-3 was created for use with Primary Runway Alternative Two (P-2) or Three (P-3) and primarily with Crosswind Alternative Three (C-3). This alternative relocates the proposed hangars outside of any imaginary Airport surface created by the location of the new primary runway.

L-3 proposes the installation of all ADG II category aircraft hangars and taxilanes. A new 10-place Standard T-Hangar is shown located east of the Conventional Hangars. The T-Hangars would be accessed via the apron and new taxilanes.

Two (2) new Executive Hangars are proposed for location east of the existing 10-place Standard T-Hangar. Access to the new Executive Hangers was chosen to be on the west side because the east side of the new Executive Hangar could potentially be used for future apron expansion and aircraft tie-down locations.

Landside L-3 also proposes the installation of six (6) tie-down areas for aircraft. Again as stated in Table 3F located on page 3-43, through the planning horizon, the Airport is recommended to have eight (8) aircraft tie-down areas. L-3 does have room for expansion of proposed apron area for additional aircraft tie-down locations or the City could look at shifting and/or removing a taxilane thus obtaining more space for aircraft tie-down areas but limiting aircraft mobility.

In total, L-3 would install 12 new hangar stalls and six (6) aircraft tie-down areas.

## SUMMARY OF DEVELOPMENT ALTERNATIVES AND RECOMMENDATIONS

The overall process in developing and assessing the airside and landside development alternatives for Blosser Municipal Airport (Airport) involved an analysis of both short-term and long-term Airport requirements as well as future Airport growth beyond those requirements. Airport design standards for both current and future developments were considered throughout. The proposed development plan must represent a means by which the Airport can grow in a balanced and prudent manner to accommodate forecast aviation demand for both the landside and the airside areas, as well as provide flexibility to meet both anticipated and unanticipated growth, and provide opportunity for new Airport revenue via accommodation of development by private and public entities at areas on or adjacent to the Airport.

The overall recommendation of the proposed development alternatives to meet the requirements and the needs of the Airport is for Primary Runway Alternative Two (P-2) or Three (P-3), Crosswind Alternate One (C-1), Two (C-2) or Four (C-4) and Landside Alternative Two (L-2) or Three (L-3). Many factors go into developing the ultimate configuration of an airport, especially at Blosser Municipal Airport. One major factor in determining the configuration would be the decision on allowing commercial prospects to lease appropriate Airport property. If businesses, industries and public entities are allowed to lease Airport land, Crosswind Alternative One (C-1) would be eliminated because it would hinder the proposed expansion of both Landside Alternative Two (L-2) and Three (L-3), thus hampering future expansion of the Airport.

If the City desires to lease Airport land to businesses, industries or public entities that have an aviation purpose or need, the Benesch recommended combination of alternatives would be Primary Runway Alternative Two (P-2), Crosswind Alternative Two (C-2) or Four (C-4), and Landside Alternative Two (L-2). If Airport land is never to be leased, Benesch recommendation would be for Primary Runway Alternative Two (P-2), Crosswind Alternative One (C-1), and Landside Alternative Two (L-2).

The best airside and landside configuration for Blosser Municipal Airport (Airport) would be for the City, Airport Advisory Board and local community to choose the Airport development alternatives that best enhance Airport revenue, and provides a modern Airport facility that meets current aviation demands and allows for future Airport and community economic expansion beyond the 20 year planning period of this Master Plan and Airport Layout Plan (ALP). Alternatives publicly chosen and implemented on that basis will allow the Airport to help enhance the prosperity of the Concordia community and surrounding area.

## REASONS FOR ZONING

By their very nature, airports are land intensive. As land use pressures in proximity to airports continue for many municipalities, it becomes apparent that detailed zoning ordinances are necessary to control new development within sensitive areas around the perimeter of airports. Sensitive areas refer to particular regions of airspace around an airport that could be unsafe to both aircraft and other inhabitants if improper land use is allowed. In addition, as long as a municipality allows an airport to exist within its boundaries then there will always be the issue of liability.

West Side of Conventional Hangars loking south. This area is adjacent to Airport Park and residential land uses

Liability refers to being legally responsible for any damages and/or injuries that occur due to lack of reasonable precautions being taken to prevent an adverse action from occurring. Since zoning is a form of legal ability bestowed upon a community by higher authorities, then liability will always be an issue to face in an adverse situation. The Federal Aviation Administration (FAA) has provided state and local officials documentation on what measures to undertake in relation to compatible land uses around airports. FAA Advisory Circular (AC) 150/5190-4A, *A Model Zoning Ordinance to Limit Height of Objects Around Airports,* Advisory Circular 150/5050-6, *Airport Land Use Compatibility Planning* and Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace,* are a few of the many publications and documentation available to assist public officials.

## LAND USE COMPATIBILITY

The concept of developing land use compatibility guidelines around airports is based on three notions:

- Hazards and obstructions to air navigation
- Accident potential zones
- Noise pollution

Each of these areas function as determinants for land use compatibility. In that regard, this Chapter Five addresses concepts that are used in each of the three (3) areas and the pertinent documents that are advisable to be used in designing a zoning ordinance for Blosser Municipal Airport (Airport).

### Hazards and Obstructions to Air Navigation

For purposes of safety, the Federal Aviation Administration (FAA) developed a very technical justification for determining hazards to navigable airspace. Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace,* is a document that describes in detail suggested guidelines to determine what constitutes an obstruction or hazard to the navigable airspace around an airport. The intent of this information is not to provide a technical explanation of the criteria of an obstruction; rather, it is to promote an understanding that such criteria does exist.

## Accident Potential Zones

A United States Air Force study conducted in 1976 regarding zones where airfield accidents most likely will occur showed that accident potential increases significantly near the extended runway centerline.

Accident potential is the most critical of the land use determinants and the least defined of all the three.

The findings of the study concluded the following:

- 75 percent (75%) of the accidents plotted were near the extended runway centerline.
- Of the total accidents plotted, 22.8 percent (22.8%) occurred on or adjacent to the runway.
- Nearly 61 percent (61%) of the accidents occurred during the landing phase as compared to 39 percent for the takeoff phase.
- Almost 70 percent (70%) of the accidents occurred during daylight hours.

The conclusions of the study defined the area in which the maximum percentage of concentrated accidents in the smallest geographical area occurs. As a result of those studies and the existing FAA regulations such as FAR Part 77 and AC 150/5300-13, *Airport Design,* land use guidelines can be developed and established to prevent incompatible land uses in those high potential accident areas.

Zoning, easement and land acquisition objectives are to prevent the following incompatible land uses in those high accident potential areas:

- High residential densities
- Labor intensive industries
- Promotion of population concentrations such as subdivision growth.
- Location of utilities and services that are required to serve area wide populations where disruption would have an adverse impact.
- Concentration of persons who are unable to respond to emergency situations such as children, elderly, handicapped, etc.
- Allow hazards to aircraft operations to exist.

## Noise Pollution

The third factor in developing compatible land use is noise pollution. Noise pollution is one of the most serious of what is termed environmental impacts. FAR Part 150, *Airport Noise Compatibility Planning* and FAA AC 150/5020-1, *Noise Control and Compatibility Planning for Airports* provide the necessary criteria for zoning in regard to noise issues. The generation of noise at airports is directly related to affecting the quality of living environments.

FAR Part 150 sets forth the standards that need to be followed when undertaking noise compatibility studies. However, FAR Part 150 does not constitute a Federal law instructing state or local jurisdictions to enforce compatible land use.

FAA AC 150/5020-1 is a direct supplement to FAR Part 150. The purpose of this document is to offer technical guidance to airport operators, local officials, and state officials on appropriate land uses surrounding airports, based upon the results of the FAR Part 150 studies. AC 150/5020-1 is a comprehensive document that describes strategies to correct recent incompatible land uses as well as what noise planning is all about. In essence, it is a must read document for any and all parties involved in airports and related land use.

someone hearing it. Because decibel levels are measured logarithmically, an increase of only 10 decibels (for example, from 50 decibels to 60 decibels) doubles the loudness that people believe they hear. Continuing the increase from 60 to 70 decibels would again double the perceived loudness of the sound. An increase of 3 decibels represents a doubling of sound energy, but an increase of 10 decibels corresponds to the perception by people that the sound level has doubled.

In terms of aircraft noise, sound levels generated by takeoffs or landings vary depending on several factors, particularly the aircraft's weight and the number of engines. While airport-related noise levels decrease quickly with distance from an airport, the accuracy of noise measurement also decreases because it is more difficult to distinguish between airport-related noise and other noise in the environment. Which sounds people considered noise, however, is very subjective.

While the human ear can hear a broad range of sounds, it cannot hear all sounds. Sounds with very low pitches (low frequencies) and sounds with extremely high pitches (high frequencies) are generally outside the hearing range of humans. Because of that, environmental noise is usually measured in "A-weighted" decibels. The A-weighted decibel unit focuses on those sounds the human ear hears most clearly and deemphasizes those sounds that humans generally do not hear as clearly. Table 5A on page 5-4 illustrates the typical sound levels of some common events.

The impact of noise on communities is usually analyzed or described in terms of the extent to which the noise annoys people. Annoyance refers to the degree to which noise interferes with activities such as sleep, relaxation, speech, television, school, and business operations. While it is difficult to predict how an individual might respond to, or be affected by, various sounds or noises, some studies indicate that it is possible to estimate what proportion of a population group will be "highly annoyed" by various sound levels created by transportation activities. The findings of a 1978 study by, T.J. Schultz, titled, *Synthesis of Social Surveys on Noise Annoyance* published in the *Journal of the Acoustical Society of America*, that related transportation noise exposure to annoyance in communities has become the generally accepted model for assessing the effects of long-term noise exposure on communities. According to that study, when sound exposure levels are measured by a method that assigns additional weight to sounds occurring between 10 p.m. and 7 a.m., and those sound levels exceed 65 decibels, individuals report a noticeable increase in annoyance.

Methods for measuring airport-related noise assess noise from either a single takeoff or landing or from the cumulative average noise that nearby communities are exposed to over time. Required by Federal law to select a single method for measuring the impact of airport-related noise on communities, FAA chose a method that measures community exposure levels and that gives greater weight to the impact of flights occurring during the nighttime. While people certainly respond to the noise of single events (particularly to the loudest single event in a series), the long-range effects of prolonged exposure to noise appear to best correlate with cumulative metrics. Such a unit provides a single number that is equivalent to the total noise exposure over a specified time. Thus, cumulative noise units based on both time and noise level. The Day-Night Average Sound Level ($L_{dn}$) now specified as the FAA noise metric for cumulative exposure under FAR Part 150 is such a unit.

more compatible, such as agricultural, commercial, and industrial uses rather than residential uses. Table 5B on page 5-6 shows various land uses and respective $L_{dn}$ noise ranges deemed either compatible or not compatible by FAA.

A FAR Part 150 noise study and the development of specific noise contours are not a part of this Master Plan but can be part of a future Environmental Assessment (EA) planned as the number one (1) local priority in the year 2013 Airport Capital Improvement Plan (ACIP) for Blosser Municipal Airport (Airport). Noise compatibility should always be taken into consideration when zoning around an airport is considered.

**NOTES and KEY for TABLE 5B (located on page 5-6)**

**Title Note for Table 5B**

[A] The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. Federal Aviation Administration (FAA) determinations under Part 150 are not intended to substitute Federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

**Key to Table 5-B**

| | |
|---|---|
| SLUCM | Standard Land Use Coding Manual |
| Y (Yes) | Land Use and related structures compatible without restrictions |
| N (No) | Land Use and related structures are not compatible and should be prohibited |
| NLR | Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure. |
| 25, 30, or 35 | Land use and related structures generally compatible; measures to achieve Noise Level Reduction (NLR) of 25, 30, or 35 decibels must be incorporated into design and construction of structure. |
| ( ) | Table numbers in parentheses refer to notes. See Notes for Table 5-B below. |
| dB | Decibel |

**Notes for Table 5-B**

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30.
(8) Residential buildings not permitted.

quite limited with regards to taking action against incompatible uses and obstructions to air traffic. However, as long as the FAA controls the supply of Federal public funding, the incentive to follow FAA guidelines is very evident.

## LOCAL INVOLVEMENT

Certain municipalities have very detailed zoning ordinances that protect their airport and all the approach patterns. Others have no mention of appropriate zoning. The key to a successful zoning standard lies with the local elected officials. There are technical, environmental, social, and economic demands that must be considered when zoning an area. In many cases Blosser Municipal Airport (Airport) is going to have an impact on more than one jurisdiction. In this situation, it is imperative that all impacted municipalities, counties, etc. implement complimentary zoning laws. It is useless to protect one side of the Airport and allow the other side to be developed with incompatible land usage.

There are many different ways to prevent incompatible land use and development, and there are choices for the City and local and state officials to pursue. Some of the options are zoning, easements, and fee-for-title acquisition of impacted land.

## INCOMPATIBLE LAND USE PREVENTION

### Land Zoning

The land zoning option is the most common method of control. One of the advantages of zoning is that it can be used to promote land use compatibility while leaving the land under private ownership and thus, on the tax rolls. The disadvantage to zoning is that future variances to the initial zoning plan can be passed, which would defeat the original zoning ordinance intent that is in place to ensure compatible land use. In short, zoning is not necessarily a permanent solution. One must remember that local zoning boards are primarily appointed by local elected officials and do change over time. Along with those changes may come modifications in the zoning regulations. Finally, a cautionary note is that zoning in many cases is not retroactive, thus, problems that exist may still be problematic after new zoning is implemented.

### Land Easements

Acquisition of land easements offer a method for the City to acquire rights to use the land of private owners at a reasonable fee. The advantage of this type of procedure is that usually only a fraction of the appraised land value is paid to the owner. Costs savings are a very attractive aspect of this activity. In addition, easements can be made permanent. Once again, this leaves the property on the tax rolls and for development, so long as it is in compliance with compatible land usage. Three (3) ways to achieve an easement are through purchase, condemnation, or dedication.

### Land Acquisition

In some cases the noise pollution or other incompatibility issues may warrant total land acquisition. If this is necessary, there are Federal programs that can be applied to assist in the funding of acquisitions. The funds are available under the authorization of Public Law (PL) 91-646, *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.* That Act allows three (3) methods of acquiring needed public land: negotiation with owners, voluntary offering by owners, or through condemnation by the local or

Although the City has I-1 zoning in place for the Airport, that zoning is not Airport and aviation specific and land use will change with the proposed configuration of the new Airport layout as shown in the Airport Layout Plan (ALP). It is crucial that the City adopt an amendment to the existing City Zoning Regulations that will accommodate the proposed future Airport developments depicted in the ALP presented in Chapter Six and Appendix P of this Master Plan. Better protecting the existing and ultimate Airport developments shown on the ALP with appropriate zoning regulations will help ensure that the Airport can appropriately expand and build ultimate improvements when ample funding becomes available. Airport development occurring under the guidance of good zoning regulations will protect aviation interests of the Airport and the use of City incorporated land adjoining the Airport.

### Proposed Aviation Zoning Regulations

Upon review of the current City of Concordia (City) Zoning Regulations, it was discovered that proposed Blosser Municipal Airport (Airport) zoning regulations were never adopted by the City for inclusion in the 2001 City Zoning Regulations (see section titled, *Review of Current Zoning Regulations for Airport* on page 5-10). Those proposed Airport zoning regulations titled, *Article 18 – Airport Overlay District* (Article 18) first drafted in 2001 have been resurrected, updated, and proposed in this Master Plan for public consideration by Concordia citizens and formal adoption by the City.

Over a six (6) month period, the City Planning Commission, City Zoning Administrator, City Zoning Consultant, City Attorney, Airport Advisory Board, and Airport Consultant, Alfred Benesch & Company (Benesch) worked together in getting Article 18 into an appropriate, acceptable, and recommendable format to serve as an Article of Airport zoning rules for addition to the existing body of City Zoning Regulations. Article 18, as proposed for public consideration and City Commission adoption, is attached as Appendix N of this Master Plan.

Important to note is that Article 18 references and utilizes the following drawings contained in the Airport Layout Plan (ALP) of this Master Plan:

- Airport Airspace Drawing: Appendix P, Page 4 of 25
- Airport Existing Land Use Drawing: Appendix P, Page 21 of 25
- Airport Ultimate Land Use Drawing: Appendix P, Page 22 of 25

It is strongly recommended that the land use of City incorporated land adjoining the Airport be routinely and carefully examined by the Airport Advisory Board, City Staff, City Planning Commission, Airport Consultant, and City Commission to help ensure land use of areas adjacent to the Airport property are compatible with the Airport in an effort to achieve a positive coexistence of the Airport and the adjacent land users well into the future.

expressing support or concerns of the Article 18 text amendment are read into the public record. Following the close of the Public Hearing, the City Planning Commission publicly discusses the Article 18 text amendment request and may either continue the matter or publicly vote on the Article 18 request.

4. The City Planning Commission forwards its recommendation concerning Article 18 to the City Commission for its public consideration and action, which can occur as soon as possible with no waiting period following the close of the Public Hearing held by the City Planning Commission. The City Planning Commission recommendation may be for approval, approval with conditions as authorized by City Zoning Regulations, or denial of the Article 18 text amendment. The recommendation of the Planning Commission shall contain a statement as to the nature and effect of Article 18 and Planning Commission reasons for recommending approval or denial of Article 18.
5. If the City Planning Commission recommends approval of Article 18 and the City Commission agrees, by simple majority vote the text amendment is approved, effective upon ordinance publication in the official City newspaper, that being the Concordia Blade-Empire.
6. If the City Commission does not agree with the City Planning Commission recommendation concerning Article 18, that recommendation may be overridden by a two-thirds (2/3) majority vote of the City Commission, or the recommendation may be returned to the City Planning Commission for reconsideration, together with a City Commission statement specifying the basis for the City Commission's decision not to approve or disapprove Article 18. Following its reconsideration of Article 18, the City Planning Commission will return either the same recommendation or a different recommendation to the City Commission. By simple majority vote, the City Commission can then approve, amend, or deny the Article 18 text amendment.
7. Proposed text amendments to the City Zoning Regulations are not subject to protest petition.

### Rezoning of Airport Property

The procedures for gaining Airport Overlay (AO) District zoning classification are no different from that of any other rezoning of property located within the City of Concordia (City) incorporated limits. The City's rules for rezoning are set out in *Article 26 - Amendment Procedures* of the City Zoning Regulations. A copy of Article 26 located in Appendix O of this Master Plan. Summarized, the public process for the proposed AO District rezoning of the Airport property is as follows:

1. Because the City is the lawful owner of the Airport property, the City needs to make application to the City Planning Department for the proposed rezoning. To do that the City Manager completes an application titled, *City of Concordia, Kansas Rezoning Application* (Rezoning Application), requesting AO District zoning, and submits that to the Zoning Administrator in the City Planning Department.
2. The City Zoning Administrator reviews the AO District application using for guidance a document titled, *Zoning and Conditional Use Permit Review Checklist Concordia, Kansas* to make sure the application is lawfully completed.

# AIRPORT LAYOUT PLAN

In Chapter Four, an evaluation was made of future development options for airfield and landside developments at the Blosser Municipal Airport (Airport). That resulted in the selection of alternatives for future Airport developments. The purpose of this Chapter is to describe in graphic and narrative form the recommended developments that will help the Airport meet the planning horizon demand levels. A set of 25 drawings, referred to as the Airport Layout Plan (ALP) depict the Airport development recommendations. These ALP drawings are attached as exhibits in Appendix P of this Master Plan.

ALPs are graphic presentations to scale of existing and proposed airport facilities, their location on the airport and the pertinent dimensional and clearance information to show conformance with all applicable standards.

## PLANNING PROCESS FOR AIRPORT LAYOUT PLAN

During the preparation of the Airport Layout Plan (ALP), a set of development alternatives were created to meet the needs and requirements of the Airport. All alternatives were sent to the Members of the Airport Advisory Board for their review and study before a public Advisory Board meeting. At the March 19, 2009 Advisory Board meeting the alternatives were publicly presented to a quorum of available Members of the Airport Advisory Board in which appropriate public notice was given to said public meeting. The pros and cons of each development alternative were publicly explained and a desired layout of the Airport was determined and voted on by an official quorum of the Airport Advisory Board.

The Airport Advisory Board discussed three (3) alternatives for enhancement of the primary runway. Briefly, the Airside Primary Runway Alternatives are as follows:

- ***Primary Runway Alternative One (P-1)*** utilizes the existing primary Runway 17/35 with it being widened to the east side to a total width of 75 feet. Primary Runway 17/35 would have pavement extensions to the south end and north end to make it an overall length of 4,800 feet. A new paved parallel taxiway would be constructed 240 feet to the west of the existing primary Runway 17/35.
- ***Primary Runway Alternative Two (P-2)*** utilizes the existing primary Runway 17/35 as the paved parallel taxiway. A new primary Runway 18/36 that is 4,800 feet long by 75 feet wide would be constructed 300 feet to the east of the existing primary Runway 17/35. The decommissioned primary Runway 17/35 would be reduced in width from 60 feet down to 35 feet to meet Federal Aviation Administration (FAA) regulations for a parallel taxiway. Parallel taxiway extensions and taxiway connection will be added to the north end and south end of the closed primary Runway 17/35.
- ***Primary Runway Alternative Three (P-3)*** utilizes the existing primary Runway 17/35 as the parallel taxiway. A new primary Runway 18/36 that is 4,800 feet long by 75 feet wide would be constructed 300 feet to the east of the existing primary Runway 17/35. Alternative P-3 varies from Alternative P-2 in that all the new primary Runway 18/36 and parallel taxiway extension is constructed on the south end of the Airport in order to allow for a large Runway Protection Zone (RPZ) on the approach to primary Runway 18 (north end). Again, the decommissioned primary Runway 17/35 would be lengthened and reduced in width from 60 feet down to 35 feet for a parallel taxiway.

It was determined by the Airport Advisory Board that Airside Primary Runway Alternative P-2 as recommended be used for development of the new primary Runway 18/36. However, it is the Airport Advisory Board's ultimate goal to have a primary runway length of 5,000 feet per recommendations concerning Blosser Municipal Airport (Airport) contained in the *Kansas Airport System Plan 2009* (KASP) commissioned by the Kansas Department of Transportation (KDOT), Division of Aviation. Detailed information concerning the KASP is located in Chapter One on page 1-21 though page 1-33 of this Master Plan.

It was discussed that if the Concordia community need for primary Runway 18/36 to be extended to a length of 5,000 feet arose in the future, the Airport Advisory Board and the City of Concordia (City) would have to complete an Airport Master Plan and related Airport Layout Plan (ALP) revisions to justify and show that. Approval of those revisions by the Federal Aviation Administration (FAA) are required.

Three (3) paved alternatives for a crosswind runway were publicly discussed. Briefly, the Airside Crosswind Runway Alternatives are as follows:

- ***Crosswind Runway Alternative One (C-1)*** includes constructing a paved crosswind Runway 13/31 with a length of 4,000 feet and a width of 60 feet. Crosswind Runway 13/31 would replace existing turf crosswind Runway 12/30. Existing turf crosswind Runway 3/21 would be decommissioned and removed.
- ***Crosswind Runway Alternative Two (C-2)*** includes constructing a new paved crosswind Runway 7/25 with a length of 4,000 feet and a width of 60 feet. Existing turf crosswind Runway 12/30 and turf crosswind Runway 3/21 would be decommissioned and removed.
- ***Crosswind Runway Alternative Three (C-3)*** includes constructing a paved crosswind Runway 2/20 with a length of 4,000 feet and a width of 60 feet. Existing turf crosswind Runway 3/21 and turf crosswind Runway 12/30 would be decommissioned and removed.

Upon completion of the public discussion of the crosswind runway alternatives, it was decided by the Airport Advisory Board that it is not currently an option to close or relocate the Cloud County road bordering the east side of the Airport (N. 150th Road) which all three (3) paved crosswind runway alternatives require. Therefore, the Airport Advisory Board determined that Crosswind Runway Alternative C-2 be modified to have a current design of a turf rather than ultimate paved crosswind runway with the runway length shortened to meet the runway length requirements of a 1968 Cessna 180H aircraft.

The Advisory Board was informed that the paved crosswind runway existing orientation of 7/25 might have to be skewed slightly to a runway orientation of 6/24 to fit the runway length requirements and not have to close N. 150th Road. It was also discussed that if the need for a paved crosswind runway arose in the future, the Airport Advisory Board and the City would have to complete a new revised Airport Layout Plan to show that and submit to FAA for consultation and approval. However, now showing a possible paved crosswind runway 4,000 feet long in this Master

Plan and ALP helps the City in now acquiring needed land to secure the Runway Protection Zone (RPZ) of that possible future crosswind runway enhancement. This new turf runway alternative is named Crosswind Runway Alternative Four (C-4) and a design drawing is located in Appendix J on page 9 of 12.

Three (3) alternative landside developments were provided for the Airport Advisory Board to publicly review and comment on. Briefly, the Landside Alternatives are as follows:

- ***Landside Alternative One (L-1)*** shows the minimal expansion possibilities of the Airport if the existing primary Runway 17/35 is not shifted to the east and primary Runway 17/35 is not decommissioned and then utilized as the new parallel taxiway.
- ***Landside Alternative Two (L-2)*** shows the possibilities of Airport expansion if the new primary runway is shifted to the east and the existing primary Runway 17/35 is decommissioned then used as a parallel taxiway for the new primary Runway 18/36. This option allows for the ultimate apron area and landside expansion requirements at the Airport.
- ***Landside Alternative Three (L-3)*** is similar to L-2 in that it meets the future landside requirements for the Airport, but L-2 has a different configuration of apron, tie-down areas and hangars.

The Airport Advisory Board publicly reviewed all three (3) development alternatives and determined that Landside Alternative Two (L-2) would best suit the Airport needs. The Airport Advisory Board did however request that the proposed apron area be moved to the north as to allow a taxilane that extends straight back to the existing T-Hangars.

The ALP establishes the configuration of existing and proposed runways, taxiways and aprons as well as the terminal area, hangars and other landside facilities. Appropriate runway approach and clear zones are incorporated into the ALP to help assist the City in providing required and desirable height restriction zoning regulations to surrounding areas.

Under the current Federal guidelines, an ALP that is now approved by the Federal Aviation Administration (FAA) is a prerequisite to receiving subsequent approval of a Federal Airport Improvement Program (FAIP) development project and related grant funding. The FAA Airports Division Central Region developed a to-do list titled, *FAA Central Region Checklist for Master Plan and Airport Layout Plan* (Checklist) for preparing Master Plan and Airport Layout Plan (ALP) updates. That Checklist provides guidance to the airport designer to make sure the FAA required information is presented in the Master Plan and on the ALP. The Checklist also helps to standardize ALP drawings and reports within the aviation industry. The current Checklist, dated May 2011 was used in preparing this Master Plan and attached ALP drawings.

All public airports are encouraged to keep an up-to-date ALP and to conform to the requirements of the approved ALP. It is good to keep in mind that the aviation industry is constantly changing and expanding and thus airports must remain flexible in all their proposed future developments. An airport owner, in this case City of Concordia (City), may request and receive approval of specific revisions to an already approved ALP from the FAA as the changes are warranted. In summary, the ALP is the primary planning document utilized by State and Federal agencies to

review and approve expenditures for a specific airport, and hence, it is a very important part of this Airport Master Plan report.

The set of ALP drawings includes the following:
- Airport Layout Drawings
- Airport Data Tables
- Airport Airspace Drawing (Federal Aviation Regulation (FAR) Part 77)
- Outer Portion of Runway Approach Surface Drawings
- Runway Line of Sight Profile
- Inner Portion of Runway Approach Surface Drawings
- Terminal Area Drawing
- Land Use Drawings
- Airport Property Map
- Runway Departure Surfaces

The Airport Layout Plan (ALP) set has been prepared using the latest Computer Aided Drafting (CAD) software for future ease of use. The City will be continually able to update the ALP drawings as needed to make sure that the ALP reflects current conditions at the Airport. Upon approval by the Airport Advisory Board, the City of Concordia Commission, and FAA, the ALP becomes the official guidance for future decisions concerning development and funding of airfield and landside improvements.

The remaining portion of this Chapter explains in more detail some of the design standards and requirements that go into each of the ALP drawings.

## DESIGN STANDARDS

According to the current National Plan of Integrated Airport Systems (NPIAS), dated 2009-2013, the Blosser Municipal Airport (Airport) is identified as a General Aviation (GA) Airport and classified as a *Basic Airport*. Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13, *Airport Design*, (through Change 14) outlines recommended design standards for airports. These design standards are based upon the characteristics of the aircraft expected to serve the Airport on a regular basis. FAA developed a coding system used to relate airport design criteria to the operational and physical aircraft characteristics. The FAA Airport Reference Code (ARC) is based upon a combination of the Aircraft Approach Category (AAC) and the Airplane Design Group (ADG). Refer to the *Critical Design Aircraft* section starting on page 2-16 for further explanation of design aircraft, AAC, the ADG and related Airport Reference Codes (ARCs).

FAA Advisory Circulars (ACs) are used to provide general guidance in the overall Airport Master Plan process. The FAA guidance documents are designed to provide flexibility in application to promote safety, efficiency, and economy of the Airport. In order to meet the needs of the Airport, the design standards selected were based upon the categories of aircraft currently using the Airport.

The design standards used for the Airport are applicable to all future developments and summarized in the Runway Data Table on the Airport Layout Plan (ALP), Drawing Number 3 titled *Airport Data Drawing* located in Appendix P of this Master Plan on page 3.

### COVER SHEET AND INDEX OF DRAWINGS (Drawing Number 1)

The *Cover Sheet and Index of Drawings* for the entire set of Drawings contained in the Airport Layout Plan (ALP) is depicted on the ALP Drawing Number 1 located in Appendix P of this Master Plan on Page 1.

### AIRPORT LAYOUT DRAWING (Drawing Number 2)

The *Airport Layout Drawing* that graphically presents the existing and ultimate Blosser Municipal Airport (Airport) improvements associated with both the airfield and landside area is depicted on Airport Layout Plan (ALP) Drawing Number 2 located in Appendix P of this Master Plan on page 2. The improvements associated with landside developments illustrated in more detail and in larger scale on the *Terminal Area Drawing* discussed later in this Chapter on page 6-10. Building facility listings, ground contour elevations, the general orientation of roads, drainage channels, and structures in the immediate Airport vicinity also shown on the *Terminal Area Drawing.*

Existing Runway 17/35 is the primary runway with a length of approximately 3,600 feet and a width of 60 feet. Planned is construction of new primary Runway 18/36 with a location to the east of existing primary Runway 17/35. The new primary Runway 18/36 will be located directly east and parallel to the existing primary Runway 17/35, which will be decommissioned and become the parallel taxiway for new primary runway 18/36. Due to the always changing of the magnetic declination, the new primary runway orientation will be changed to 18/36.

The major primary runway improvements are the construction of the new 4,800 feet long by 75 feet wide primary Runway 18/36, and construction of new connecting and parallel taxiway extensions. The existing primary Runway 17/35, to serve as part of the ultimate parallel taxiway will reduce in width from 60 feet to 35 feet and the pavement strength will increase from 8,000 pounds Single Wheel Gear (SWG) to 30,000 pounds SWG. In order to increase the pavement strength, an asphalt overlay must be constructed on the remaining portion of decommissioned primary Runway 17/35 that is to become the parallel taxiway. The long-term recommendation is that the existing asphalt Runway 17/35 once converted to parallel taxiway is later replaced with new concrete pavement so that all runway and taxiway pavement on the airfield is concrete.

Primary Runway 17/35 currently served by Utility/Non-Precision approaches on both Runway 17 and Runway 35. Ultimately the new primary Runway 18/36 is anticipated to get a *Non-Precision/ Other Than Utility With Greater Than Three-Fourths (¾) Mile Approach Procedure* on the approach to Runway 36 (south end of the new primary runway); and a *Non-Precision/Other Than Utility With Greater Than One (1) Mile Approach Procedure* on the approach to Runway 18 (north end of the new primary Runway 18/36). Ultimately planned for the approach on Runway 36 (south end of the new primary runway) is an approach procedure upgrade to a Global Positioning System – Wide Area Augmented System – Localizer Performance with Vertical Guidance (GPS-WAAS-LPV). In

order to obtain a *Greater Than Three-Fourths (¾) Mile Approach Procedure* with Vertical Guidance – Required Navigational Performance (APV-RNP) it is required that an approach lighting system be installed. Therefore, a required Omni-Directional Approach Lighting System (ODALS) depicted on the approach of Runway 36 (south end of the new primary Runway 18/36).

Before construction, the City of Concordia (City) will need to acquire a significant amount of land for any of the new primary runway improvements. During land acquisition, the City may deem it prudent to go ahead and acquire the additional land needed for the Airport Advisory Board desired ultimate primary runway length of 5,000 feet. Further discussion on land acquisition is under the section in this Chapter titled, *Airport Property Map Drawing* on page 6-15.

The Airport currently has two (2) turf crosswind runways, Runway 12/30, which is 2,263 feet long by 265 feet wide and Runway 3/21, which is 1,628 feet long by 255 feet wide. In the *Blosser Municipal Airport 1997 Airport Master Plan Update* dated January 1997, Runway 3/21 was planned and cited for closure. This Master Plan recommends a new turf crosswind runway planned for a crosswind runway orientation of 6/24 with dimensions of 2,236 feet long by 250 feet wide and closes existing turf crosswind Runway 12/30 and turf crosswind Runway 3/21.

As analyzed in Chapter Three of this Airport Master Plan report, the new primary Runway 18/36 is not recommended, according to design FAA AC 150/5300-13 *Airport Design*, to be a stand-alone primary runway due to the 92.32 percent (92.32%) wind coverage Runway 18/36 provides at a wind speed of 10.5 knots. With the addition of crosswind Runway 6/24 to primary Runway 18/36, the combined wind coverage provides the minimum 95 percent (95%) wind coverage for all wind speed levels (10.5, 13, 16, and 20 knots). Therefore, it was recommended in Chapter Three that a crosswind runway should be planned for the Airport throughout the planning horizon. It is anticipated that crosswind Runway 6/24 will continue to be served with Visual-Utility approaches to both ends (Runway 6 and Runway 24) throughout the forecasting period.

The *Airport Layout Drawing* shows the proposed future development of the Terminal Area. Several new hangar spaces created by a combination of new Executive Hangars and Standard T-Hangars are depicted for construction in the future to help accommodate the future demand of Airport aircraft that require hangar space. In pavement tie-down locations for aircraft are added for local and itinerant pilots that wish to park their aircraft on the apron for a short period of time.

## AIRPORT DATA DRAWING (Drawing Number 3)

The *Airport Data Drawing* presents data associated with Blosser Municipal (Airport) in table and/or graphic format and is depicted on Airport Layout Plan (ALP) Drawing Number 3 located in Appendix P of this Master Plan on page 3. This Drawing shows the detailed data information used to formulate the *Airport Layout Drawing* (Drawing Number 2). This includes all information pertaining to the existing and ultimate configurations of all runways with declared distances and runway end coordinates. The *Airport Data Drawing* also shows the wind rose data for the existing runways and the ultimate runway configuration. The wind data table summarizes the wind analysis by showing what percent of the time the runways shown are usable during different wind speeds.

## AIRPORT AIRSPACE DRAWING (Drawing Number 4)

The *Airport Airspace Drawing* for Blosser Municipal Airport (Airport), based on Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, is depicted on Airport Layout Plan (ALP) Drawing Number 4 located in Appendix P of this Master Plan on page 4. In order to protect airspace and approaches to each runway at the Airport from hazards that would affect the safe and efficient operation of the Airport, the Federal Aviation Administration (FAA) established Federal criteria for use by airport engineers when designing airport improvements. Those criteria are also used by local planning and land use jurisdictions to control the location and height of objects in Airport vicinity.

The *Airport Airspace Drawing* shows all of the two-dimensional land areas that contain three-dimensional imaginary airspace protection surfaces that surround the Airport for up to 10,000 feet in every direction, and provides a holistic look at the affect the Airport airspace protection areas have on the surrounding Concordia community and land located outside the community. The Drawing depicts the two-dimensional land areas of FAA airspace concerns where location of typical three-dimensional aviation hazards required for identification (hazard type, location coordinates, and height) and cited for recommended regulation by FAA. Examples of potential obstructions are trees, buildings, electricity transmission poles and lines, communication towers, wind turbines, or possibly streets.

The *Airport Airspace Drawing* depicts two (2) dimensional land area boundaries in which all the three-dimensional imaginary airspace protection surfaces and areas for each runway are located. These imaginary surfaces emanate from the runway centerline and dimensioned to protect approaching and departing aircraft from the potential hazard of obstructions. The *Airport Airspace Drawing* also indicates obstructions currently located within Airport airspace protection areas defined by the FAR Part 77 imaginary surfaces.

The *Airport Airspace Drawing* permits the City of Concordia (City) to determine readily if construction of a proposed structure in the Airport vicinity will penetrate any of the protected airspace areas and surfaces. A proposed set of Airport zoning regulations that reference and use in tandem the *Airport Airspace Drawing* are prepared and included as Appendix N of this Master Plan as a recommendation of zoning regulations for the City to publicly consider and adopt. Those Airport zoning regulations were publicly reviewed then formally recommended to the Airport Advisory Board for inclusion in this Master Plan at a public meeting of the City Planning Commission conducted on February 23, 2010. The proposed Airport zoning regulations comply and dovetail with the City's Comprehensive Plan and existing City Zoning Regulations.

The *Airport Airspace Drawing* depicts the critical protection areas and surfaces for ultimate non-precision instrument approaches to primary Runway 18 and primary Runway 36, and visual-utility approaches to crosswind Runway 6 and crosswind Runway 24. The FAR Part 77 imaginary airspace protection surfaces include primary surface, approach surface, transitional surface, horizontal surface, and conical surface. FAR Part 77 surfaces were formulated then drawn in plain view to illustrate the ultimate runway configurations for the Airport. FAR Part 77 imaginary surfaces and respective Drawings are described in the following paragraphs.

### PRIMARY SURFACE

The Primary Surface is an imaginary surface longitudinally centered on the runway. The Primary Surface extends 200 feet beyond each runway end (for runways with hard prepared surfaces or runways planned to ultimately have a hard prepared surface) and stops at the physical end of each turf runway (or runway without a hard prepared surface). The width of the Primary Surface determined by the type of approach procedure established for a particular runway approach end (such as visual, non-precision, precision). The elevation of any point on the Primary Surface is the same as the elevation of the nearest point on the runway centerline. For the ultimate planned non-precision (greater than three fourths (¾) mile and one (1) mile) approach procedures to primary Runway 18/36, the Primary Surface is 500 feet wide. For ultimate visual-utility approach procedures for crosswind Runway 6/24, the Primary Surface is 250 feet wide.

Centered on the runways, the Primary Surface must remain clear of unnecessary objects in order to allow unobstructed passage of aircraft. Within the Primary Surface, no objects are permitted above the ground except for those objects whose location is "fixed by function." Frangible navigational aids such as Precision Approach Path Indicators (PAPIs) or Runway End Identifier Lights (REILs) are examples of such objects within the "fixed by function" category.

### APPROACH SURFACE

The Approach Surface, for each runway, begins at the end of the Primary Surface previously discussed. The Approach Surface has the same width of 500 feet as the Primary Surface and extends upward and outward from the Primary Surface centered along an extended runway centerline. The upward slope and length of the Approach Surface is determined by the type of approach procedure (existing and/or planned) to the runway end. For ultimate primary Runway 18 and primary Runway 36, a 34:1 non-precision Approach Surface depicted. For existing primary Runway 17 and primary Runway 35 along with ultimate crosswind Runway 6 and crosswind Runway 24, a 20:1 visual-utility Approach Surface depicted.

For each runway approach, profiles were drawn along the centerline of the extended runway for the entire length of each of the Approach Surfaces (10,000 feet for non-precision primary Runway 18/36 and 5,000 feet for visual-utility crosswind Runway 6/24). On Airport Layout Plans (ALPs), Approach Surface profiles are broken out into outer and inner portions. Inner portions of Approach surfaces extend from the end of the primary surface to a point 100 feet above the runway end elevation along the corresponding approach slope. For example, a 34:1 non-precision approach slope out to 100 feet above the runway end would extend 3,400 feet. The remaining portion of the Approach Surface defines the outer portion of the Approach Surface. For example, a non-precision runway with 10,000 feet total approach slope, minus 3,400 feet of inner portion has a 5,600 feet outer portion. Significant objects with proximity to the Approach Surfaces are depicted on the inner and outer approach profiles.

### TRANSITIONAL SURFACE

Each runway approach end has a Transitional Surface which extends outward and upward at right angles to the runway centerline at a slope of 7:1 from the sides of the Primary Surface and from the sides of the Approach Surface. The Transitional Surface extends upward until it meets the Horizontal Surface, when at that point the Transitional Surface is replaced by the Horizontal Surface.

### HORIZONTAL SURFACE

The Horizontal Surface is an imaginary surface established at 150 feet above the highest runway elevation of all the runway surfaces on an airport. For example, with two ultimate runways at Blosser Municipal Airport (Airport), primary Runway 18/36 and crosswind Runway 6/24, the Horizontal Surface is 150 above the highest point on either runway. Having no slope, the Horizontal Surface connects the Transitional and Approach surfaces to the Conical Surface at a distance of 5,000 or 10,000 feet (again depending on the type of runway) from the Primary Surfaces of each runway. The highest proposed runway elevation at Blosser Municipal Airport (Airport) is 1,494.47 feet above Mean Sea Level (MSL) and located on the approach end of ultimate Runway 36. Therefore, the proposed Horizontal Surface elevation for the Airport is located at an elevation of 1,644.47 feet above MSL. Analysis of existing terrain data indicates that there are obstructions to the Horizontal Surface of the Airport. Obstructions and methods of correction established in the Airport Layout Plan (ALP).

### CONICAL SURFACE

The Conical Surface begins at the outer perimeter of the Horizontal Surface. The Conical Surface extends outward and upward from the Horizontal Surface at a slope of 20:1. Therefore, at 4,000 feet from the outer perimeter of the horizontal surface, the elevation of the Conical Surface is 350 feet above the highest of all runway elevations at Blosser Municipal Airport (Airport). For example, with two ultimate runways, primary Runway 18/36 and crosswind Runway 6/24, the Conical Surface elevation is 350 above the highest point on either runway. The highest proposed runway elevation at the Airport is 1,494.47 feet above Mean Sea Level (MSL) and located on the approach end of ultimate Runway 36. Therefore, the proposed Conical Surface elevation for the Airport is located at an elevation of 1,844.47 feet above MSL.

## OUTER PORTION OF RUNWAY APPROACH SURFACE DRAWING (Drawings Number 5, 6 & 7)

The *Outer Portion of Runway Approach Surface Drawing* (plan view and profile view) for each existing and proposed runway approach at Blosser Municipal Airport (Airport) are depicted on Airport Layout Plan (ALP) Drawings Number 5 through 7 located in Appendix P of this Master Plan on pages 5 through 7. While the *Airport Airspace Drawing* (Drawing 4) shows the Airport as a whole, these Drawings show the impacts on each runway approach separately based upon the approach protection surfaces for each runway as described above. The approach surfaces only extend out one (1) mile from the Airport, and show potential obstructions on a smaller scale that are located very close to the Airport. Examples of potential obstructions are trees, buildings, electricity transmission poles and lines, communication towers, or possibly streets.

## RUNWAY LINE OF SIGHT PROFILE DRAWING (Drawings Number 8 & 9)

The *Runway Line of Site Profile Drawing* (plan view and profile view) for each existing and proposed runway at Blosser Municipal Airport (Airport) are depicted on Airport Layout Drawings (ALP) Drawings Number 8 and 9 located in Appendix P of this Master Plan on pages 8 and 9. These Drawings show the existing runways and design of future runways and whether there are any issues with sight distances on the runways due to the curvature of the runway surface. When a pilot is landing or taking off, it is required that they are able to see the entire runway at all times. This becomes an issue when a vertical crest curve is constructed on a runway to match the surrounding terrain. As an example, think of a highway when a vehicle is approaching the top of a hill and the driver can only see a limited distance ahead. Airport engineers avoid that inappropriate site line when formulating a runway design. As depicted on these Drawings, all proposed runways at the Airport meet Federal Aviation Administration (FAA) *Runway Line of Site Profile* requirements.

## INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING (Drawings Number 10 through 19)

The *Inner Portion of Runway Approach Surface Drawing* (plan view and profile view) for each existing and proposed runway approach at Blosser Municipal Airport (Airport) are depicted on Airport Layout Plan (ALP) Drawings Number 10 through 19 located in Appendix P of this Master Plan on pages 10 through 19. An obstruction table is included on each Drawing. These Drawings provide a larger scale representation of each primary and crosswind runway, with topographic contours, to assist with identification of potential encroachments on Runway Safety Areas (RSAs), Object Free Areas (OFAs), Approach Slopes (ASs), and Runway Protection Zones (RPZs).

## TERMINAL AREA DRAWING (Drawing Number 20)

The *Terminal Area Drawing* for Blosser Municipal Airport (Airport) depicted on Airport Layout Plan (ALP) Drawing Number 20 is located in Appendix P of this Master Plan on page 20. This Drawing is a large scale drawing of the future landside area and terminal area. Several items are shown more clearly than possible on the *Airport Layout Drawing* depicted on ALP Drawing Number 2. Proposed changes shown on the Drawing include the new Standard T-Hangars and Executive Hangars with associated access taxilane, new tie-down locations for aircraft of various sizes and a new apron expansion with enhanced connecting taxiway.

## AIRPORT EXISTING LAND USE DRAWING and AIRPORT ULTIMATE LAND USE DRAWING (Drawings Number 21 & 22)

The *Airport Existing Land Use Drawing* and related zoning districts within the Blosser Municipal Airport (Airport) property boundaries depicted in Airport Layout Plan (ALP) Drawing Number 21 located in Appendix P of this Master Plan on page 21. Currently, the entire Airport property is zoned Light Industrial (I-1) District and has only aviation and agricultural land uses.

The *Airport Ultimate Land Use Drawing* and related zoning districts within the Airport property boundaries and with proximity to the Airport depicted by ALP Drawing Number 22 located in Appendix P of this Master Plan on page 22. The primary objective of the Airport land use plan and proposed zoning districts is to prevent any future condition caused by land use and related activities that could detract from the City of Concordia's (City's) aviation mission or planned development at the Airport. This includes such considerations as provision of space for Airport facility expansion and the prevention of visual barriers, radio disturbance, and other safety hazards related to aviation uses at the Airport. Secondary objectives of the *Airport Ultimate Land Use Drawing* relate to considerations of the non-airfield, revenue-producing capabilities of the Airport property and tertiary objectives involving the considerations of positive impact on economic development of the entire Concordia community and surrounding rural area.

As with existing land use at the Airport, the ultimate planned land use on Airport property is predominately for aviation purposes. The aviation use category includes runways, taxiways, aprons, aircraft hangars, maintenance and storage buildings, administrative offices, and other facilities related to aircraft and aviation operations at the Airport.

To generate new revenue for the Airport, facilitate prudent community growth, and help foster economic development and quality job creation in Concordia and surrounding rural areas, the major changes to the existing land use and related zoning on Airport property and adjacent land due to the future developments forecasted in the next 20 years are depicted on the *Airport Ultimate Land Use Drawing* are as follows:

- ***Airport North Development*** is conversion of Airport property located to the northwest of new primary Runway 18/36 to commercial and industrial areas. Proposed General Commercial (C-3) District and Light Industrial (I-1) District shown on the northwest area of the Airport for possible commercial and industrial development due to that Airport land location having possible primary runway connectivity, good visibility and access to the 22nd Street, Blosser Drive and U.S. Highway 81 Expressway. Any non-aviation use of this property requires the prior written permission of the *Beldon M. Blosser Trust Number One* through September 30, 2032.
- ***Airport East Development*** is conversion of Airport property located to the east of new primary Runway 18/36 to an industrial area. Proposed Light Industrial (I-1) District shown on the east side of the Airport includes property for possible industrial development of Airport property due to that land location having possible primary runway connectivity with good visibility and access to N. 150th Road. Any non-aviation use of this property requires the prior written permission of the *Beldon M. Blosser Trust Number One* through September 30, 2032.

- ***Cemetery Development*** is conversion of a portion of City land located outside the current Airport property boundary and southeast of new primary Runway 18/36 to a City public use area. That proposed Public Use (P) District for development of a new City cemetery. On August 8, 2011, the City purchased this property fee-for-title from Lynn and Patricia Mosher. A portion of that property purchase planned for facilitating aviation development needs at the Airport with the remaining portion used to develop a new cemetery for the Concordia community.
- ***Airport South Development*** is conversion of a portion of City land located outside the current Airport property boundary and southwest of new primary Runway 18/36 to a commercial use area. That proposed General Commercial (C-3) District planned for general commercial development because the area has possible primary runway connectivity with good visibility and access to Plum Road and the U.S. Highway 81 Expressway. On August 8, 2011, the City purchased this property fee-for-title from Lynn and Patricia Mosher. A portion of that property purchase is for facilitating future aviation development needs at the Airport with the remaining portion planned for commercial development.
- ***Airport Park Development*** is conversion of the east portion of City land called Airport Park located west central and adjacent of Airport property from Public Use (P) District to General Commercial (C-3) District for general commercial development because that area has possible primary runway connectivity and good visibility and access to Blosser Drive and the U.S. Highway 81 Expressway. That area owned fee-for-title by the City but permission is needed from the previous landowner, Board of Cloud County Commissioners to use the property for a function other than a public park.

It is proposed that the City retain ownership of all Airport property but consider leasing Airport property specified above to commercial and/or industrial prospects for business development that requires the aviation resources of the Airport. It is again important to note, any non-aviation use of certain Airport property requires the prior written permission of the *Beldon M. Blosser Trust Number One* through September 30, 2032.

During implementation of this Airport Master Plan, there will also be conversion of Airport existing aviation operation areas to agricultural land, pasture, or areas for commercial and industrial development, and vice versa, due to changing Airport land needs caused by the future runway developments, changing of runways to taxiways, landside upgrades, etc.

With permitted agricultural production activities on Airport property, important to note is that no agricultural activities allowed within the Runway Visibility Zone (RVZ). Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5200-33B *Hazardous Wildlife Attractants on or Near Airports*, recommends no agricultural activities permitted within the RVZ. Since the terrain within the RVZ is level with the runway ends, farm machinery or crops may interfere with a pilot's line-of-sight in the RVZ. All other agriculture designated areas on Airport property permit growing of crops. However, crops that attract birds in sufficient quantity should not be produced on any of the Airport property.

Crops should not be produced closer than shown on the *Airport Ultimate Land Use Drawing* per the crop restriction limits as determined in accordance with FAA AC 150/5300 *Airport Design-13*, Change 10, Appendix 17. The space between crop production areas and runways and taxiways should be in turf and regularly mowed and maintained.

If at any time the costs of crop production exceed the revenues generated by the crops for a sustained period, the recommended alternate land use is unimproved open space maintained to prevent erosion and height or visual obstructions.

There are currently three (3) small water bodies with location adjacent or near the Airport property:

- ***Airport Pond*** is a City of Concordia (City) owned public recreation and flood control area located on the west central side of the Airport property and adjacent to the Airport. Airport Pond constructed in the late 1920s before the Airport developed in this area. The community dedicated the Airport, then named *Blosser Field*, on May 24th and 25th, 1930. Airport Pond serves the community as a small recreation and fishing area. Fourteen (14) concrete parking pads with utility hookups for Recreational Vehicles (RVs) are located on the east side of Airport Pond. Adjacent to the Recreational Vehicle (RV) parking are camping areas. A small City park, shelter house, and playground area are also located on the east side of Airport Pond. In 2010, the City enhanced the shelter house area with installation of new retaining walls. Preliminary landscape engineering in this area plans for Airport Pond to have a walking path with lighting around the entire Airport Pond basin.

  In 1998, the City temporarily drained Airport Pond to help facilitate the expansion of U.S. 81 Highway from a two (2) lane highway to a four (4) lane expressway. The City worked closely with Kansas Department of Transportation (KDOT), Kansas Department of Wildlife & Parks (KDWP), and the United States Department of Agricultural Natural Resources Conservation Service (USDA NRCS) to get Airport Pond in a temporary state to facilitate said highway construction. That work made the basin of Airport Pond smaller. Replacement of the Airport Pond dam and related area enhancements stalled to date for public funding reasons.

- ***Blosser Pond*** is a very small and private water body located on the private residential property of Marilyn Blosser. Blosser Pond is a private area and does not serve as a public recreation or flood control area.

- ***Shady Lake*** is a City owned flood control area and public recreation area located just northwest of the Airport on the west side of the U.S. 81 Expressway. The Shady Lake flood control area first developed in 1912. Before that development, merchants and residents along Broadway Street kept piles of sand bags on hand to barricade against floodwaters whenever a three (3) to five (5) inch cloudburst came. May 8, 1950, the flood control dam failed as the result of a 4.67 inch rain. Water was approximately 40 feet deep in the Shady Lake area and reached within two (2) feet of the top of the dam before the flood control structure failed. Floodwaters roaring down Broadway Street caused heavy damage to business and residential sections of Concordia and entire sections of Broadway Street lifted and washed away.

The City drained Shady Lake in 2004 to accommodate sediment removal and reconstruction of the 20th Street Flood Control Structure that protects portions of Concordia from regular flooding during periods of heavy rainfall. In 1996, the City received a memo from USDA NCRS informing the City that the dilapidated 20th Street Flood Control Structure now deemed a "high hazard structure" due to the proximity of dwellings located immediately downstream and recommended rehabilitation or relocation of the dam. In January 2006, a study conducted by the United States Army Corps of Engineers (Corps), Kansas City District titled, *Flood Risk From The 20th Street Embankment* found a dangerous potential for loss of life and extreme property damage associated with a repeat of the 1950 dam failure and documented said finding with a *Corps Hydrology and Hydraulics Analysis.*

In 2012, the City continues to work the issue by soliciting engineering solutions and identifying affordable funding sources for the estimated $1.8 million problem. A sidewalk is located on the east side of Shady Lake. Community plans are to landscape the entire area, install a gazebo, and have a sidewalk with lighting constructed around the whole Shady Lake area near the basin's edge.

FAA AC 150/5200-33B recommends specifically two (2) distances from airports that wildlife attractants such as ponds, hazard separation, landfills, etc. considered a hazard to air navigation without further investigation. Those distances are: within 5,000 feet from airports serving piston-powered aircraft exclusively; and within 10,000 feet from airports serving turbine powered aircraft. Wildlife attractants between 10,000 feet and five (5) miles from an airport are an FAA concern and proposed sites need to be considered for hazard potential.

The City is willing to make a good faith effort that no new water body development will occur in areas near the Airport where FAA regulations prohibit said development. However, the City does desire to keep and enhance *Airport Pond* and *Shady Lake* for the general public good of, primarily, flood control, and, secondarily, local recreation and community aesthetics. Both *Airport Pond* and *Shady Lake* were in place when the *Department of Commerce Civil Aeronautics Administration* on February 24, 1948 approved the very first Federal Funds for Airport development (Project Number: 9-14-007-701) because of a grant application submitted by the City dated December 22, 1947.

The City must complete substantial land acquisition before construction can begin of the major airside developments at the Airport. Much of the needed land surrounding the Airport currently owned and used by local farmers as pasture and farmland. Once the City acquires needed land for the future Airport developments, some of that acquired land could remain as pasture and farmland and possibly leased out by the City to local farmers and/or ranchers. The City could also ultimately make grassland of all acquired property needed for Airport expansion that is surplus after ultimate Airport development. The City must own Airport land fee-for-title in order to control the construction of structures that could result in navigational obstructions or hazards in the protected airspace of the Airport.

## AIRPORT PROPERTY MAP DRAWING (Drawing Number 23)

Airport Layout Plan (ALP) Drawing Number 23 located in Appendix P of this Master Plan on page 23 depicts the current *Airport Property Map Drawing* of Blosser Municipal Airport (Airport) and a history of how the land parcels acquired (fee-for-title or easement) for the Airport.

The Federal Aviation Administration (FAA) recommends that the City of Concordia (City) owns land, in fee-for-title, out to the 35-foot Building Restriction Line (BRL) for each runway located at the Airport. In addition to the Airport land currently owned by the City, land shown for acquisition by the City, in fee-for-title, to protect the runways out to the 35-foot BRL.

The most crucial land acquisition currently needed by the City for the Airport is the land required for the new runway improvements. The City may deem it prudent to go ahead and acquire ample additional land to support the ultimate goal of the Airport Advisory Board to have a primary runway length of 5,000 feet. The City and Airport Advisory Board understands that the Federal Aviation Administration (FAA) will not currently cost share in additional land acquisition for the Airport not justified by a currently approved Airport Master Plan and Airport Layout Plan (ALP). This Master Plan justifies a primary runway length of 4,800 feet. Therefore, the cost of more land needed to construct an additional 200 feet of length on the proposed primary Runway 18/35 must be 100% covered by the City. If a future update of the Airport Master Plan and ALP justifies a primary runway length of 5,000 feet, FAA will reimburse the City for the past land acquisition per the cost share formula in use at that time by the Federal Airport Improvement Program (FAIP).

All new land acquired by the City per the *Airport Property Map Drawing* should be acquired fee-for-title. The City should then consider leasing surplus Airport property with individuals and businesses for their use as pasture, farmland, commercial or industrial development. City ownership with adherence to FAA regulations would eliminate the possibility of obstructions constructed in the protected airspace of the Airport.

## RUNWAY TERMINAL INSTRUMENT PROCEDURES (TERPS) 40:1 DEPARTURE SURFACE DRAWING (Drawings Number 24 & 25)

The *Runway Terminal Instrument Procedures (TERPS) 40:1 Departure Surface Drawing* for the proposed new primary Runway 18/36 at Blosser Municipal Airport (Airport) depicted on Airport Layout Plan (ALP) Drawings Number 24 and 25 located in Appendix P of this Master Plan on pages 24 and 25. Those drawings depict the departure surfaces of the ultimate primary Runway 18/36 configuration.

A Terminal Instrument Procedures (TERPS) Drawing is not required for the proposed new crosswind Runway 6/24 because a TERPS Drawing is required only for runways (typically paved runways) with existing or future instrument approach/departure procedures. The Federal Aviation Administration (FAA) does not typically write instrument procedures for turf runways and concentrates mainly on paved runways. It is currently not envisioned the crosswind turf runway at the Airport ever having or needing instrument approach or departure procedures. Most pilots using a turf runway are comfortable with utilizing only visual approaches. However, if sometime in the

future the City of Concordia (City) and/or Airport Advisory Board desires paving crosswind Runway 6/24 and FAA finds it justified based on a design aircraft, then an updated ALP with TERPS Drawing showing the paved runway length of crosswind Runway 6/24 would be required at that time.

The 40 to 1 (40:1) Departure Surface starts at each end of the primary runway and extends outward and upward at a rate of 40 feet horizontally to one (1) foot vertically. That TERPS Departure Surface extends out a distance of 22.09 nautical miles (25.42 statute miles) from the runway end within an arc of 180-degrees centered along the runway centerline.

Airspace protection and obstacle clearance are vital to airport and aircraft operations. TERPS prescribe standardized methods are used in designing instrument flight procedures. TERPS help ensure the safety of aircraft during approaches and departures. Airport area restriction boundaries establishing maximum heights of buildings, antennas, trees and other objects within the prescribed area is depicted as the TERPS surface. Airport engineers also use the TERPS Departure Surface for airport obstruction analysis to help protect airspace at an airport.

Anytime an airport is planning for an ultimate instrument departure procedure off the end of a runway, the FAA requires that airport to submit a TERPS 40:1 Departure Surface Drawing. That Drawing aids in locating the Departure End of Runway (DER), as defined in TERPS, in order for departing aircraft to avoid airspace obstructions. Obstructions to the TERPS Departure Surface will likely result in a determination of a presumed hazard by the FAA. However, objects that penetrate the 40:1 departure surface may not necessarily require removal or relocation, but the object penetrations may affect FAA required departure minimums, climb gradients, and/or departure procedures. FAA may publicly record those object penetrations for public access by pilots and others. It is not a favorable outcome for the City, Airport, and Concordia community if the FAA, pilots and others with aviation interest discover object penetrations to the TERPS Departure Surface.