APPENDIX I - GENERAL AVIATION & OTHER USES

While commercial service operations can easily be defined under *14 CFR Part 121, Air Carrier Certification*, general aviation covers a much broader portion of the aviation community. General Aviation (GA) covers everything but commercial service and military activity. For the purpose of this appendix we will cover both General Aviation, Air Cargo and Military activity. General aviation can include aerial application, medical, instructional, business, corporate, or personal aviation activity. These types of aeronautical activity serve the public in a capacity that may be less noticeable to the average citizen. Providing access for general aviation users can prove to be a vital asset to the communities the airport serves. This section contains information on general aviation as it pertains to the Minot International Airport (MOT), a commercial service facility.

General Aviation Terminal

Background: The general aviation terminal provides access to the airfield for airport users. This can be a separate building or within the Fixed-Base Operator (FBO) facility, and is usually separate from the commercial service terminal area. When an airport has multiple FBOs, each one typically provides a general aviation terminal facility. Amenities typically found in a general aviation terminal building include a waiting area, pilot's lounge, restrooms, sleeping quarters, conference rooms, weather briefing capabilities and vending machines.

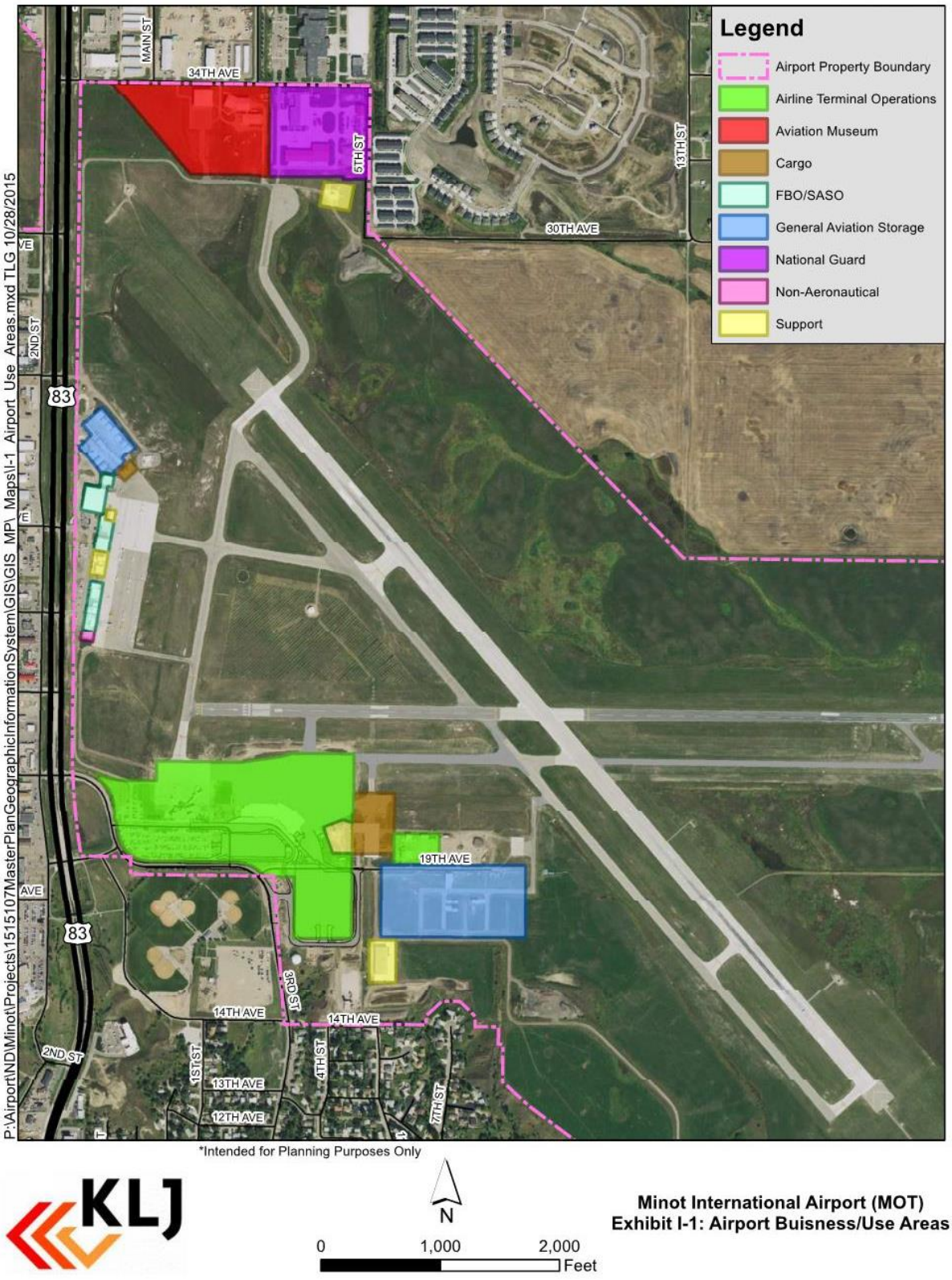
At MOT the privately-owned and operated FBO serves as the terminal point for GA users. Public-use terminal facilities are addressed below.

Existing: The FBO terminal provides approximately 14,000 square feet of space for pilots and passengers. Amenities found at the GA terminal at MOT include a pilot's lounge, vending machines, restrooms, flight planning/weather briefing area, passenger waiting lounge, conference room and crew rest area.

Future & Ultimate: No substantive improvements or changes were identified through the master plan study. The size of the area and location of the facilities is expected to be sufficient through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

A map showing the location of the different users at the airport is shown in **Exhibit I-1 Airport Business/Use Areas**. A map showing the detail of operators in the General Aviation Area is shown in **Exhibit I-2 - Fixed Base Operators (FBOs) and Specialized Aviation Service Operators (SASOs)**.

Exhibit I-1 Airport Business/Use Areas



Minot International Airport (MOT)
Exhibit I-1: Airport Buisness/Use Areas

FBOs and SASOs

Background: Fixed-Base Operators (FBOs) and Specialized Aviation Service Operators (SASOs) serve the flying public with various aeronautical services. They tend to be private companies that lease land from the airport and are suited to serve itinerant traffic but also serve based customers. The aeronautical services FBOs provide typically include fuel sales, pilot facilities, flight line services, aircraft storage and sometimes services such as maintenance, flight instruction, aircraft rental, or charter services.

SASOs may provide a variety of specialized aeronautical services for aircraft and pilots. Services provided by SASOs typically excludes full service fueling and flight line services which is a type of service provided only by FBOs. SASOs provide a specialty aeronautical service or focus (e.g., aircraft maintenance, skydiving, avionics, aerial photography, flight instruction, etc.).

Table I-1 – FBOs and SASOs

Operator	Hangars/ Storage	Fuel	Maint.	Other Services
Minot Aero Center	Y	Y	Y	Ground Handling
Pietsch Aircraft & Restoration			Y	Aircraft Restoration
Pioneer Agviation				Aerial Applicator
Don Bessette Aviation Inc				Aircraft Sales
Aviation Services Inc.				Aerial Applicator

Source: Minot International Airport

Existing: For MOT there is one FBO, which is Minot Aero Center, and a variety of SASOs that operate. All of these operators are listed in **Table I-1**. Each of the operators at MOT are located in the west GA area with most of these also having direct access to the GA aircraft parking apron.

Future & Ultimate: Areas were identified through the master plan study where FBO's and SASOs can exist and continue to expand. These include areas in the west, east, and south which is expected to be sufficient space through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

Exhibit I-2 Fixed Base Operators and Specialized Aviation Service Operators

Customs and Border Protection (CBP)

Background: The U.S. Customs and Border Protection (CBP) component of the Department of Homeland Security is typically referred to as "Customs." Customs provides Flight Inspection Services at international commercial airports as well as designated general aviation airports. At larger commercial airports, Customs is typically located within the airline terminal building. However, smaller commercial service airports or designated general aviation airports may locate a customs facility in or near the general aviation terminal building or FBO facility. Having Customs on the airfield can attract international business and can be an effective tool in economic development for the surrounding communities. By having Customs near the general aviation facilities, international flights can avoid the congestion of the passenger terminal and get in and out of the airport without interrupting the normal operations of air carrier traffic.

According to U.S. Air Commerce Regulations (19 CFR Part 112, Subpart B) there are three classifications of airports that handle international passengers/cargo. These are "International" airports, "Landing Rights" airports, and "User Fee" airports. The airports in the area allowed to handle international passengers are listed in **Table I-3**.

- **International**: Permission to land is not required but estimated arrival time must be provided to CBP. These are known as "Airport of Entry" facilities.
- **Landing Rights**: Specific permission to land is required in addition to providing estimated arrival time to CBP.
- **User Fee**: Does not meet Congressional Criteria for a CBP Port of Entry; the cost of CBP services are paid for by the community/users rather than the federal government.

Regardless of the type of designation there are also three categories of CBP facility. The highest is the Federal Inspection Service (FIS) which is staffed at a minimum with 12 to 14 Federal employees, the second is the General Aviation facility with a minimum of two to four Federal employees. The third type is the User Fee facility which can function for general aviation or passenger airlines depending on location and configuration. The User Fee facility is staffed by Federal employees, but the cost of the service is paid by the airport, local government, and/or users.

Table I-2 – International Airport Categorization in the Region

Airport	City	State	Federally Designated		User Fee
			Int'l	Landing Rights	
Minot Int'l	**Minot**	**ND**	**X**		
Sloulin Field Int'l	Williston	ND	X		
Grand Forks Int'l	Grand Forks	ND	X		
Hector Int'l	Fargo	ND	X		
Pembina Municipal	Pembina	ND	X		
International Peace Garden	Dunseith	ND		X	

Source: CBP

Existing: MOT currently is a federally designated international airport with a Customs and Border Protection facility in the General Aviation terminal. The current facility is classified as a general aviation facility (GAF). It has approximately 2,800 square feet of space for passenger processing, inspection and staff offices. Persons arriving by air from an international origination point may land directly at MOT.

There are aircraft flying domestically to and from Alaska to the lower 48 contiguous states and for those aircraft, MOT is one of the first and last options to stop for fuel and remain a domestic flight while flying over Canada.

Future & Ultimate: No substantive improvements or changes were identified through the master plan study. The size of the area and location of the facilities is expected to be sufficient through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

Cargo Facilities

Background: Cargo operations are unique. Many cargo operations have larger aircraft that fly to an airport within a region, transfer packages to smaller aircraft, and those smaller aircraft then fly to smaller outlying communities. Smaller operations normally consist of smaller aircraft flying into the airport and transferring packages to and from trucks on the apron. Larger operations have dedicated apron space and cargo processing building. Cargo operations occur during various times of the day, but typically occur rather quickly and all at once. The operations may occur out on the apron or through a building.

Existing: MOT is currently served by air cargo contract carriers from UPS (Encore Air Cargo) and FedEx (Corporate Air, Mountain Air Cargo). The aircraft serving MOT are feeder flights from regional hubs currently located in Sioux Falls, SD (UPS) and Grand Forks, ND (FedEx). Other cargo carriers are used to haul contract freight and bank checks (Pro Air Cargo). FedEx and UPS feeder flights each operate on a daily basis. On average, there are three landings per day in cargo aircraft. FedEx feeder aircraft is the ATR-42 twin turboprop (37,258 lbs.). UPS feeder aircraft include Fairchild Metroliner III (16,000 lbs.), and Cessna 404/402 twin engine aircraft (8,400 lbs.).

FedEx has a complex located to the east of the terminal dedicated for air cargo. With a recent addition, there is 43,000 square feet of cargo processing space. A small 3,100 square yards aircraft apron serves for aircraft loading and unloading for up to two (2) feeder aircraft at one time. UPS contracts with ICS to load and unload cargo in the area of the GA Terminal. There are no dedicated buildings UPS's cargo processing. See **Exhibit I-1 Airport Business/Use Areas** for both Cargo areas.

Future and Ultimate: Areas were identified through the master plan study where cargo can exist and continue to expand. These include areas in the south and east which is expected to be sufficient space through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

Aircraft Parking Aprons

Background: General aviation apron space can be utilized by either transient or based aircraft for aircraft parking and/or overnight storage. When apron space is located in front of an FBO, typically there will be a small tie-down charge for overnight storage. However, at smaller airports with no FBO, overnight storage can sometimes be free. Apron space can also be used by an FBO to shuffle aircraft in and out of hangar storage.

Typically, aircraft apron storage is a function of the airport geographic location. In the winter months, if the airport is located in the northern regions of the country, most apron aircraft storage will be transient aircraft. Due to harsh weather conditions that can be present in colder weather climates, most based aircraft have enclosed hangar space for their aircraft. This can also be true for any other type of severe weather climate. In extremely hot conditions, there may be less of a demand for apron space because based aircraft owners have a desire to store their aircraft in hangars for the shade in

summer months. As a result, apron sizes may be smaller and utilized more frequently by transient aircraft.

Also, during adverse weather conditions, some commercial service airports utilize general aviation apron space for diverted commercial service aircraft. However, this is only possible if the airport has a runway capable of supporting such large aircraft.

Apron size requirements are typically driven by the most demanding aircraft (wingspan clearances) to utilize the space, as well as a function of how many aircraft will occupy the tie-down spots at any given time.

Existing: There is one general aviation apron area at MOT located on the west end of the airport. This apron is approximately 57,000 square yards and runs parallel to Taxiway B (Taxiway B was constructed as Runway 1-19 and used as a runway until sometime in the 1960's). The apron is 350 feet deep and approximately 1,300 feet long and is depicted on **Exhibit I-3 General Aviation Apron Areas**. The apron has a mix of asphalt and concrete pavement surfaces. Additional information regarding the pavements at the airport including the aprons can be found in **Appendix G - Airfield Pavements**.

On the GA apron there are tie-downs for aircraft in the area south of the entrance to Taxiway C3. There are 54 tie-downs in three rows facing west configured for Airport Design Group (ADG) I aircraft (wingspan not greater than 49 feet). There is also a designated helicopter landing area located in the west-central portion of the apron. In between aircraft parking spaces there are unmarked taxilanes for maneuvering of up to ADG-I aircraft. There are no designated tie-downs for larger aircraft, however large aircraft typically park utilizing multiple tie-down locations. As a result, the required Taxilane Object Free Area requirements are not met. There are no Object Free Area pavement markings.

The airport allows aircraft to park on the apron at no cost unless parked longer than 15 days in any month. For those staying more than 15 days a month the aircraft owner pays $2/night. Due to this pricing policy, a substantial number of tie-downs are used by based aircraft.

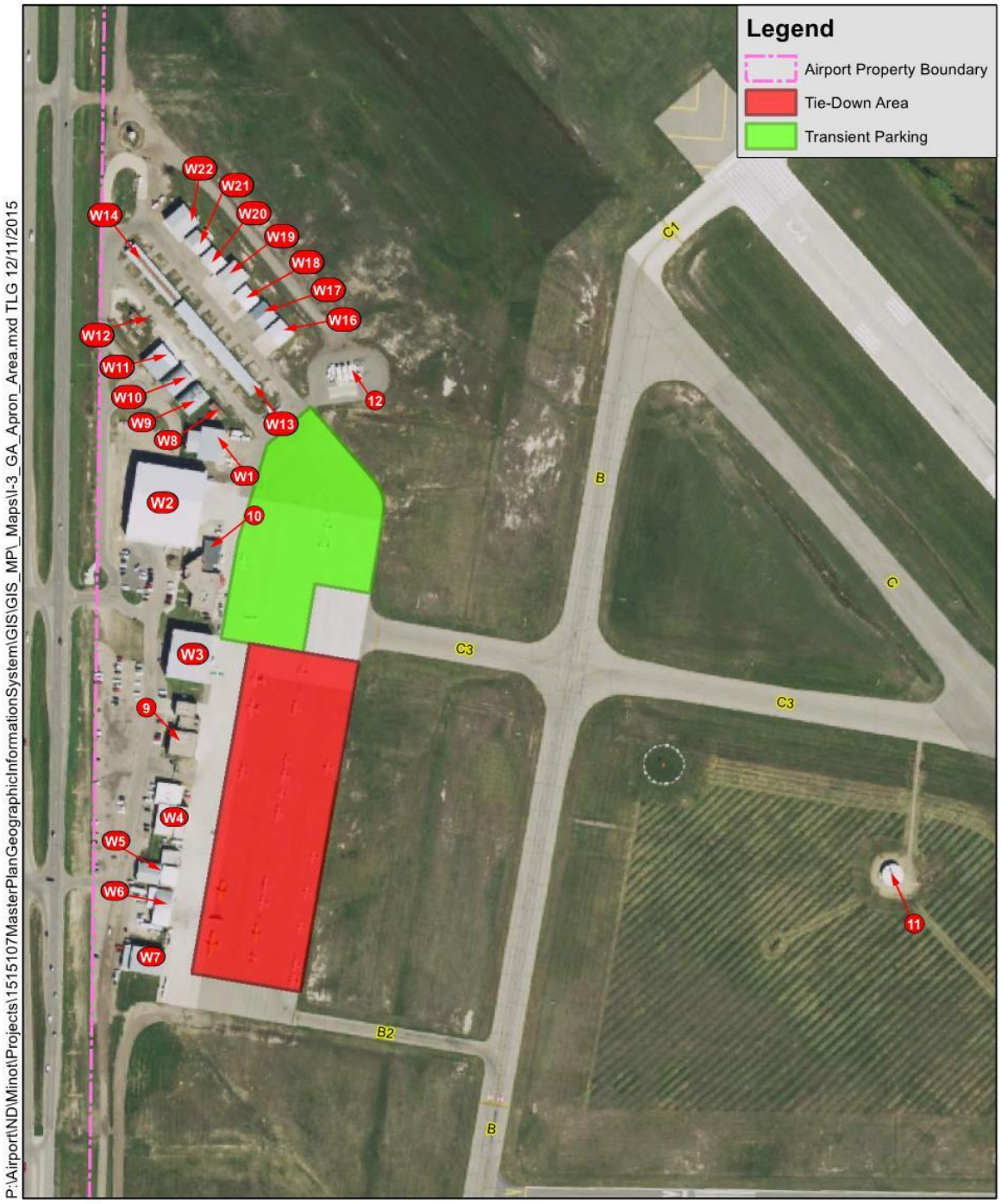
Minot Aero Center is located in the northern third of the apron area with direct access to Taxiway C3. Most transient general aviation aircraft and those needing Customs Service use this north portion of the apron. On the northern edge of the apron, near the taxilanes to the T-Hangars, is the area used by UPS for cargo aircraft parking. This is also the roadway access to the airport's fuel farm. No self-service fueling is available. Fueling is performed by the FBO through mobile fueling trucks.

The apron is accessible from the airfield by Taxiways B2 and C3. Taxiway B2 is 35 feet wide and can accommodate Taxiway Design Group 2 (TDG-2) aircraft while Taxiway C3 can accommodate TDG-4 (MOT design aircraft) with its 75 foot width. There is an access gate for vehicles to get to the apron just south of the ARFF station.

The asphalt portion of the general aviation apron is scheduled for rehabilitation in 2016.

Future & Ultimate: No substantive improvements or changes were identified through the master plan study. The size of the area and location of the aprons are expected to be sufficient through the planning period. Aprons should be maintained, and improvements should be made as demand dictates.

Exhibit I-3 – General Aviation Apron



*Intended for Planning Purposes Only

N

0 250 500 Feet

Minot International Airport (MOT)
Exhibit I-3: GA Apron Areas

Aircraft Storage

Background: General aviation aircraft storage is usually located near the general aviation terminal area. Aircraft can be stored outdoors on the aircraft parking apron or under a structure, or indoors in an enclosed hangar.

Examples of enclosed storage buildings include conventional square hangars or T-hangars. T-hangar units usually store smaller single or twin engine aircraft; units are commonly nested together into one structure. T-Hangars are primarily used for aircraft storage and typically because of limited access and size are not used for commercial activities. Conventional hangar construction can vary in size and shape, from small square hangars to larger corporate hangars, and are capable of storing multiple aircraft. These hangars are often used for commercial aeronautical operations because of better landside/airside access and size. Hangars may be constructed by the airport or by private companies or individuals who lease airport property for a specific lease term.

Demand for hangar space for based aircraft varies and is usually influenced by the geographic location of the airport. If it is in the northern portion of the country, there may be a higher demand for hangar space than apron space. This is due to the adverse weather conditions in winter. These conditions can be hazardous to aircraft when left outside for longer periods of time. This can be true for other types of severe weather. In extremely hot conditions, there may be a higher demand for hangar storage/shade in the hot summer months.

Sometimes, aircraft owner/operators store their vehicles inside the hangars while operating their aircraft. While this type of storage is permissible, other non-aeronautical storage is not. It is important that the airport be aware of any non-aeronautical uses of hangars on their airfield. Non-aeronautical uses can affect the airport's ability to receive federal funding (under AIP grant assurances). It is imperative that the airport evaluates existing, future, and ultimate hangar uses/leases and ensures hangar usage is for aeronautical purposes.

While the layout of hangars can vary based on the type of use and size of the hangar there are general principles that can be considered in the location and attributes of hangars. The issues that must be considered with hangars are:

1) Need for Dedicated Apron
2) Need for Access to the Main Apron
3) Separation from Taxilanes
4) Access to Taxilanes, and
5) Access to Landside (Public Road Network)

These issues and the need to include them with a particular type of hangar are included in **Table I-5 - Typical Aircraft Hangar Attributes**. One very important thing to consider for large hangars is their location and attributes should be considered both for what their intended use is and also what the potential use would be if the building changed tenants. This is why, at a minimum, large conventional hangars should have some amount of dedicated apron, sufficient taxilane access, and landside access. This only helps the airport by allowing its current and future tenants to function as efficiently and safely as possible.

Table I-3 – Typical Aircraft Hangar Attributes

	T-Hangars	Small Storage	Large Storage	FBO/SASO
Photo Examples				
Dedicated Apron	None	None	Equal to depth of hangar	Equal to depth of hangar (plus apron for services)
Main Apron Access	No	No	No	Yes
Taxilane Separation	Yes - for Design Group (I or II)	Yes - for Design Group (I or II)	Yes – for Design Group (II+)	Yes – for Design Group (II+)
Taxilane Access	Yes - for Design Group (I or II)	Yes - for Design Group (I or II)	Yes - for Design Group (II+)	Yes - for Design Group (II+)
Landside Access	No	Yes or No	Yes or No	Yes

Source: KLJ

Existing: MOT has 121 reported civil aircraft based at the airport. Aircraft storage facilities consists of large conventional hangars (typically 8,000 square feet or greater), small conventional hangars (typically less than 8,000 square feet), and T-hangars. There are two areas used for aircraft storage at the airport. These are on the west side of the airport along North Broadway Road and on the south side with access from Airport Road and 3rd Street NE. See **Exhibit I-2**. Aircraft storage facilities are depicted in **Table I-6**.

FBO/SASO HANGARS

All the existing FBO/SASO hangars are located on the general aviation apron opening to the east. The hangars on the north end are the newer ones which are around the GA terminal and north of the ARFF station. These are identified as hangars W1, W2 and W4 on the exhibit and table. The hangars south of the ARFF station are used by SASOs but are extremely old and small dating back to as early as 1928. These are identified as hangars W5 through W8 on the exhibit and table.

NORTH T-HANGARS AND SMALL CONVENTIONAL HANGARS

There are two sets of T-Hangars at the airport which are north of the general aviation apron in between sets of small conventional hangars. These hangars are identified as Hangars W9 through W22 on the **Exhibit I-4 West General Aviation Area** and **Table I-4 General Aviation Aircraft Hangars**.

SOUTH STORAGE HANGARS

On the south side of the airport, south of Taxiway D and west of Taxiway C is an area established since early 2000's for hangar development. There are currently four conventional hangars in an area with thirty-two (32) developable lots. Three of these four hangars are sized only for ADG-I aircraft. All the 35-foot wide taxilanes and set-backs in this area are designed for up to ADG-II and TDG-2 aircraft with excess space for landside automobile parking at some hangars. These hangars are identified as Hangars S1, S2, S5, and S30 on the **Exhibit I-5 South General Aviation Area** and **Table I-4 General Aviation Aircraft Hangars**.

FINANCIAL ELEMENTS OF HANGAR CONSTRUCTION

MOT has typically allowed hangar development based on long term land leases. The tenant pays for all the improvements in exchange for a long term (20 to 25 years) ground lease rate. This scenario can work for many larger traditional hangars but as hangar size requirements get smaller it is more difficult for owners to justify the expense. Traditional and T-Hangars are occupied by individuals who are not necessarily interested in constructing their own hangar. Hangar construction options are to lease land to a developer to build and/or lease the units, or for the airport to construct the hangar and lease the units.

Table I-4 – General Aviation Aircraft Hangars

Facility No.	Facility Type	Use	Hangar Area (SF)
W1	Small Hangar	SASO	4,800
W2	Large Hangar	FBO	26,300
W3	Large Hangar	FBO	12,000
W4	Two Joined Small Hangars	SASO	8,900
W5	Two Joined Small Hangars	SASO	6,300
W6	Round Top Hangar	SASO	3,600
W7	Small Hangar	SASO	4,800
W8	T-Hangar (1 unit)	Storage	800
W9	Small Hangar	Storage	4,200
W10	Small Hangar	Storage	4,200
W11	Small Hangar	Storage	5,040
W12	T-Hangar (1 unit)	Storage	800
W13	T-Hangar (10 units)	Storage	8,900
W14	T-Hangar (6 units)	Storage	5,400
W16	Small Hangar	Storage	2,500
W17	Small Hangar	Storage	2,400
W18	Small Hangar	Storage	2,000
W19	Small Hangar	Storage	3,300
W20	Small Hangar	Storage	2,000
W21	Small Hangar	Storage	2,000
W22	Small Hangar	Storage	3,600
S1	Small Hangar	Storage	1,600
S2	Small Hangar	Storage	1,600
S5	Small Hangar	Storage	3,000
S29	Small Hangar	Storage	4,600
S30	Small Hangar	Storage	4,200
TOTAL	Large Conventional Hangars	2	38,300
	Small Conventional Hangars	20	74,640
	T-Hangars (units)	16	15,900
		Grand Total	**128,840**

Source: Minot International Airport
NOTE: Areas estimated by KLJ based on imagery to include Aircraft Storage areas only.

Future & Ultimate: Areas were identified through the master plan study where storage hangars can continue to expand. These include areas in the west, south and northeast which is expected to be sufficient space through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

Exhibit I-4 – West General Aviation Area

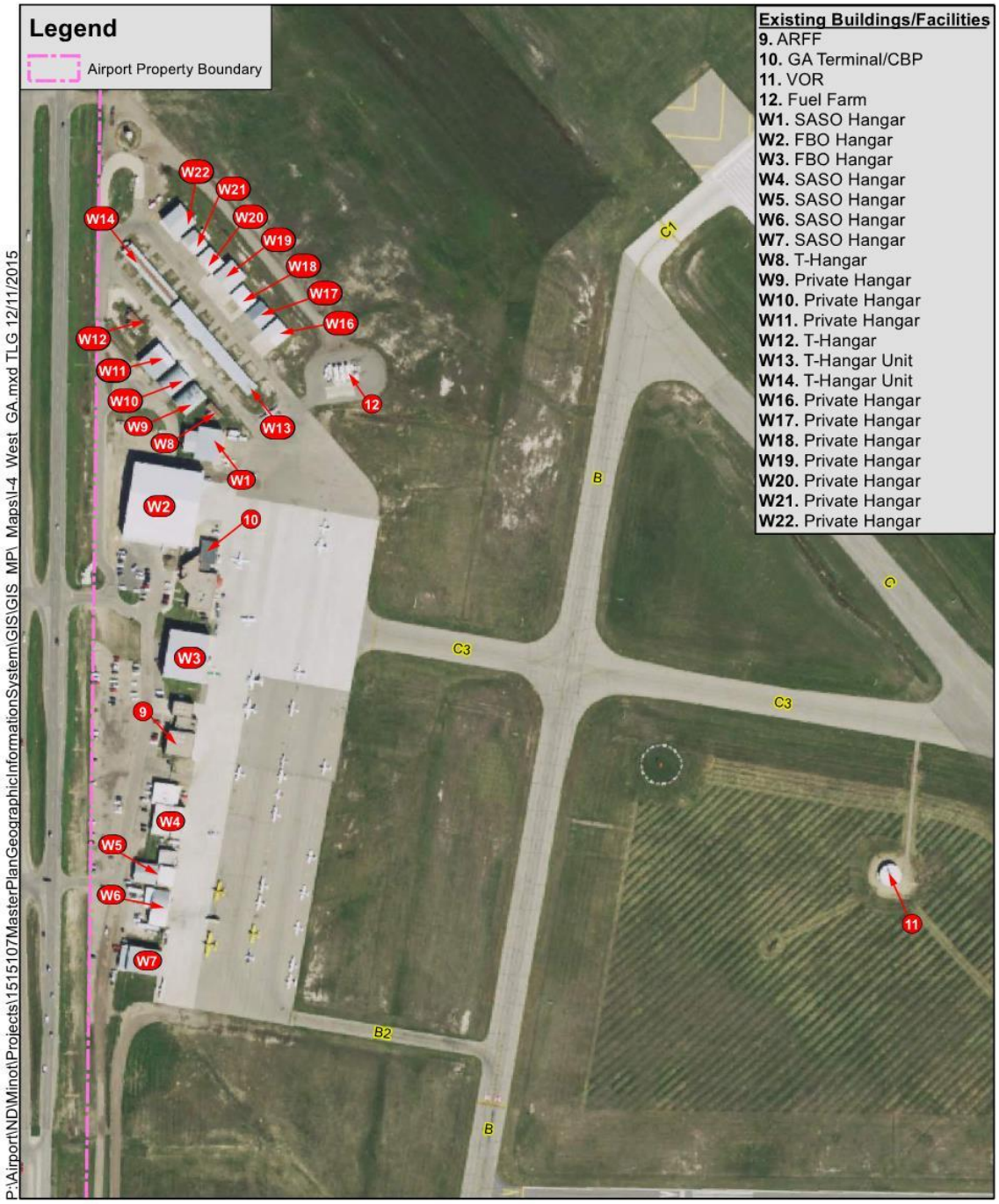
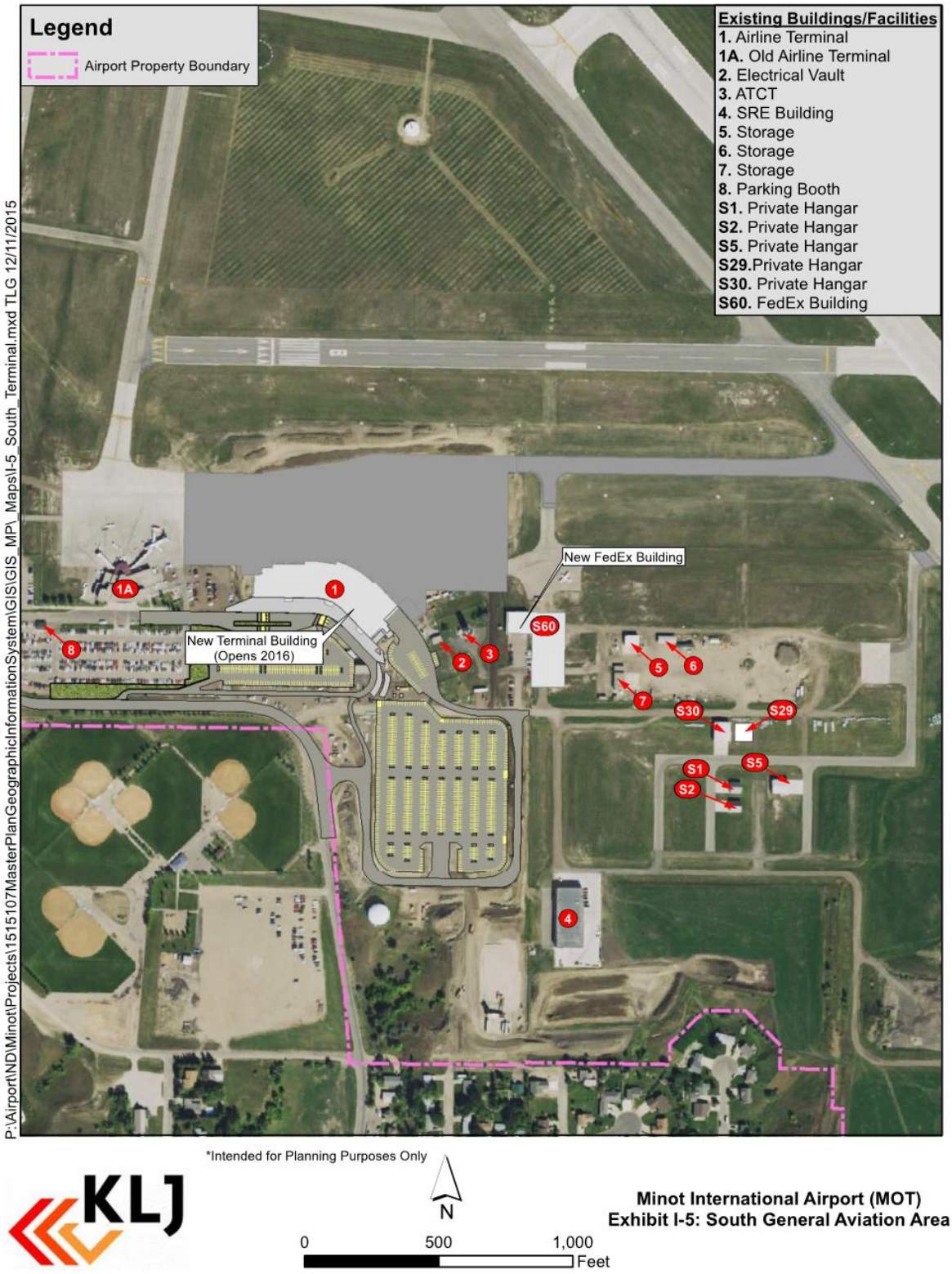


Exhibit I-5 – South General Aviation Area



Vehicle Parking & Access

Background: Generally speaking, vehicular parking for general aviation amenities are located in the same area as the aircraft. Fixed-Base Operators (FBOs) usually have their own parking, as do terminal buildings. Parking facilities can be located "outside the fence" in the public area, or "inside the fence" within the air operations area. Maneuvering and parking vehicles in the airside area requires increased vigilance from all operators to avoid incursions between aircraft and vehicles. Vehicle and aircraft operations should be separated whenever possible. General aviation hangar tenants typically drive their vehicle up to their hangar and park it inside or next to the hangar when the aircraft is in use.

Existing: Currently, the majority of the parking in the west general aviation area is on extremely deteriorated asphalt and gravel areas. For facilities located along the west aircraft apron, there is approximately 25,000 square feet of paved space to the east of the interior roadway available for parking in an unorganized fashion. A dedicated 9,700 square foot parking lot with 24 striped vehicle stalls is located west of the GA terminal/Customs building. The majority of vehicles requiring use of facilities along the main apron park to the west of the access road where there is 76,900 square feet of space available for unorganized automobile parking. Vehicles enter and exit this west area from North Broadway and 23rd & 22nd Avenues NW. The interior road to these parking spaces is in similar condition to the parking spaces. See **Exhibit J-3 Roads on the Airport** in **Appendix J – Support Facilities**.

Vehicles accessing the west general aviation hangar areas drive on dedicated access roads or aircraft taxilanes, and park their vehicles adjacent to their hangars. Vehicles accessing the south general aviation hangar area have dedicated access roads but also do not have dedicated parking, requiring tenants to park inside hangars or in the space adjacent to the hangar.

For the west general aviation area, an improved interior access road and parking area is needed to access the hangars and maximize the use of the limited land area available between North Broadway and the hangars.

Future & Ultimate: The parking and road system for the general aviation area does need improvement and sufficient space to meet demand. A general layout of the interior road needs and parking is included in the Airport Layout Plan. This includes improvements in the west and south for existing areas and as demand dictates in the east and northeast areas..

Dakota Territory Air Museum

Background: The Dakota Territory Air Museum was founded in 1986 and began at the airport in 1989 with its initial 8,400 sf hangar (N1 on **Exhibit I-6 North Hangar Area**). The museum's mission is to be:

> "a vital historical aviation resource honoring the men, women and machines that have impacted the rich history of aviation through displays and events that educate, inspire and entertain people of all ages".

The museum expanded to the west with a 5,000 sf addition to the building in 1991. This original building with its addition is the current entrance with gift shop area. The original portion of the building is currently a cold area for storage and restoration. A large 11,000 sf hangar (N2 on **Exhibit I-6**) was added which has a walkway adjoining the entry building. In 2008, a 9,000 sf addition was made to the west of the large hangar creating one large 20,000 sf area to house the majority of exhibits.

In 2013, a 23,000 sf hangar (N3 on **Exhibit I-6**) was added further to the west as a separate building. It was constructed to house portions of the Texas Flying Legends Museum Aircraft collection. The Texas Flying Legends have a cooperative arrangement with the Dakota Territory Air Museum to keep the

aircraft. The Texas Flying Legends perform at airshows during the year and are housed through the year at Minot, Wiscasset, Maine, and Ellington Field in Houston Texas.

Future and Ultimate: No substantive improvements or changes were identified through the master plan study for the museum area. The size of the area and location of the museum is expected to be sufficient through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

North Dakota Army National Guard

Background: When military facilities are located at an airport, typically they will be located in their own section of the airfield, with special permission required to enter (either landside or airside). The types of operations conducted by military facilities can vary from search and rescue missions, aerial sustainment, air movement, reconnaissance/observation, and other operations approved by the secretary of defense. The buildings and improvements are all paid for by funds from the State of North Dakota and U.S. Government, separate from funds provided by the Federal Aviation Administration (FAA) for other airport improvements. FAA funds may not be used for improvements to military facilities since their use of the airport is exempt from paying into the Airport and Airway Trust Fund. This does not preclude local funds being used with funds derived from the Army National Guard, but the use of local funds should be based upon a lease or commensurate benefit the airport will receive from the improvements.

Existing: North Dakota Army National Guard (NDARNG) operates a 35 acre facility located directly north of the airport. A total area of 16 acres is leased from the airport and scheduled to expire in 2036. The mission of the NDARNG at the airport is the headquarters of the 164th Engineering Battalion. There is currently no aeronautical mission. The NDARNG facilities consists of five buildings, of which three are within airport property (N4, N5 and N6 on **Exhibit I-6 North Hangar Area**).

Future and Ultimate: No substantive improvements or changes were identified through the master plan study for the NDARNG area. The size of the area and location of the NDARNG facilities are expected to be sufficient through the planning period. Facilities should be maintained, and improvements should be made as demand dictates.

Exhibit I-6 – North Hangar Area