



**City of Safford**

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# Airport Layout Plan Update



# Airport Layout Plan Update

## Final Report

Prepared for  
**Safford Regional Airport**  
**City of Safford**  
**Graham County, Arizona**

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## BACKGROUND

Safford Regional Airport (the Airport) is located approximately six miles northeast of the City of Safford (the Sponsor) in Graham County, Arizona. Located 10 miles north of the Coronado National Forest, Safford offers countless recreational attractions including the Pinaleno Mountains. According to the 2010 Census, there are approximately 9,566 City of Safford residents.

The Airport was originally constructed for training purposes during World War II but was transferred to the City of Safford in 1946. Many upgrades and additions have been completed since then, including a runway overlay of the primary runway in 1974, reconstruction of the secondary runway in 1987 and the primary runway in 1994, taxiway extensions/reconstructions, lighting and signage improvements, and a new main entrance road in 2003. The Airport is a public-use, general aviation (GA) airport that serves the aviation needs of local residents, the U.S. Forest Service (USFS), the Bureau of Land Management (BLM), air ambulance operators, Fort Huachuca and other military groups, pilots completing flight training, the fixed base operator (FBO), and corporate/business operators. The Airport has no scheduled commercial service and does not serve as a reliever airport for any of the air carrier facilities in the region.

The last approved Airport Layout Plan (ALP) was completed in December 2000 by Stantec Consulting Inc. as part of an Airport Master Plan Update. Following review of the report and drawings, the ALP was approved by the Federal Aviation Administration (FAA) on January 10, 2001. In 2007 the Airport retained Kimley Horn and Associates, Inc., to prepare a Master Plan Update. Although draft documents and drawings were prepared in 2008, they were never finalized or approved. Given that the information presented in these draft reports is more current than the approved Master Plan and ALP Update, the latter documents will be referenced throughout this report.

The current ALP Update is being funded jointly by the FAA, the Arizona Department of Transportation (ADOT), and the City of Safford, with technical work completed by C&S Engineers, Inc. The FAA, ADOT and the City of Safford have made great progress in completing many of the projects identified in the FAA-approved Master Plan. Due to the completion of a majority of these projects, in addition to a change in project priorities, there is now a need to update the Airport's ALP and, in turn, their capital improvement plan. The new ALP drawings and capital improvement plan will identify projects that provide reasonable, fiscally responsible solutions to achieving the goals of the City of Safford.



## AIRPORT LAYOUT PLAN UPDATE STUDY

The objective of the ALP Update is to determine the extent, type, and schedule of development needed to accommodate existing needs and future aviation demand at the Airport, and then produce a set of updated airport layout plan drawings that depict the proposed development. The recommended development is presented in the following three planning periods: short term (years 2012-2016), intermediate term (years 2017-2021), and long term (years 2022-2031).

This study provides updated aviation demand forecasts and facility requirements for the next 20 years. It assesses requirements for both the airside (runway, taxiways, safety and object free areas, runway protection zones, and navigation aids) and landside (hangars, aircraft parking apron, terminal building, fuel storage, automobile parking, and possibly the FBO areas).

The ALP drawing set includes a depiction of the existing airport layout; an airport layout plan showing the proposed 20 year development plan for the Airport; a terminal area plan depicting landside development; an airspace and approach and obstruction plans identifying obstructions to the FAR Part 77 surfaces, based upon obstruction data from both the current published FAA Airport Master Record and the National Geodetic Survey (NGS) with a verification date of September 20, 2008; a land use and ground access plan; and an airport property map.

In addition to the updated set of ALP drawings, this narrative report summarizes the following for the Airport:

- Existing airport conditions
- Key issues
- Forecasts of aviation activity
- Facility requirements
- Financial management and development plan

## EXISTING AIRPORT CONDITIONS

The Airport occupies approximately 948 acres northeast of the City of Safford. The City owns the entire airport property and has easements over land within the runway protection zones (RPZ) for Runway 12-30. The City has an ongoing agreement with the Department of the Army that allows them to annually renew a land lease of 9.59 acres southwest of Runway 8-26 and west of the airport access road. Although it does not appear that this has been renewed in recent years, the agreement does not expire until December 31, 2012. See **Appendix C** for a copy of this agreement.

Existing airport facilities are presented in **Exhibit 1**.





## EXHIBIT 1 AIRSIDE FACILITIES SUMMARY

General Airport Information						
Airport Field Elevation (ft.)	3,179					
Airport Reference Code (ARC)	B-II					
Airport Reference Point (ARP)	Lat. 32° 51’ 12.04” N; Long. 109° 38’ 6.28” W					
Runway Data	12-30 (Primary)			8-26		
Length and Width (ft.)	6,006 x 100			4,799 x 75		
Single-Wheel Pavement Strength (lbs.)	33,000			23,000		
Type & Condition	Asphalt - Good			Asphalt - Good		
Wind Coverage (%)	All Weather	VFR	IFR	All Weather	VFR	IFR
10.5 kts	97.05	97.07	89.37	94.80	94.83	84.76
13 kts	98.51	98.53	91.34	97.63	97.66	88.15
16 kts	99.35	99.37	92.29	99.21	99.23	92.71
Gradient (%)	0.1			0.4		
FAR Part 77 Approach Slope	34:1			34:1		
Safety Area Condition	In Compliance			In Compliance		
Marking	Basic			Basic		
Lighting	MIRL, REIL, Threshold			MIRL		
Taxiway Information	Width (ft.)	Type		Condition		
Taxiway A	35	Asphalt		Good		
Taxiway A1	35	Asphalt		Good		
Taxiway A2	50	Asphalt		Good		
Taxiway B	35	Asphalt		Good		
Taxiway B1	48	Asphalt		Good		
Taxiway B2	35	Asphalt		Good		
Taxiway B3	35	Asphalt		Good		
Taxiway C	35	Asphalt		Good		
Taxiway C1	35	Asphalt		Good		
Taxiway C2	35	Asphalt		Good		
Taxiway C3	35	Asphalt		Good		
Taxiway D	35	Asphalt		Good		
Taxiway E	35	Asphalt		Good		
Taxiway E1	35	Asphalt		Good		
Taxiway E2	35	Asphalt		Good		
Instrument Approach Aids	GPS, VOR					
Navigational Aids	PAPIs, Rotating Beacon, Segmented Circle, Lighted and Non-Lighted Wind Indicators					
Apron (SY)	51,200 (34 tiedowns)					
Helipads (5) (ft.)	30 x 30					
Heliport (ft.)	72 x 72					

Source: C&S Engineers, Inc.



## Airside Facilities

The Airport has two runways designated as 12-30 and 8-26 that are constructed of asphalt. According to the 2012 FAA Airport Master Record for the Airport, both runways are in good condition. However, the City of Safford has noted significant damage to Runway 8-26 and the remaining paved surfaces. Damage includes pavement cracking and weathering of the existing surfaces, resulting in foreign object debris (FOD) on the runway and airfield that can be damaging to aircraft. Both runways are equipped with Medium Intensity Runway Lighting (MIRL) systems in good operating condition. There are Runway End Identifier Lights (REILs) on both ends of the primary runway (Runway 12-30), which is also equipped with threshold lighting. The MIRLS, REILs, and threshold lighting are in fair to good condition.

The Airport has full-length taxiway systems paralleling both runways. All of the taxiways can accommodate B-II aircraft and are equipped with Medium Intensity Taxiway Lighting (MITL) systems in fair to good condition. Refer to Airport Layout Plan for the taxiway configuration.

There are five helipads located on airport property that are 30 x 30 feet and one heliport that is 72 x 72 feet. All of the helipads, as well as the heliport, are constructed of concrete and in fair to good condition. The heliport was constructed in 1998 and has a pavement strength of 42,000 pounds.

The existing apron area provides 34 tiedowns that are divided between the east and west ramp. The tiedowns located on the east ramp are designated for smaller aircraft. The apron is in good condition. There is aerial lighting for the apron area and terminal area apron. Some of the lease lots are equipped with lighting. All lighting is in good to fair condition.

Airfield signage at the Airport includes taxiway designation signs and directional signs that are in good condition. Taxiway segments B3, D, and C are currently lacking signage that should alert airport users of the end of the apron area and beginning of the taxiway system.

The Airport has the following visual aids: a rotating beacon (originally installed in 1950 and in need of a replacement); three lighted wind indicators and a segmented circle of unknown age but in poor condition; additional non-lighted wind indicators; and precision approach path indicators (PAPIs) on runway ends. The PAPI system was installed on Runway 12-30 in 2005. The Airport also has a functioning Automated Surface Observing Station (ASOS) that serves as a navigational aid and broadcasts weather conditions at the Airport. The ASOS has been in operation since 1997 and is located on the south side of the Airport, adjacent to the airport access road. Although the station is operational, the recording system is decommissioned.

Instrument approach aids for the Airport include GPS and the San Simon VORTAC, which is located 40 nautical miles southeast of the Airport.



## Landside Facilities

**Exhibit 2** provides information about the existing airport facilities. Refer to the Airport Layout Plan for locations of these buildings.

**EXHIBIT 2  
LANDSIDE FACILITIES SUMMARY**

General Airport Information	
Buildings	Area (SF)
Terminal Building	1,600
Emergency Generator/Electrical Vault	440
Electrical Building Containing the ASOS	165
Conventional Hangars	67,000
T-Hangars	6,100
BLM Admin. Building	3,600
BLM Fire Shed	2,400
Jetcrafters Office Building	1,500
Air Evac. Building	2,100
Shed (FBO)	220
Office Trailer (FBO)	500
Office Building/House (to be removed)	2,000
Service Building	450
Vehicle Parking	1,675 (SY)

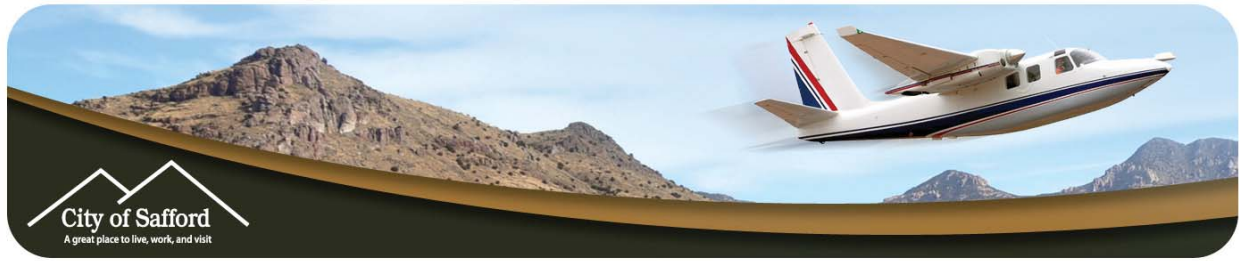
Source: C&S Engineers, Inc.

The Airport's terminal building is 1,600 square feet and consists of a concrete block building and metal roof. The building is in good condition but was originally constructed in the 1960s. It offers a lobby, pilot lounge, administrative area for the Airport Manager/FBO, equipment room, and restrooms.

There is a 440 square foot emergency generator/electrical vault that consists of a concrete block building and a metal roof. The building's age was not available but it appears to be in fair condition. The backup generator and the regulator are stored in separate sides/areas of this building. There is a second electrical building near the entrance road that is in poor condition. Its exact dimensions and age are unknown. This building currently houses the ASOS equipment.

The Airport has 14 conventional hangars, one bank of T-hangars with four units, and one standalone T-hangar. Half of the conventional hangars were constructed between 2003 and 2004. Ages for the remaining hangars are unknown. The hangars are in fair to excellent condition and store all of the aircraft based at the Airport except for four, which are held on leased tiedowns on the apron.





There are three structures owned by the Bureau of Land Management (BLM) including a 3,000 square foot administrative building (built in 1999), firefighting facilities, and a storage shed.

The Airport has one FBO on property. Ponderosa Aviation joined the Airport in 2002 and its operations are spread across the Airport. Ponderosa offers the following services:

- Aviation fuel
- Ground power unit (GPU)/Power cart
- Aircraft charters
- Avionics sales and service
- Aircraft modifications
- Aircraft cleaning/washing/detailing
- Aircraft parts
- Aviation accessories
- Pilot supplies
- Internet access

Aerozona Jetcrafters is also based at the Airport and has provided services since June of 2004. Jetcrafters is a private company that offers aircraft painting and interior services. Its facilities are located on the west side of the building area.

There are two entrances to the Airport, both accessed from Airport Road. Aviation Way runs east-west into the Airport and was originally constructed in 1949. An additional access road was completed in 2004 and runs south-north into the Airport. Located outside of the fence line in the terminal area is a 1,675 square yard automobile parking lot, constructed and paved in 1994. Additional parking is available near airport businesses and other buildings. There is also a 16,480 square yard automobile parking lot on the west side of the airport access road and directly south of Aviation Way. This area is used almost exclusively for special events parking and activities due to its inconvenient location in relation to the airport hangars, terminal and other key buildings and structures.



## Recent Projects

The projects that have been completed since the last Master Plan Update include the following:

- Land acquisition of 309 acres along the south and west boundaries of the property (2002).
- Construction of a new main airport entrance road (2003).
- Relocation of Taxiway D (2003).
- Reconstruction of Taxiway E (2003).
- Construction of several new hangars (2003).
- Airport improvements to its lighting and signage (2004).
- Airfield pavement preservation involving a Runway 8-26 grind and overlay (2004).
- Crack sealing and slurry seal of Runway 12-30, taxiways, apron area, and helipad (2004).
- Construction of additional hangars (2004).
- Construction of a new connecting taxiway between Runway 12-30 and Taxiway A (2005).
- Installation of a PAPI system on Runway 12-30 (2005).
- Completion of pavement preservation projects including an overlay of Runway 12-30 (2007).
- Extension of Taxiway E to end of Runway 30 (2007)
- Installation of an automatic gate, two rolling gates and 3,200 feet of security fencing around portions of the airport boundary (2008).
- Rehabilitation of Runway 12-30 including a grind and overlay (2010).

The following projects are currently being designed and are anticipated to be completed by 2013:

- Apron rehabilitation and reconstruction.
- Regrading around all airfield lights, signs, and bases to restore the grades to standard.

**Exhibits 1 and 2** provide summaries of the existing airport facilities.



## Existing Aircraft and Operations

In order to evaluate existing aviation activity at the Airport, the following sources were examined:

- The FBO's (Ponderosa Aviation) monthly reports to the City of Safford documenting operations observed at the UNICOM;
- Flight Aware data documenting instrument approach operations;
- The FAA's TAF;
- Information provided by the City of Safford;
- The 2008 Draft Master Plan Update; and
- The FAA's *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*.

## Based and Transient Aircraft

According to the City, there are currently 32 based aircraft at the Airport. **Exhibit 3** presents a breakdown of aircraft types based at the Airport.

**EXHIBIT 3  
BASED AIRCRAFT CHARACTERISTICS**

Aircraft Type	Max. Takeoff Weight (lbs.)	Wingspan (ft.)	Approach Category	Design Group
Aero Commander 500	6,750	49	B	II
Aero Commander 690	10,250	47	B	I
Beechcraft Bonanza	2,725	33	A	I
Cessna 172	2,250	36	A	I
Cessna 182	3,100	36	A	I
Mooney M20	3,374	37	A	I

Source: City of Safford, C&S Engineers, Inc.

Flight Aware data was used to determine the types of transient aircraft visiting the Airport, included in **Exhibit 4**.



**EXHIBIT 4  
TRANSIENT AIRCRAFT CHARACTERISTICS**

Aircraft Type	Max. Takeoff Weight (lbs.)	Wingspan (ft.)	Approach Category	Design Group
Beechcraft Baron 58	6,200	37.8	B	I
Beechcraft Super King Air 200	12,500	54.5	B	II
Beechcraft King Air 90	10,950	45.9	B	I
Cessna Citation Bravo	14,800	52.2	B	II
Cessna Citation X	36,100	63.6	C	II
Cessna Conquest 1	8,200	44.2	B	I
Learjet 35	18,300	39.5	D	I
Piper Navajo	6,500	40.7	B	I
Rockwell Turbo Commander 690	10,250	46.67	B	I

Source: Flight Aware, September 20, 2011; and C&S Engineers, Inc.

## Annual Operations

A number of methods were used to determine the existing annual operations for the Airport including review of the FAA TAF, Flight Aware data, and monthly reports submitted to the City by the FBO that documented operations observed at the UNICOM during normal business hours, defined as 8 a.m. to 5 p.m., Monday through Friday. **Exhibit 5** shows the available existing annual operations numbers from each of the three sources.

**EXHIBIT 5  
AVAILABLE EXISTING ANNUAL OPERATIONS DATA**

FAA TAF	Flight Aware	UNICOM
8,690	1,791	3,961

Sources:

1) 2010 FAA TAF; 2) Flight Aware - includes instrument approaches that occurred between September 2010 and September 2011; and 3) Ponderosa Aviation - includes operations observed at the UNICOM during work hours in 2011 and estimates for four months of missing data.

Deficiencies exist with each of the three annual operations totals. Specifically, the Flight Aware data includes only operations using instrument approach. The FAA TAF total is extremely low when compared to the 2008 Draft Master Plan Update and the 2008 Arizona State Airports System Plan (SASP). Finally, the UNICOM data is limited to operations that occurred while the FBO was stationed at the UNICOM and does not reflect weekend and after-hour operations, which tend to be the busiest travel times.



In order to develop an existing annual operations level, the UNICOM data was considered the most accurate source as it included the largest number of recorded individual operations. Before determining the total operations from data provided by the FBO, estimates for after-hour and weekend operations must be developed. The Flight Aware data was therefore divided into weekday (between 8 a.m. and 5 p.m., Monday through Friday) operations and after-hour/weekend operations so that the ratios could be applied to the FBO-recorded numbers. The results are shown in **Exhibit 6**.

**EXHIBIT 6**  
**TIME AND DAY BREAKDOWNS OF INSTRUMENT OPERATIONS**

	Operations During Hours (M-F, 8 a.m. to 5 p.m.)	After-Hour and Weekend Operations	Totals
Number of Annual Operations (9/13/2010 to 9/19/2011)	668	1,123	1,791
Percent of Annual Operations (9/23/2010 to 9/19/2011)	37%	63%	100%

Source: Flight Aware, C&S Engineers, Inc.

The Flight Aware percentages for after-hour/weekend versus weekday operations were then applied to the existing UNICOM data to determine the total existing annual operations (10,705). See **Exhibit 7**.

**EXHIBIT 7**  
**ESTIMATED TOTAL OPERATIONS**

UNICOM Operations (M-F, 8 a.m. to 5 p.m.)	Estimated After-Hour and Weekend Operations	Totals
3,961	6,744	10,705
37%	63%	100%

Source: Flight Aware, Ponderosa Aviation (UNICOM), C&S Engineers, Inc.

FAA Order 5090.3C, the *Field Formulation of the National Plan of Integrated Airport Systems*, was consulted for comparison. This document contains guidance for estimating annual operations per based aircraft (OPBA). Using the OPBA for general aviation facilities, this method yields 11,200 annual operations (32 based aircraft multiplied by 350 OPBA). This is comparable to the UNICOM-based total, which will be used for further analysis in this ALP Update as it was calculated using real data from the Airport. The FAA's *Model for Estimating General Aviation Operations at Non-Towered Airports using Towered and Non-Towered Airport Data* was also considered but did not serve the purpose of comparison and was thus excluded from detailed review.





## Critical Aircraft

The selection of appropriate FAA airport design criteria is based primarily upon the critical or design aircraft that will be utilizing the Airport. The critical aircraft is defined by the FAA as the most demanding aircraft that performs or is projected to perform at least 250 annual departures (or 500 annual operations at the facility).

In order to determine the critical aircraft currently operating at the Airport, a review of the 2008 Draft Airport Master Plan Update was conducted, operations logs recorded from the Airport's UNICOM were reviewed, and Flight Aware data was assessed. According to this information, there were 542 annual operations by Aircraft Approach Category B (aircraft with approach speeds of 91 knots or more but less than 121 knots) and Airplane Design Group II aircraft (aircraft with wingspans 49 feet up to but not including 79 feet). It is therefore recommended that the Airport Reference Code (ARC) for the Airport remain as B-II.

Considering that the types of aircraft and/or operations are not expected to change in the foreseeable future, the future ARC for the Airport shall be designated as B-II. However, when examining the facility requirements for existing conditions (see **Appendix B**), it was noted that the crosswind runway did not comply with FAA standards for B-II aircraft. The greatest concern is the existing runway length, which is approximately 325 feet shorter than standard. It would not be prudent to extend the runway at this time or in the near future because the primary runway provides adequate wind coverage and thus does not necessitate a crosswind runway. In collaboration with the airport sponsor and FBO, it was decided to maintain the B-II designation for the Airport but designate Runway 8-26 as A-I and reserve this for small aircraft use.

Three B-II aircraft were selected to represent the existing critical aircraft for Runway 12-30. These include the Aero Commander 500, which has a wingspan of 49 feet, a maximum gross takeoff weight of 6,750 pounds, and an approach speed of 97 knots; the Rockwell International 500S with the same specifications; and the Beechcraft Super King Air 200, which has a wingspan of 54.5 feet, a maximum gross takeoff weight of 12,500 pounds, and an approach speed of 103 knots. The existing critical family of aircraft is expected to remain the same for future conditions.

A family of A-I aircraft was selected as the existing and future critical aircraft for Runway 8-26. Based on the percentage breakdowns of operations according to airport records, the following aircraft were chosen to represent the character of aircraft typically operating and anticipated to operate on Runway 8-26:

- Waco 9, which has an approach speed of approximately 36 knots and a wingspan of 29.5 feet; and
- Cessna 182 with an approach speed of approximately 64 knots and a wingspan of 36 feet.



## KEY ISSUES

Based on an airport inventory and discussions with airport management and pilots, a number of key issues were identified, including the following:

- There is currently an abandoned office building in the terminal area that needs to be demolished.
- FAR Part 77 obstructions have been identified based on existing data from the NGS and the FAA's 5010 Airport Master Record. Obstructions need to be verified and removed, if necessary.
- Last year's frequent fire fighting activity highlighted the need for an improved/augmented water system. Although the existing elevation change impedes water flow the main issue is the quantity of water available.
- There is demand for additional hangar space to accommodate based aircraft.
- There are several airport elements that do not comply with FAA design standards.
- The Airport's existing taxiway naming convention needs to be changed to comply with FAA standard.

## FORECASTS

Aviation demand forecasts at the Airport are presented in this section for the 20 year planning period (2012-2031). Forecasts of aviation demand provide a basis for determining the type, size, and timing of aviation facility development.

Forecasting future activity involves both analytical techniques and subjective considerations. Factors that can influence aviation activity levels include regulatory policy on the local and national level, technological innovations, aviation industry trends, and local fluctuations in population and employment. The objective of forecasting is to develop a realistic measure of the potential for these changes so their effect can be estimated in a rational manner and preparations can be made to smoothly and cost-effectively accommodate their impact on airport facilities. Forecasts of aviation demand for the Airport include the following components:

- Historical Aviation Activity
- Based Aircraft Forecast
- Based Aircraft Fleet Mix Forecast
- Annual Aircraft Operations Forecast
- Design Day and Design Hour Operations Forecast
- Forecast of Annual Instrument Approaches



Detailed information regarding these forecasts can be found in **Appendix A**. The forecasts provide three specific planning horizons for five, 10, and 20 year estimates of future aviation activity levels at the Airport. These levels of forecasted activity will then serve as a guide for future development and allow for the City to prudently plan for future capital investments. However, the projections should be used as planning activity levels which identify trigger points for future airport facilities and considered independent of specific years. If actual growth occurs faster than anticipated, the implementation schedule should be reassessed and accelerated as necessary. Similarly, slower than projected growth may warrant deferment of planned improvements to a later date. Actual activity growth should be frequently compared to projected growth so schedule corrections can be identified and implemented.

## Aviation Demand Forecast Summary

The Airport's 20 year forecast for aviation activity conservatively projects steady growth over the period for general aviation activity. A summary of forecasted demand at the Airport is presented in **Exhibit 8**. Further explanation of the forecast components is located in **Appendix A**. Demand elements from these forecasts will be used in the facility requirements section of this report.

**EXHIBIT 8  
AVIATION DEMAND FORECAST SUMMARY**

	2011	2016	2021	2031	Average Annual Compound Growth Rates		
					2011-2016	2016-2021	2021-2031
<b>Operations (Ops.)</b>							
<u>General Aviation</u>							
Local	1,951	2,097	2,310	2,665	1.5%	2.0%	1.4%
Itinerant	7,254	7,793	8,585	9,905	1.4%	2.0%	1.4%
<u>Military</u>	1,500	1,500	1,500	1,500	0.0%	0.0%	0.0%
<b>TOTAL OPS</b>	<b>10,705</b>	<b>11,390</b>	<b>12,395</b>	<b>14,070</b>	<b>1.3%</b>	<b>1.7%</b>	<b>1.3%</b>
<b>Instrument Ops.</b>	1,787	1,902	2,070	2,350	1.3%	1.7%	1.3%
<b>Design Day Ops.</b>	35	37	41	46	1.1%	2.1%	1.2%
<b>Design Hour Ops.</b>	15	16	17	19	1.3%	1.2%	1.1%
<b>OPBA</b>	335	335	335	335	N/A		
<b>Based Aircraft</b>							
Single Engine	15	16	17	19	1.3%	1.2%	1.1%
Multi Engine	16	17	19	21	1.2%	2.2%	1.0%
Jet	0	0	0	1	0.0%	0.0%	N/A
Helicopter	1	1	1	1	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>32</b>	<b>34</b>	<b>37</b>	<b>42</b>	<b>1.2%</b>	<b>1.7%</b>	<b>1.3%</b>

Source: C&S Engineers, Inc.



## FACILITY REQUIREMENTS

**Exhibit 9** provides a summary of airside and landside facility requirements for the Airport. The facility requirements were developed using FAA approved forecasts, FAA methodology, and input from the City of Safford and local stakeholders.

**EXHIBIT 9  
FACILITY REQUIREMENTS SUMMARY**

Item	Existing (2011)	Phase 1 (2012-2016)	Phase 2 (2017-2021)	Phase 3 (2022-2031)
<b>Runway Dimensions (ft.):</b>				
R/W 12-30 (B-II)	6,006 x 100	6,006 x 100	6,006 x 100	6,006 x 100
R/W 8-26 (A-I)	4,799 x 75	4,799 x 75	4,799 x 75	4,799 x 75
<b>Taxiways:</b>				
R/W 12-30	Full parallel	Full parallel	Full parallel	Full parallel
R/W 8-26	Full parallel	Full parallel	Full parallel	Full parallel
<b>Lighting:</b>				
R/W 12-30	MIRL, REIL	MIRL, REIL	MIRL, REIL	MIRL, REIL
R/W 8-26	MIRL	MIRL	MIRL	MIRL
<b>Navigation Aids:</b>	PAPIs, Rotating Beacon, Segmented Circle, GPS and VOR	PAPIs, Rotating Beacon, Segmented Circle, GPS and VOR	PAPIs, Rotating Beacon, Segmented Circle, GPS and VOR	PAPIs, Rotating Beacon, Segmented Circle, GPS and VOR
<b>Terminal (SF):</b>	1,600	4,200	4,500	5,100
<b>Hangars (SF):</b>	40,920	41,200	44,800	51,200
<b>Apron (SY):</b>	51,200	51,200	51,200	51,200
<b>Vehicle Parking (SY):</b>	1,675	1,675	1,675	1,675

Source: C&S Engineers, Inc.

In comparing the existing facilities and infrastructure to FAA standards for the existing and future critical aircraft (see **Appendix B – Airport Design Standards and Facility Requirements**), the following elements were deemed noncompliant:

1. The Runway 12-30 centerline to holdline separation distance.
2. Taxilane centerline to fixed or movable object separation distance.
3. The Runway 12-30 RPZs currently extend off airport property and are not under the control of the airport sponsor.



## FINANCIAL MANAGEMENT AND DEVELOPMENT PLAN

The following describes the proposed sequence of development for the Airport over the short, intermediate, and long term.

### Short-Term Development

In the short term, the City of Safford and the FAA will concentrate on enhancing aircraft operating safety and completing ongoing projects. The short-term development will include:

- Apron rehabilitation, pavement, and markings (ongoing), which will involve the relocation of tiedowns for better use of apron space.
- Remove Taxiway segment A2 to enhance the safety of the aircraft operating environment.
- Demolition of existing office building house near terminal.
- Verification and removal (if necessary) of FAR Part 77 obstructions that have been identified using information from the NGS and the FAA's 5010 Airport Master Record.
- Airfield signage, pavement marking, electrical upgrade, and replacement of the beacon and tetrahedron. The pavement marking portion will bring Runway 12-30 into compliance for the runway centerline to holdline separation standard. New signage should incorporate a revised taxiway naming convention to comply with FAA standards and enhance the safety of aircraft operating at the Airport.
- Land acquisition or easement for RPZs from the State of Arizona, the federal government, and Freeport Mining Company (private) in order to grant the airport owner control over these areas per FAA standards.

### Intermediate-Term Development

Intermediate-term development will allow for the Airport to begin meeting forecasted aviation demand and address antiquated equipment and facilities at the Airport. The intermediate-term development will include:

- Security fencing improvements at the suggestion of Airport management.
- Relocation of existing fuel facility, at the time of its useable life, to a more centralized location.
- Construction of run up ramps or "stub" taxiways to both ends of the primary runway to provide a safe waiting area for departing aircraft and per the request of airport pilots.
- Construction of additional hangars and apron area, as needed.





## Long-Term Development

Long-term development is identified for addressing anticipated needs of the Airport. The long-term development may include:

- Terminal building expansion.
- Extension of vehicle parking in the terminal area.
- Construction of additional helipads.

As discussed under the Key Issues section of this report, last year's frequent fire fighting activity highlighted the need for an improved/augmented water system. Although it was not considered a reasonably foreseeable project at this time, the City requested that potential locations be considered for a one million gallon, 130 foot high water tank on airport property. In order to assist in future planning efforts, a restriction line is shown on the Airport Layout Plan to depict the setback for a tank of this height. The north-side location of airport property was chosen based on existing elevation changes and availability of space.

## Capital Improvement Project Phasing

This section provides a phasing of capital improvement projects for the Airport over the next 20 years. For capital improvement planning and funding purposes, there is a short-term phase (years 2012–2016), intermediate-term phase (years 2017 – 2021) and a long-term phase (years 2022–2031). **Exhibits 10 through 13** provide a summary of major projects for the three phases of airport development. The exhibits provide opinions of probable costs (2012 dollars) and identify potential funding sources for the proposed capital improvement projects over the 20 year planning period.



**EXHIBIT 10  
CAPITAL IMPROVEMENT PROGRAM PHASE 1 (2012-2016)**

	<b>Project</b>	<b>Total Cost (\$)</b>	<b>Federal Eligible (\$)</b>	<b>State Eligible (\$)</b>	<b>Local Share (\$)</b>
1-1	Apron Reconstruction and Safety Area Improvements	1,225,000	1,115,485	54,758	54,758
1-2	Closure of Taxiway A2	150,000	136,590	6,705	6,705
1-3	Replacement of Runway 8-26 Edge Lighting	100,000	91,060	4,470	4,470
1-4	Installation of Runway 8-26 REILs	20,000	18,212	894	894
1-5	Demolition of abandoned electrical building #1 and expansion of existing electrical building #2	500,000	455,300	22,350	22,350
1-6	Replacement of beacon and rehabilitation of tetrahedron	100,000	91,060	4,470	4,470
1-7	Rehabilitation of Runway 8-26 and pavement markings	1,500,000	1,365,900	67,050	67,050
1-8	Relocation of existing hold lines and signs on Runway 12-30	200,000	182,120	8,940	8,940
1-9	Land Acquisition for RPZs	300,000	273,180	13,410	13,410
1-10	Building Demolition	25,000	22,765	1,118	1,118
1-11	Lighting for Runway 12 FAR Part 77 Road Obstruction	50,000	45,530	2,235	2,235
1-12	Removal of FAR Part 77 Obstruction via Fence Realignment	50,000	45,530	2,235	2,235
1-13	Removal of FAR Part 77 Obstruction (Vegetation)	20,000	18,212	894	894
	<b>TOTAL</b>	<b>4,240,000</b>	<b>3,860,944</b>	<b>189,528</b>	<b>189,528</b>

**Source: C&S Engineers, Inc.**



**EXHIBIT 11  
CAPITAL IMPROVEMENT PROGRAM PHASE 2 (2017-2021)**

	<b>Project</b>	<b>Total Cost (\$)</b>	<b>Federal Eligible (\$)</b>	<b>State Eligible (\$)</b>	<b>Local Share (\$)</b>
2-1	Security Fence Improvements	1,125,000	1,024,425	50,288	50,288
2-2	Relocation and Construction of New Fuel Facility	300,000	273,180	13,410	13,410
2-3	Construction of Run-Up Ramps or Stub Taxiways	1,000,000	910,600	44,700	44,700
2-4	Construction of Apron and Additional Hangars	2,825,000	2,572,445	126,278	126,278
	<b>TOTAL</b>	1,125,000	1,024,425	50,288	50,288

Source: C&S Engineers, Inc.

**EXHIBIT 12  
CAPITAL IMPROVEMENT PROGRAM PHASE 3 (2022-2031)**

	<b>Project</b>	<b>Total Cost (\$)</b>	<b>Federal Eligible (\$)</b>	<b>State Eligible (\$)</b>	<b>Local Share (\$)</b>
3-1	Terminal Building Expansion	400,000	364,240	17,880	17,880
3-2	Expansion of Terminal Area Vehicle Parking	350,000	318,710	15,645	15,645
3-3	Construction of Additional Helipads	900,000	819,540	40,230	40,230
	<b>TOTAL</b>	400,000	364,240	17,880	17,880

Source: C&S Engineers, Inc.



**EXHIBIT 13**  
**CAPITAL IMPROVEMENT PROGRAM SUMMARY (2011 DOLLARS)**

Project Phase	Total Cost (\$)	Federal Eligible (\$)	State Eligible (\$)	Local Share (\$)
<b>Phase 1 (2012-2016)</b>	4,240,000	3,860,944	189,528	189,528
<b>Phase 2 (2017-2021)</b>	1,125,000	1,024,425	50,288	50,288
<b>Phase 3 (2022-2031)</b>	400,000	364,240	17,880	17,880
<b>TOTAL</b>	5,765,000	5,249,609	257,696	257,696

Source: C&S Engineers, Inc.

Federally eligible airport projects in the State of Arizona currently receive funding from the FAA for 91.06 percent of a total project cost. The Arizona Department of Transportation (ADOT) contributes 4.47 percent of the total project cost and the sponsor or municipality is responsible for the remaining amount. The costs included in the above exhibits reflect this breakdown.

Using this pay structure, the current federal share is projected to be \$5,249,609 while the state share is projected to be \$257,696. The local share of capital projects is also projected at \$257,696 for the 20-year planning period.

## AIRPORT LAYOUT PLAN DRAWINGS

Central the ALP Update is to provide an updated set of drawings for the Airport. The principal drawing is the ALP, which identifies the major improvements required to comply with FAA standards and accommodate future development. Other drawings included as part of the set include the existing airport layout which shows the Airport as it is today, airspace, approach and obstruction plans which identify the location of obstructions at the Airport and provide recommendations for their removal, a land use plan that shows the existing and proposed land uses around the Airport, and the airport property map which shows the current airport property and identifies airport land acquisition that has occurred and is proposed. The full set of ALP drawings (reduced to half size) are contained on the following pages.



# AIRPORT LAYOUT PLAN UPDATE

## SAFFORD REGIONAL AIRPORT CITY OF SAFFORD GRAHAM COUNTY, ARIZONA



LOCATION & VICINITY MAP  
NOT TO SCALE

SHEET NO.
1.
2.
3.
4.
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SHEET NAME
TITLE SHEET
EXISTING AIRPORT LAYOUT (SPONSOR'S COPY ONLY)
AIRPORT LAYOUT PLAN
TERMINAL AREA PLAN
AIRSPACE PLAN AND OBSTRUCTION DATA
RUNWAY 12-30 INNER APPROACH PLAN AND PROFILE
RUNWAY 8-26 INNER APPROACH PLAN AND PROFILE
LAND USE AND GROUND ACCESS PLAN
AIRPORT PROPERTY MAP

SEPTEMBER 2012

FAA AIP # 3-04-0031-021-2010  
ADOT No. E2F98



**CAS COMPANIES**

CAS ENGINEERS, INC.

1000 S. Santa Fe Avenue, Suite 1000  
 San Diego, California 92108  
 Phone: 619-296-9373  
 Fax: 619-296-9383  
 www.cas-engineers.com

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**AIRPORT LAYOUT PLAN UPDATE**

**CITY OF SAFFORD**

**SAFFORD REGIONAL AIRPORT**

**GRAHAM COUNTY, ARIZONA**

PROJECT NO: K1800001

DATE: SEPTEMBER 2012

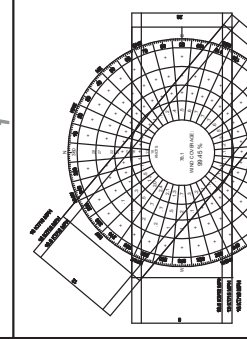
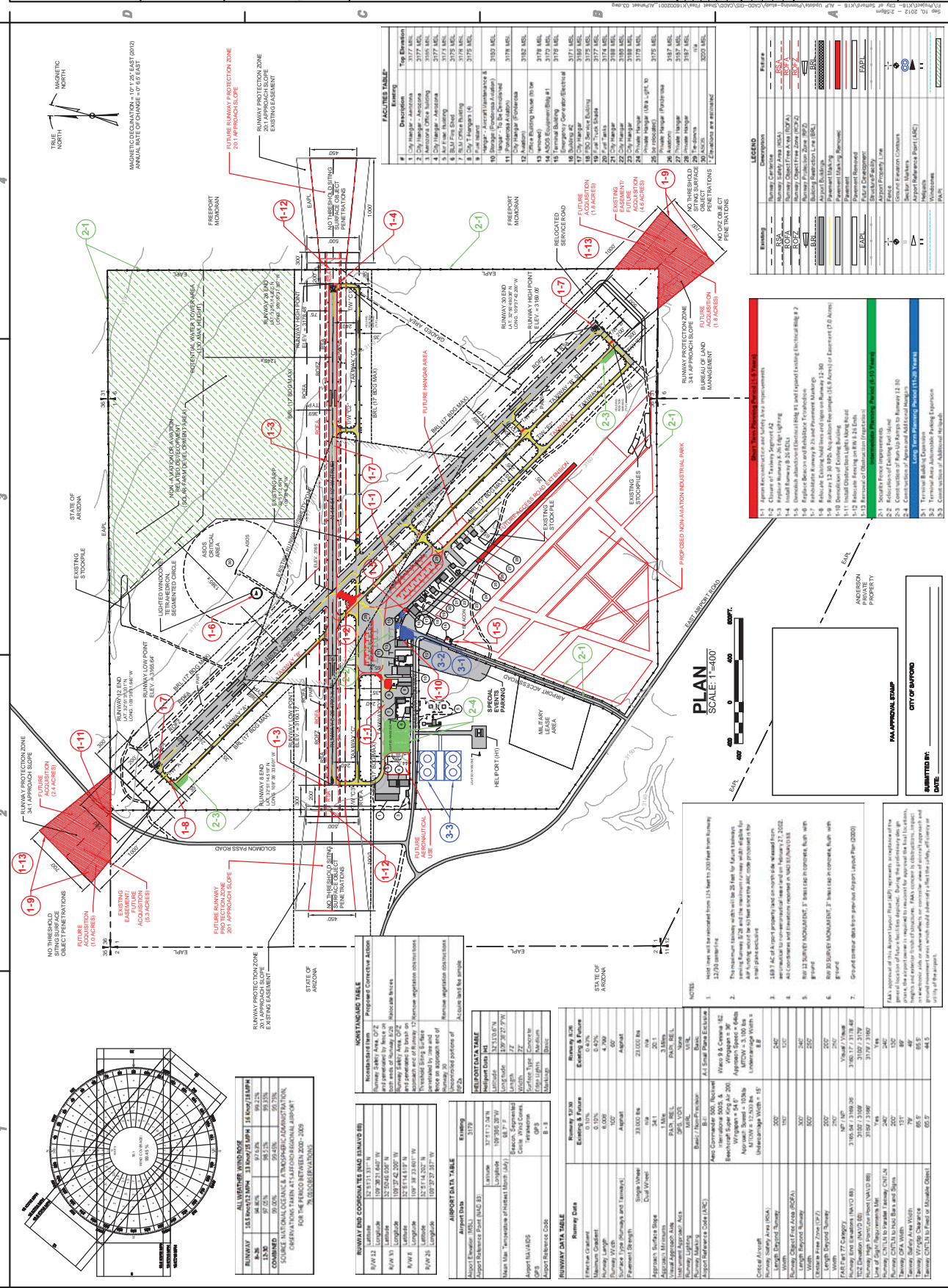
DRAWN BY: BMM

DESIGNED BY: BMM

CHECKED BY: BMM

**AIRPORT LAYOUT PLAN**

**SHEET 3 OF 3**



**MONTHLY WINDSPEED DATA**

Month	Windspeed (MPH)	Frequency (%)
Jan	10-15	10.0
Feb	15-20	15.0
Mar	20-25	20.0
Apr	25-30	25.0
May	30-35	30.0
Jun	35-40	35.0
Jul	40-45	40.0
Aug	45-50	45.0
Sep	50-55	50.0
Oct	55-60	55.0
Nov	60-65	60.0
Dec	65-70	65.0

**RELOCATED DATA TABLE**

Runway	Length (ft)	Width (ft)	Area (sq ft)
Runway 12	12,000	150	1,800,000
Runway 13	10,000	150	1,500,000
Runway 14	8,000	150	1,200,000
Runway 15	6,000	150	900,000
Runway 16	4,000	150	600,000
Runway 17	2,000	150	300,000

**RELOCATED DATA TABLE**

Runway	Length (ft)	Width (ft)	Area (sq ft)
Runway 18	12,000	150	1,800,000
Runway 19	10,000	150	1,500,000
Runway 20	8,000	150	1,200,000
Runway 21	6,000	150	900,000
Runway 22	4,000	150	600,000
Runway 23	2,000	150	300,000

**RELOCATED DATA TABLE**

Runway	Length (ft)	Width (ft)	Area (sq ft)
Runway 24	12,000	150	1,800,000
Runway 25	10,000	150	1,500,000
Runway 26	8,000	150	1,200,000
Runway 27	6,000	150	900,000
Runway 28	4,000	150	600,000
Runway 29	2,000	150	300,000

**RELOCATED DATA TABLE**

Runway	Length (ft)	Width (ft)	Area (sq ft)
Runway 30	12,000	150	1,800,000
Runway 31	10,000	150	1,500,000
Runway 32	8,000	150	1,200,000
Runway 33	6,000	150	900,000
Runway 34	4,000	150	600,000
Runway 35	2,000	150	300,000



City of Safford

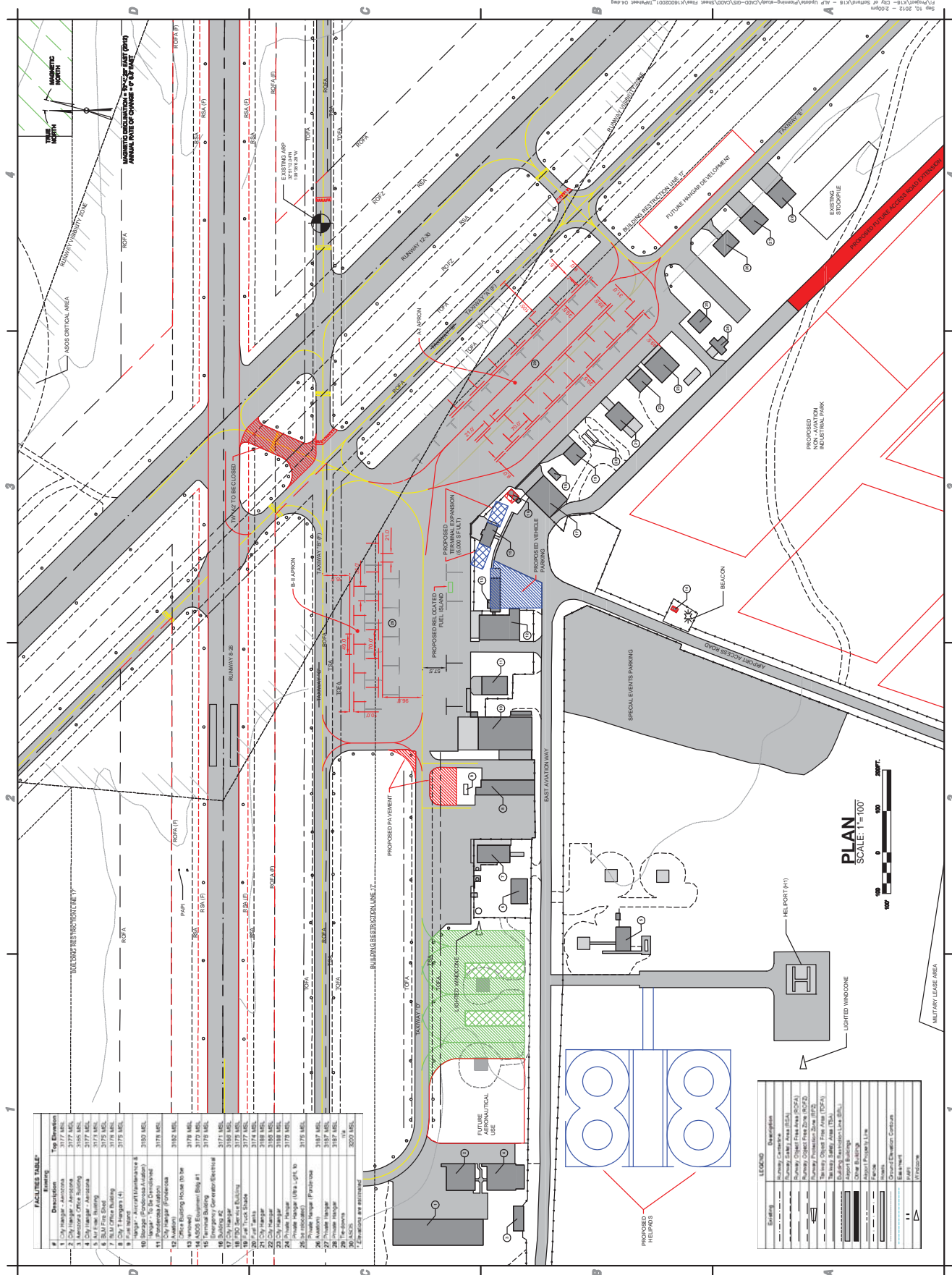
**AIRPORT LAYOUT PLAN UPDATE  
SAFFORD REGIONAL AIRPORT  
CITY OF SAFFORD  
GRAHAM COUNTY, ARIZONA**

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## TERMINAL AREA PLAN

**4**

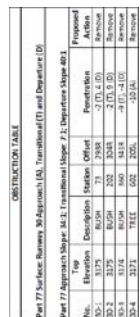
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**CITY OF SAFFORD**  
**GRAHAM COUNTY, ARIZONA**

**AIRPORT LAYOUT PLAN UPDATE**

MARK DATE DESCRIPTION

REVISIONS

PROJECT NO. K1600001

DATE: SEPTEMBER 2012

DRAWN BY: BPN

DESIGNED BY: BPN

CHECKED BY: GAN

**RUNWAY 8-26**  
**INNER APPROACH**  
**PLAN AND PROFILE**

SHEET NUMBER NO. **7**

SHEET 7 OF 8

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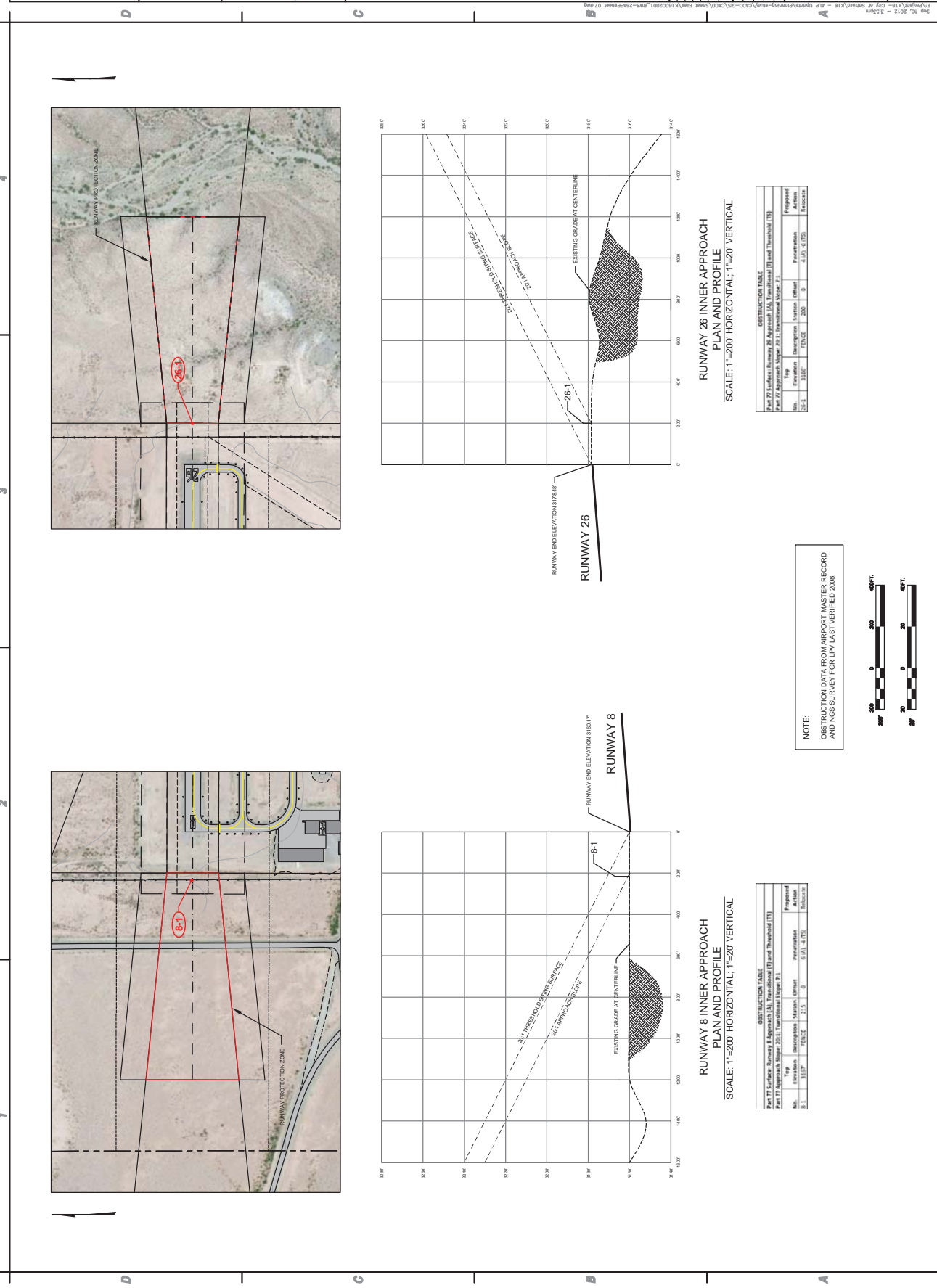
2000 Camino Del Rio North

San Diego, California 92108

Phone: 619-296-6373

Fax: 619-296-6603

www.candse.com



**RUNWAY 26 INNER APPROACH**  
**PLAN AND PROFILE**  
SCALE: 1"=200' HORIZONTAL, 1"=20' VERTICAL

Part 77 Surface Runway 26 Approach (A), Transitional (T) and Threshold (T)						
No.	Elevation	Description	Station Offset	Penetration	Proposed Action	
26-1	3030'	FENCE	200	0	4 (A), 4 (T)	Relocate

NOTE:  
OBSTRUCTION DATA FROM AIRPORT MASTER RECORD  
AND NGS SURVEY FOR LPV LAST VERIFIED 2006.





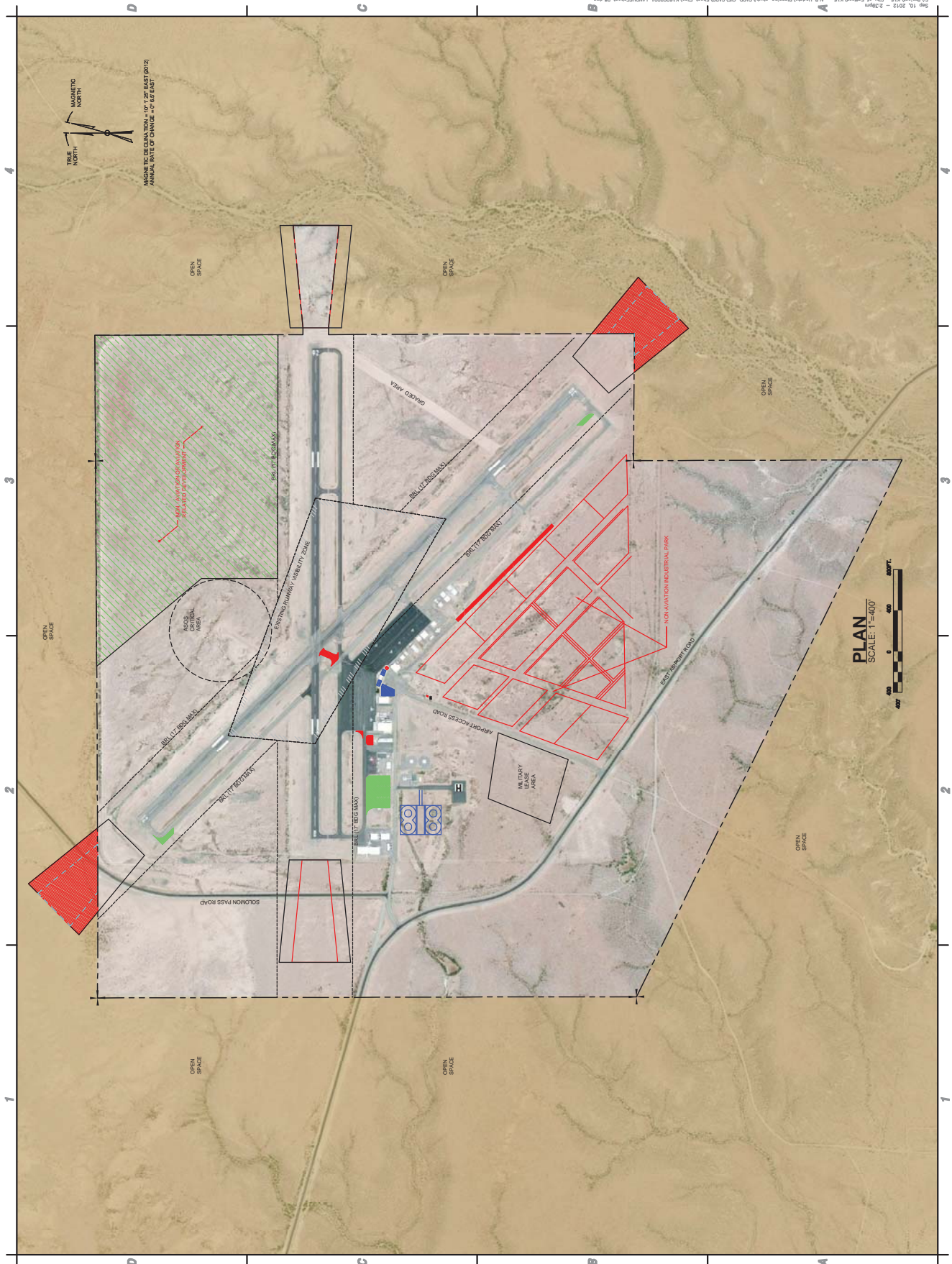
**AIRPORT LAYOUT PLAN UPDATE  
SAFFORD REGIONAL AIRPORT  
CITY OF SAFFORD  
GRAHAM COUNTY, ARIZONA**

WORK	DATE	DESCRIPTION
		REVISIONS
		PROJECT NO: K1802201
		DATE: SEPTEMBER 2012
		DRAWN BY: SPN
		DESIGNED BY: SPN
		CHECKED BY: GMM

# LAND USE AND GROUND ACCESS PLAN

8  
SHEET 8 OF 9

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[illegible]

9  
SHEET 9 OF 9  
SHEET PERFORMANCE NO.

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Reference Number	Tax Parcel Number	Previous Owner / Acquiree	Date of Acquisition	Previous Owner / Acquiree
1	105-00-002	City of Ashford	8/23/06	Acquiree
2	105-00-003	Acquiree	12/19/06	Acquiree
3	105-00-005	Acquiree	7/18	Acquiree
4	107-30-034	Pharis Design	8/19/02	Acquiree
5	105-00-004E	Acquiree	3/1/00	Acquiree
E1	N/A	State of Arizona	6/11/10	09/2
E2	N/A	Bureau of Land Management	6/18/1991	09/2
E3	N/A	Bureau of Land Management	7/29/1991	09/2

---



## Appendices

### Appendix A – Aviation Forecasts

### Appendix B – Airport Design Standards and Facility Requirements

### Appendix C – Background Information

Department of the Army Land Lease In Support of Fort Huachuca  
Signal and Communications Training With Safford Airport Authority



# **APPENDIX A**

## **AVIATION FORECASTS**





## Historical Activity Review

This section outlines the historical aviation activity at Safford Regional Airport (the Airport). Evaluating historical trends at the Airport provides insight into what can be expected when projecting future aviation activity levels.

Safford Regional Airport does not have an air traffic control tower (ATCT) to assist in keeping accurate historical data. The City of Safford did, however, maintain logs of based aircraft from 2008 to 2011. This data, along with the Federal Aviation Administration's (FAA) Terminal Area Forecast (TAF), the 2008 Draft Master Plan Update, and discussions with airport staff, was used to define the historical trend for based aircraft.

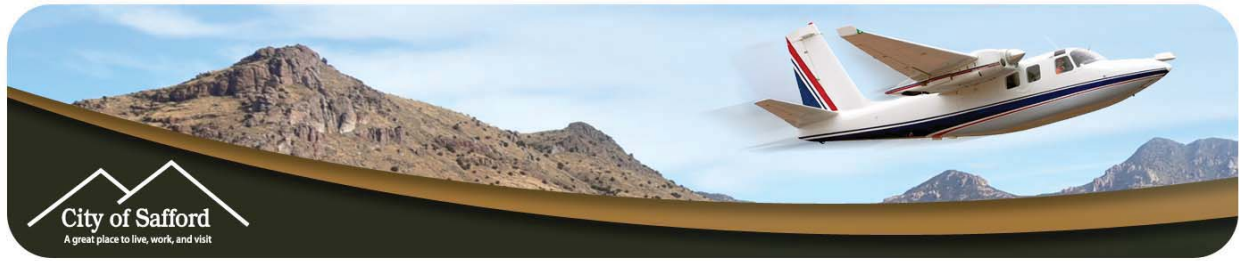
The 2008 Draft Master Plan coupled with records provided by the City of Safford indicate that the number of based aircraft peaked between 2006 and 2008 and has been gradually declining since (see **Exhibit 1**). It is worth noting that the previous FBO, Safford Aviation, ceased operations at the Airport in 2010. Safford Aviation's seven based aircraft also left the Airport, thus implying that the 2010 total of 32 includes several new aircraft, a positive step toward increasing operations and airport activity.

**EXHIBIT 1  
HISTORICAL BASED AIRCRAFT**



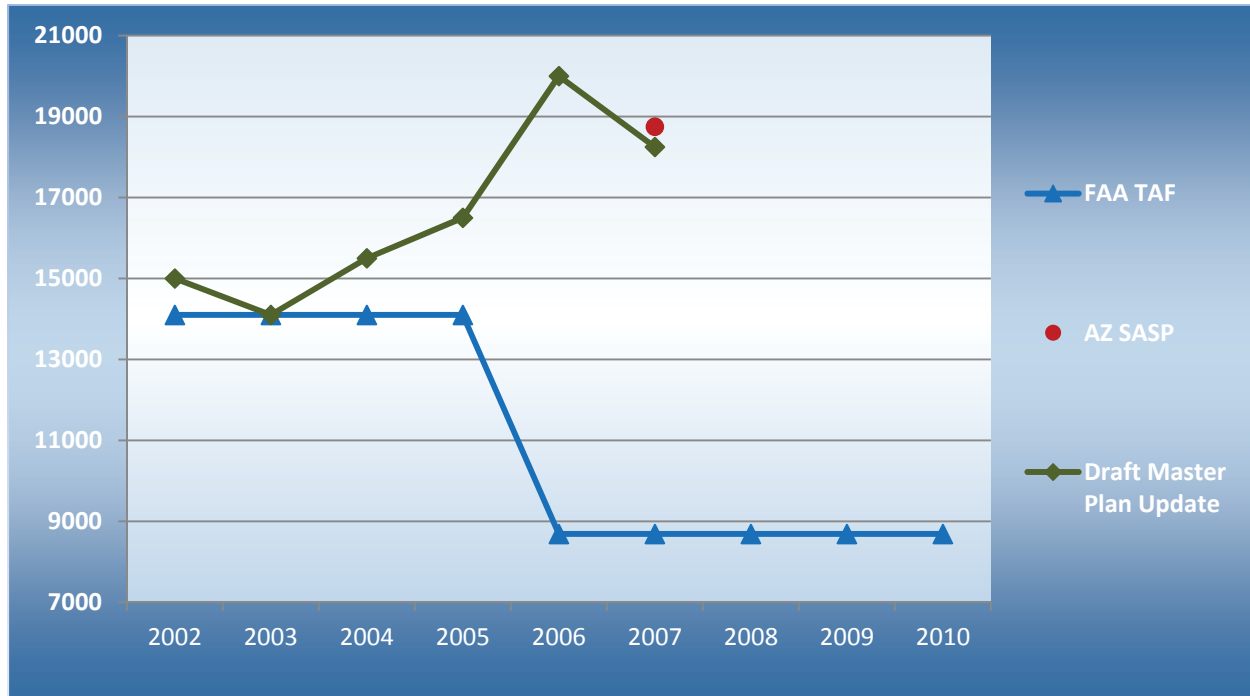
Source: 2008 Draft Master Plan Update, City of Safford and 2010 FAA TAF (not considered an accurate representation of historical activity)





The FAA's TAF, 2008 Draft Master Plan Update, and the Arizona State Airports System Plan (SASP) were used to define the historical trend for annual operations.

**EXHIBIT 2  
HISTORICAL OPERATIONS**



Source: 2010 FAA TAF, 2008 Draft Master Plan Update,  
2008 Arizona State Airport System Plan (SASP).

Note: AZ SASP does not provide historical operations data for the Airport  
so the "existing" operations total from AZ SASP was used for reference.

As shown in **Exhibit 2**, there are significant discrepancies between these sources. However, both the Draft Master Plan Update and FAA TAF show current (2011) operations levels to be lower than those in the mid-2000s. This trend is consistent with the historical based aircraft numbers, as shown above in **Exhibit 1**. Therefore, the forecast models used for documents created during these higher levels will need to be revalidated to reflect a lower starting point.

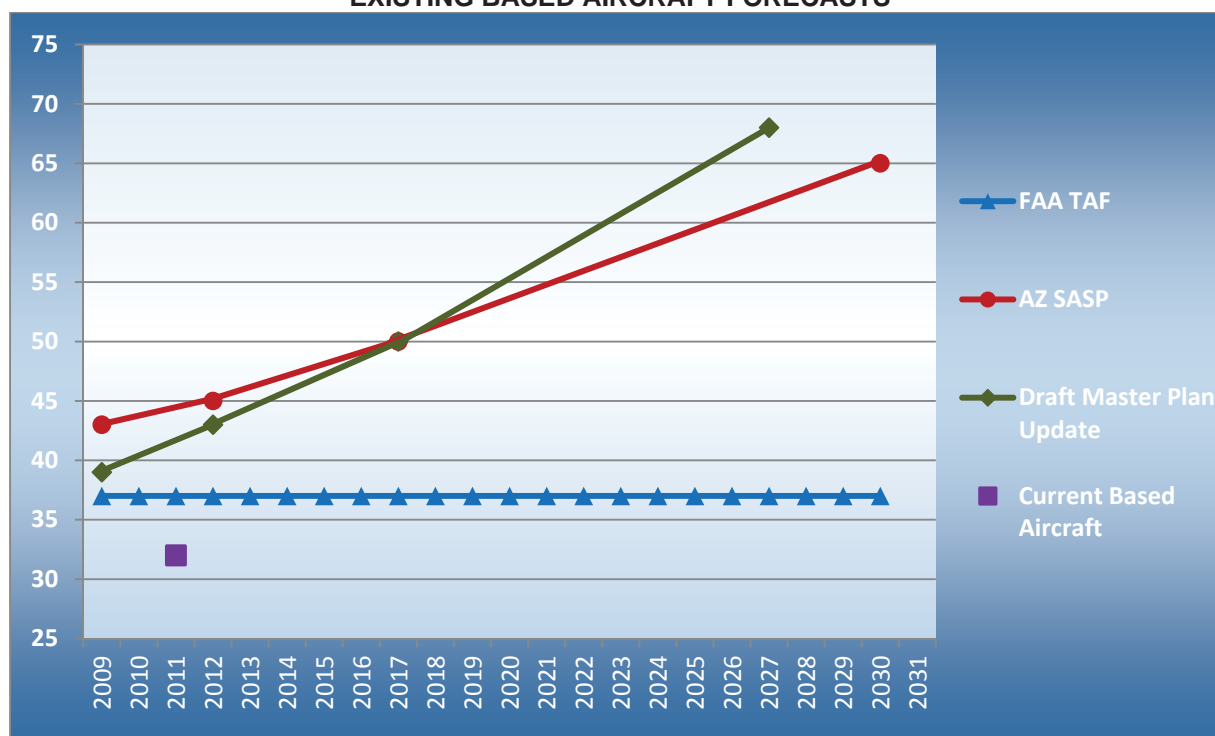
## Based Aircraft Forecast

This section analyzes existing based aircraft forecasts for Safford Regional Airport. This analysis compares the forecasting efforts of the Airport's previous Draft Master Plan Update with efforts of the FAA and the Arizona Department of Transportation (ADOT) in order to determine which methodology more closely aligns with the historic and current activity at Safford Regional Airport.



As noted in the previous section, the Airport has experienced a minor overall decrease in based aircraft in recent years. The 2008 Draft Master Plan Update noted that the Airport was home to 37 based aircraft in 2007. Airport records indicate that 32 aircraft are currently based at the Airport. Since seven of the former FBO's aircraft left in 2010, the 2011 total must include new aircraft. As stated earlier, this is a positive step toward increasing operations and airport activity. The Airport's various based aircraft forecasts are shown on **Exhibit 3**.

**EXHIBIT 3  
EXISTING BASED AIRCRAFT FORECASTS**



**Note: Current Based Aircraft is displayed for comparison purposes.**

**Source: 2010 FAA TAF, 2008 Arizona State Aviation System Plan, 2008 Draft Master Plan Update**

The FAA's TAF is revised annually. The 2010 TAF projects a flat growth rate for based aircraft at Safford Regional Airport and forecasts the based aircraft count to remain at 37 through the year 2030, (see **Exhibit 3**). However, the FAA Aerospace Forecasts for Fiscal Years (FY) 2011 to 2031 projects an increase in national general aviation activity over the mid- and long-term planning periods so the TAF's zero percent growth rate will not be used.

The 2008 Draft Master Plan Update analyzed several different forecast methodologies before selecting a 3.1 percent growth rate for based aircraft at the Airport. The based aircraft portion of the approved forecast was based on recent general aviation industry growth, the Airport's rise in based aircraft from 2002 to 2007, and employment trends. The resultant based aircraft forecast is shown on **Exhibit 3**.



The 2008 Arizona State Airport System Plan (SASP) provides individual airport-based aircraft forecasts for airports in the State of Arizona. The forecast utilizes a base year of 2007 and projects low, medium and high growth rate potentials for each facility. Based on area socioeconomics, the low forecasted annual growth rate for Safford Regional Airport is .66 percent. The medium annual growth rate of 2.03 percent was derived from historic based aircraft growth rates and industry trends. The high annual growth rate includes county population projections and industry trends and is projected to be 1.35 percent. Given the criteria for the medium growth rate scenario and its alignment with the 2008 Draft Master Plan Update based aircraft forecast, this scenario was chosen to represent the State System Plan’s forecast for the Airport and will serve as the preferred forecast.

In order to accurately revalidate the based aircraft forecast using the same methodology as that used for the medium forecasted annual growth rate of based aircraft presented in the SASP, historical based aircraft growth rates and general aviation trends must be examined. As of 2011, the historical based aircraft compound annual growth rates fall within the same range as used in the 2008 SASP, so revalidation is not necessary. However, the FAA Aerospace Forecasts for FY 2008 to 2025 that was used to determine aviation trends for the SASP has been updated for FY 2011 to 2031. The previous forecast projected U.S. active aircraft to grow at an annual rate of 1.35 percent. The SASP adjusted this rate for each airport according to its historic based aircraft growth, i.e. if an airport’s historic based aircraft growth was “slower” than the industry rate, the forecasted rate would be lowered to reflect this. The same methodology can be applied to the updated projections for FY 2011 to 2030, which projected a 0.9 percent annual growth rate for active general aviation aircraft. By following the guidelines in the 2008 SASP, the revalidated annual growth rate for based aircraft at Safford Regional Airport comes to 1.35 percent. The resultant preferred based aircraft forecast is shown in **Exhibit 4** and depicted on **Exhibit 5**.

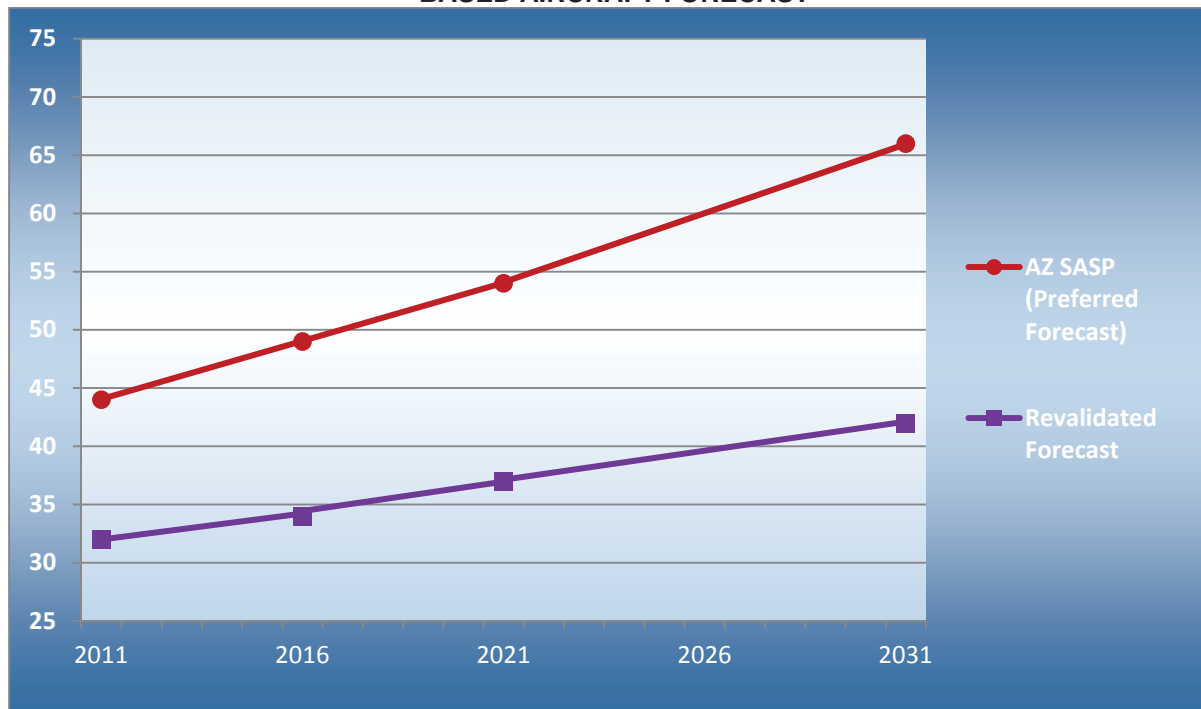
**EXHIBIT 4  
BASED AIRCRAFT FORECAST**

Year	2008 Arizona SASP Preferred Forecast	Revalidated (Preferred) Forecast
2011	44	32 (Existing)
2016	49	34
2021	54	37
2031	66	42

Source: 2008 Arizona State Airport System Plan,  
C&S Engineers, Inc.



**EXHIBIT 5  
BASED AIRCRAFT FORECAST**



Source: Arizona State Airport System Plan, 2008  
C&S Engineers, Inc.

## Based Aircraft Fleet Mix Forecast

The forecast of the based aircraft fleet mix (type of aircraft) is based upon expected national trends adjusted to local conditions. These forecasts give an indication of the growth and direction of the fleet and of potential future based aircraft. **Exhibit 6** presents the based aircraft fleet mix forecast for Safford Regional Airport.

The current fleet mix at the Airport consists of 47 percent single engine aircraft, 50 percent multi-engine aircraft and three percent rotorcraft. The types of aircraft in the fleet are not expected to significantly change over the 20-year planning period. In order to ensure adequate airport planning for potential future aircraft with more advanced facility demands, the possibility of future based jet aircraft was considered. Since there are no jet aircraft currently based at the Airport, national forecasts for jet growth were reviewed. The FAA Aerospace Forecasts for FY 2008 to 2025 had forecasted business jet use to grow at a higher rate than single and multi-engine piston aircraft. However, the updated FAA Aerospace Forecasts for FY 2011 to 2030 considers the current economic environment and its effects on the business jet market, anticipating slower growth of the business jet market in the short- and mid-term planning periods. The forecast does, however, anticipate growth of the jet market in the long-term



planning period. This expectation is based on increased corporate profits, safety concerns, and rising interest in business aviation over commercial air travel. This transition to a larger jet presence within the last 10 years of the planning period is reflected in **Exhibit 6**.

**EXHIBIT 6**  
**EXISTING AND FORECASTED FLEET MIX**

Year	Single Engine	Multi Engine	Jet	Rotorcraft	Total
2011	15	16	0	1	32
2016	16	17	0	1	34
2021	17	19	0	1	37
2031	19	21	1	1	42

Source: C&S Engineers, Inc.

## Annual Aircraft Operations Forecast

An aircraft operation is a measure of activity that is defined as either a takeoff or a landing. A takeoff and a landing are two operations. The annual general aviation operations forecast was derived for both local and itinerant operations through the use of an Operations-per-Based-Aircraft (OPBA) ratio. In order to develop a preferred OPBA method, several ratios were analyzed to find the best fit for Safford Regional Airport. These methods are summarized as follows:

- Method 1: 2010 FAA TAF for Safford Regional Airport (218 OPBA)
- Method 2: Safford Regional Airport Records (335 OPBA)
- Method 3: 2008 Arizona State Aviation System Plan (421 OPBA)
- Method 4: 2008 Draft Master Plan Update (500 OPBA)

The second method is the preferred forecast, as it is based on 2011 operations and based aircraft logs provided by the FBO and City of Safford. It is therefore the most accurate and up-to-date method. This forecast provides a conservative projection of the Airport's operations while allowing the sponsor to plan for steady growth over the planning period.

## Local/Itinerant Split

The FAA defines local general aviation operations as those performed by aircraft that:

- Operate in the local traffic pattern or within sight of an airport
- Are known to be departing for or arriving from flight in local practice areas within a 20-mile radius of the airport
- Are executing practice instrument approaches





The 2008 Arizona SASP provides the most up-to-date survey of local/itinerant operations splits for Safford Regional Airport. The survey data indicates that the Airport experiences a local/itinerant split of 21.2 percent local operations and 78.8 percent itinerant operations. This data is reflected in **Exhibit 7** and is applied to the above-mentioned operations forecast.

According to the Arizona SASP and the 2008 Draft Master Plan Update, there are consistently 1,500 military operations occurring each year. These numbers are not expected to increase over the planning period.

**EXHIBIT 7  
EXISTING AND FORECASTED ANNUAL OPERATIONS**

Year	Based Aircraft	OPBA	Local GA	Itinerant GA	Total GA	Military	TOTAL
2011	32	335	1,951	7,254	9,205	1,500	10,705
2016	34	335	2,097	7,793	9,890	1,500	11,390
2021	37	335	2,310	8,585	10,895	1,500	12,395
2031	42	335	2,665	9,905	12,570	1,500	14,070

Source: C&S Engineers, Inc.

## Design Hour Operations Forecast

Since many of the Airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month and peak hour operations. The peak period general aviation operations for 2011 at Safford Regional Airport were calculated using the following methodology:

- **Peak Month Operations:** This level of activity is defined as the calendar month when peak aircraft operations occur. According to the Flight Aware data, the peak month was April, which accounted for 9.8 percent of the total yearly operations.

$$\text{Peak Month Operations} = \text{Annual Operations} \times .098$$

- **Design Day Operations:** This level of operations is defined as the average day within the peak month.

$$\text{Design Day Operations} = \text{Peak Month Operations} / 30$$

- **Design Hour Operations:** This level of activity is defined as the peak hour within the design day. Typically these operations will range between 10 and 15 percent of the design day operations. According to the Flight Aware data, the busiest hour of the busiest day in April occurred between 14:00 and 15:00, with five operations. This accounts for 42 percent of that day's total operations (12).



$$\text{Design Hour Operations} = \text{Design Day Operations} \times 0.42$$

**Exhibit 8** presents the forecast of peaking characteristics for general aviation operations at Safford Regional Airport.

**EXHIBIT 8  
EXISTING AND FORECASTED GENERAL AVIATION OPERATIONAL PEAKING**

Year	Annual Operations (GA + Military)	Peak Month Operations	Design Day Operations	Design Hour Operations
2011	10,705	1,049	35	15
2016	11,390	1,116	37	16
2021	12,395	1,215	41	17
2031	14,070	1,379	46	19

Source: Flight Aware, C&S Engineers, Inc.

## Forecasts of Annual Instrument Approaches

A necessary task in assessing the need for new or improved landing aids is a forecast of the levels of instrument approaches at the Airport. An instrument approach can be defined as a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions (i.e., poor weather) from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. At most general aviation airports, instrument operations will comprise two to five percent of the total operations. According to Flight Aware, there were approximately 1,800 instrument operations from September 2010 to September 2011, accounting for 16.7 percent of total annual operations. Therefore, 16.7 percent will be used for instrument approach forecasting. The results are shown in **Exhibit 9**.

**EXHIBIT 9  
EXISTING AND FORECASTED INSTRUMENT APPROACHES**

Year	Total Operations	Approach Percentage	Approach Forecast
2011	10,705	16.7%	1,787
2016	11,390	16.7%	1,902
2021	12,395	16.7%	2,070
2031	14,070	16.7%	2,350

Source: Flight Aware, C&S Engineers, Inc.

## Aviation Demand Forecast Summary

The Safford Regional Airport 20-year forecast for aviation activity conservatively projects steady growth over the period for general aviation activity. A summary of forecasted demand at the Airport is presented in **Exhibit 10**. Demand elements from these forecasts will be used in the



facility requirements section of this report. To better assist in the FAA's review of the forecast elements, the operations forecast summary is compared to the FAA TAF in **Exhibit 11**.

**EXHIBIT 10  
AVIATION DEMAND FORECAST SUMMARY**

					Average Annual Compound Growth Rates		
	2011	2016	2021	2031	2011-2016	2016-2021	2021-2031
Operations							
General Aviation							
Local	1,951	2,097	2,310	2,665	1.5%	2.0%	1.4%
Itinerant	7,254	7,793	8,585	9,905	1.4%	2.0%	1.4%
Military	1,500	1,500	1,500	1,500	0.0%	0.0%	0.0%
TOTAL OPS	10,705	11,390	12,395	14,070	1.3%	1.7%	1.3%
Instrument Operations	1,787	1,902	2,070	2,350	1.3%	1.7%	1.3%
Design Day Operations	35	37	41	46	1.1%	2.1%	1.2%
Design Hour Operations	15	16	17	19	1.3%	1.2%	1.1%
OPBA	335	335	335	335	N/A		
Based Aircraft							
Single Engine	15	16	17	19	1.3%	1.2%	1.1%
Multi Engine	16	17	19	21	1.2%	2.2%	1.0%
Jet	0	0	0	1	0.0%	0.0%	N/A
Helicopter	1	1	1	1	0.0%	0.0%	0.0%
TOTAL	32	34	37	42	1.2%	1.7%	1.3%

Source: C&S Engineers, Inc.

**EXHIBIT 11  
TAF COMPARISON**

	Year	Forecast	TAF	Forecast / TAF (% Difference)
Base yr.	2011	10,705	8,690	23.2%
Base yr. + 5yrs.	2016	11,390	8,690	31.1%
Base yr. + 10yrs.	2021	12,395	8,690	42.6%
Base yr. + 20yrs.	2031	14,070	8,690	61.9%

Source: C&S Engineers, Inc.



## **APPENDIX B**

# **AIRPORT DESIGN STANDARDS AND FACILITY REQUIREMENTS**



## Airside Requirements

**Exhibits 1 and 2** identify FAA standard dimensions for design of B-II airports and compare established standards with Runways 12-30 and 8-26.

**EXHIBIT 1**  
**AIRPORT DESIGN STANDARDS (B-II) for Runway 12-30**  
**(Visual runways and runways with not lower than  $\frac{3}{4}$  mile approach visibility minimums)**

Design Criteria	Standard Dimensions (feet)	Existing Conditions (feet)	Meet Standard?
Runway Length	5,125	6,006	Yes
Runway Width	75	100	Yes
Runway Centerline to			
- Holdline	200	130	No
- Taxiway/Taxilane Centerline	240	240	Yes
- Aircraft Parking Area	250	390	Yes
Runway Safety Area			
- Width	150	150	Yes
- Length (prior to landing threshold)	300	300	Yes
- Length (beyond runway end)	300	300	Yes
Runway Object Free Area			
- Width	500	500	Yes
- Length (beyond runway end)	300	300	Yes
Runway Protection Zone			
- Inner Width	500	500	Off property
- Outer Width	700	700	Off property
- Length (starting 200' beyond runway end)	1,000	1,000	Off property
Taxiway Width(s)	35	35	Yes
Taxiway Centerline to			
- Parallel Taxiway/Taxilane Centerline	105	225	Yes
- Fixed or Movable Object	65.5	65.5	Yes
Taxilane Centerline to			
- Parallel Taxilane Centerline	97	N/A	N/A
- Fixed or Movable Object	57.5	55	No
Taxiway Safety Area Width	79	79	Yes
Taxiway Object Free Area Width	131	131	Yes
Taxilane Object Free Area Width	115	110	No

Sources: FAA Advisory Circular 150/5300-13, *Airport Design*,  
2008 Draft Master Plan Update, 5010 Airport Master Record and C&S Engineers, Inc.





**EXHIBIT 2**  
**AIRPORT DESIGN STANDARDS (B-II) for Runway 8-26**  
**(Visual runways and runways with not lower than ¾ mile approach visibility minimums)**

Design Criteria	Standard Dimensions (feet)	Existing Conditions (feet)	Meet Standard?
Runway Length	5,125	4,799	No
Runway Width	75	75	Yes
Runway Centerline to			
- Holdline	200	130	No
- Taxiway/Taxilane Centerline	240	240	Yes
- Aircraft Parking Area	250	345	Yes
Runway Safety Area			
- Width	150	150	Yes
- Length (prior to landing threshold)	300	300	Yes
- Length (beyond runway end)	300	300	Yes
Runway Object Free Area			
- Width	500	500	Off-property
- Length (beyond runway end)	300	300	Off-property
Runway Protection Zone			
- Inner Width	500	500	Off property
- Outer Width	700	700	Off property
- Length (starting 200' beyond runway end)	1,000	1,000	Off property
Taxiway Width(s)	35	35	Yes
Taxiway Centerline to			
- Parallel Taxiway/Taxilane Centerline	105	240	Yes
- Fixed or Movable Object	65.5	65.5	Yes
Taxilane Centerline to			
- Parallel Taxilane Centerline	97	N/A	N/A
- Fixed or Movable Object	57.5	55	No
Taxiway Safety Area Width	79	79	Yes
Taxiway Object Free Area Width	131	131	Yes
Taxilane Object Free Area Width	115	110	No

**Sources: FAA Advisory Circular 150/5300-13, *Airport Design*,  
2008 Draft Master Plan Update, 5010 Airport Master Record and C&S Engineers, Inc.**

Currently, Runway 12-30 does not meet B-II design standards for the runway centerline separation distance to holdline or its taxilane centerline separation distance to a fixed or movable object. The latter separation distance determines the taxilane object free area width, which is therefore noncompliant. Additionally, the RPZs on either side of Runway 12-30 extend off airport property.



As shown in **Exhibit 2**, Runway 8-26 does not meet FAA design standards for a B-II runway. The greatest concern is the existing runway length, which is approximately 325 feet shorter than standard. However, it would not be prudent to extend the runway at this time or in the near future because the primary runway provides adequate wind coverage and thus does not necessitate a crosswind runway. In collaboration with the airport sponsor and with input from the FBO, it was decided to designate Runway 8-26 as A-I and reserve this runway for small aircraft use. The airport sponsor should submit this information to the FAA so that the 5010 Airport Master Record can be updated accordingly. **Exhibit 3** shows that the existing Runway 8-26 meets all design standards for A-I aircraft.

**EXHIBIT 3**  
**AIRPORT DESIGN STANDARDS (A-I for Small Aircraft) for Runway 8-26**  
**(Visual runways and runways with not lower than ¾ mile approach visibility minimums)**

Design Criteria	Standard Dimensions (feet)	Existing Conditions (feet)	Meet Standard?
Runway Length	1,054	4,799	Yes
Runway Width	60	75	Yes
Runway Centerline to			
- Holdline	125	130	Yes
- Taxiway/Taxilane Centerline	150	240	Yes
- Aircraft Parking Area	125	345	Yes
Runway Safety Area			
- Width	120	120	Yes
- Length (prior to landing threshold)	240	240	Yes
- Length (beyond runway end)	240	240	Yes
Runway Object Free Area			
- Width	250	250	Yes
- Length (beyond runway end)	240	240	Yes
Runway Protection Zone			
- Inner Width	250	250	Yes
- Outer Width	450	450	Yes
- Length (starting 200' beyond runway end)	1,000	1,000	Yes
Taxiway Width(s)	25	35	Yes
Taxiway Centerline to			
- Parallel Taxiway/Taxilane Centerline	69	240	Yes
- Fixed or Movable Object	44.5	65.5	Yes
Taxilane Centerline to			
- Parallel Taxilane Centerline	64	N/A	N/A
- Fixed or Movable Object	39.5	55	Yes
Taxiway Safety Area Width	49	79	Yes
Taxiway Object Free Area Width	89	131	Yes
Taxilane Object Free Area Width	79	110	Yes

Sources: FAA Advisory Circular 150/5300-13, *Airport Design*,  
2008 Draft Master Plan Update, 5010 Airport Master Record and C&S Engineers, Inc.



## Runway Length and Width Analysis

In order to determine runway length requirements, the methodology in FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design*, was used. Based on the Airport's elevation of 3,179 feet, a mean maximum temperature for the hottest month of 98.7° F, and the Airport's critical aircraft, the runway length requirement for Safford Regional Airport (the Airport) is approximately 5,125 feet.

According to this analysis, the existing length of Runway 12-30 (6,006 feet) is adequate to accommodate the critical family of aircraft operating at the Airport.

The FAA AC was also used to determine if the crosswind runway would comply with standards for A-I aircraft. Using the applicable methodology and based on the Airport's elevation, Runway 8-26 would need to be 1,054 feet ( $800 \text{ feet} + [0.08 * \text{airport elevation}]$ ). The existing length of Runway 8-26 exceeds this requirement.

Runway width is a dimensional standard that is based upon the physical characteristics of aircraft using the Airport. The required runway width for a B-II runway is 75 feet and the required runway width for an A-I runway is 60 feet. Both runways currently exceed these standards.

## Taxiway System

Based on FAA Advisory Circular 150/5300-13, the existing taxiway system is in compliance with dimensional standards. However, according to the FAA's Engineering Brief (EB) Number 89 regarding taxiway nomenclature (dated March 29, 2012) the naming structure of the existing taxiway system does not follow FAA guidelines. For example, the brief states the following:

“e. (2) For a runway with a parallel taxiway, the entrance and exit taxiways located at the ends and along the runway must use alphanumeric designators and follow an increasing, sequentially numbered pattern from one runway end to the other runway end, such as A1, A2, ..., A5.”

The existing taxiway parallel to Runway 12-30 changes from Taxiway A to Taxiway B at the intersection with Runway 8-26. This results in what may be a confusing progression from Taxiway Segments A1 to A2 to B3 to B2 to B1. It would be preferable to continue using the letter “A” for designation purposes across the entire parallel taxiway and continue the numbering from one end to the other.

Engineering Brief 89 directs airport owners and planners to “keep it simple and logical.” Though this is a subjective guideline, it seems illogical that Runway 12-30's parallel taxiways are



designated as Taxiway A and B and then jump to E. This is likely because Taxiway E was added after Taxiways C and D were already constructed and named.

An additional guideline that may be relevant to the Airport states that designations for inner and outer taxi routes around a terminal should follow a logical progression into the airfield environment. This is not always possible due to other requirements but should be considered.

In reviewing the taxiway system it was observed that Taxiways D and E may not be necessary in the future given the forecasted aviation activity levels for the Airport and due to the full parallel taxiways that serve both runways. If it were determined that either or both of these were no longer needed, they could be closed off as taxiways and used for access to aircraft hangars.

In the short term, the Airport should plan to close Taxiway A2 due to potential safety hazards. This taxiway leads directly to the intersection of Runways 12-30 and 8-26, a dangerous position for taxiing aircraft as well as aircraft traversing the runways. The airport sponsor should also consider closing or making changes to taxiways that provide straight and direct access from the apron area to the runways for safety reasons.

## **Taxilane System**

The existing taxilane object-free area widths and separation distances to the nearest fixed or movable object are noncompliant with FAA AC 150/5300-13 standards. If designated as A-I, Runway 8-26 would comply with the latter standard.

## **Land Requirements**

The airport property totals 948 acres. Portions of the Runway 12-30 RPZ extend outside of the airport property boundary and should be acquired in the future. The Runway 12 RPZ extends onto state land and the Runway 30 RPZ onto both federal and private land.

## **Instrumentation and Lighting**

Instrumentation and lighting includes runway and taxiway lighting, approach lighting, wind indicators and visual approach aids. Existing instrumentation and lighting available on the Airport include the following (those in need of replacement are noted as such):

- Medium Intensity Runway Lighting (MIRL) on both runways.
- Medium Intensity Taxiway Lighting (MITL) on all taxiways.
- Runway End Identifier Lights (REILs) on both ends of Runway 12-30.
- Threshold lighting on Runway 12-30.
- Security lighting in the apron area.





- Pole-mounted lighting in the terminal area apron.
- Visual Aids:
  - Rotating beacon (in need of replacement).
  - Lighted wind indicators.
  - Non-lighted wind indicators.
  - Segmented circle (in need of replacement).
  - Precision Approach Path Indicators (PAPIs) on both runway ends.
- Instrument Approach Aids:
  - GPS approach to both runways with one-mile visibility minimums.
  - San Simon VORTAC, located 40 nautical miles southeast of the Airport.

## Landside Requirements

The planning of landside facilities should be based upon a balance of airside and landside capacity. The determination for terminal and support area facilities has been accomplished for the three future planning periods. The principal operating elements covered under these analyses for general aviation requirements include:

Aircraft Apron Area  
Hangars  
Terminal Building  
Vehicle Parking  
Support Areas

### Aircraft Apron Area

There are currently 34 paved tie-down spaces available for aircraft on 51,200 square yards of apron. According to the FBO and information provided in the 2008 Draft Master Plan Update, the majority of based aircraft are stored in airport hangars. The FBO estimated that less than five aircraft are currently based on the east apron. Using FAA methodology and assuming that the number of aircraft based on the apron are split between multi- and single-engine aircraft and will continue to grow at the forecasted rate for based aircraft (1.35 percent per year), the following table represents the need for apron areas to accommodate based aircraft:



**EXHIBIT 4  
GENERAL AVIATION BASED AIRCRAFT APRON REQUIREMENTS**

Year	Based Aircraft on Apron	Required Apron (SY)
2011	4	1,200
2016	4	1,200
2021	5	1,500
2031	5	1,500

Source: C&S Engineers, Inc.

**Note:** Based aircraft stored on the apron are assumed to be split between single- and multi-engine aircraft. Since there is an uneven number for the mid- and long-term planning periods, it is assumed that three of these aircraft will be single-engine and two will be multi-engine due to the preference to store larger aircraft in hangars.

Areas designated for the parking of transient (visiting) aircraft are called "itinerant aprons." The itinerant apron areas are also used by based aircraft for loading, fuel, maintenance, and other activities. The size of such an apron required to meet FBO/itinerant demand was estimated using the following methodology:

Assume the average itinerant busy day operations are 10 percent more active than the average day of the peak month (ADPM).

Assume that a certain portion of the itinerant airplanes will be on the apron during the busy day (FAA Advisory Circular 150/5300-13 uses 50 percent). Since 50 percent of the operations are departures, only 25 percent of the daily operations will represent aircraft on the ground in need of parking area.

Calculate the apron needed using 400 square yards per itinerant aircraft. Applying this approach to the general aviation operations forecast yields the demand for apron area shown in **Exhibit 5**.

**EXHIBIT 5  
GENERAL AVIATION ITINERANT APRON REQUIREMENTS**

Year	Busy Day Itinerant Operations	Itinerant Aircraft on Apron	Required Apron (SY)
2011	26	7	2,800
2016	28	7	2,800
2021	31	8	3,200
2031	36	9	3,600

Source: C&S Engineers, Inc.



There are currently 34 paved tie-down spaces for both FBO/itinerant and based aircraft on 51,200 square yards of the apron. **Exhibit 6** shows the total need for apron area parking over the planning period:

**EXHIBIT 6**  
**GENERAL AVIATION APRON REQUIREMENTS**

Year	GA Itinerant Apron Requirements (SY)	GA Based Aircraft Apron Requirements (SY)	Total GA Apron Requirements (SY)
2011	2,800	1,200	4,000
2016	2,800	1,200	4,000
2021	3,200	1,500	4,700
2031	3,600	1,500	5,100

Source: C&S Engineers, Inc.

The Airport will not require additional apron area over the planning period. However, existing tie-downs could be reconfigured to more efficiently serve transient aircraft. For example, a nested pattern of tie-downs on the east apron would allow for additional tie-downs while minimizing the amount of space required. Furthermore, it is recommended that the airport sponsor designate the east apron for A-I aircraft and the west apron for B-II aircraft. This would avoid unnecessary costs associated with strengthening the former area for large aircraft. The FBO also noted that the tie-downs on the west apron are sized too large to be practical for the type of aircraft typically parking at the Airport.

## Aircraft Hangars

Hangar requirements for a general aviation facility are a function of the number of based aircraft, the type of aircraft to be accommodated, owner preferences, and area climate.

The City of Safford owns nine conventional hangars and one row of T-hangars with four units, all of which are occupied by private individuals or businesses. There is currently 51,287 square feet of city-owned hangar space at the Airport (4,994 square feet of T-hangars and 46,293 square feet of conventional hangars). However, not all of this space is available for aircraft storage due to existing business operations. Jetcrafters Worldwide Inc. rents hangar space on the west side of the Airport that is used primarily for aircraft painting and interior services (they recently ended one hangar lease with the City, which is now used for aircraft storage). By deducting the hangar space that is unavailable for aircraft storage, there are 35,926 square feet of city-owned conventional hangar space and 4,994 square feet of city-owned T-hangar space capable of storing aircraft.

There are five additional conventional hangars and one single-unit T-hangar that were constructed by tenants who lease or leased the ground from the City of Safford. These hangars total 20,082 square feet, though one hangar (10,400 square feet) is used primarily for aircraft



maintenance by Ponderosa Aviation and is therefore unavailable for aircraft storage. For planning purposes, only city-owned hangars were considered as it is assumed that privately owned hangars will not accommodate future, additional based aircraft.

Typical aircraft sizes were reviewed in light of the evolution of business aircraft size. Conventional hangar space was based upon a standard of 1,200 square feet for a single-engine aircraft, 1,400 square feet for a multi-engine piston aircraft, 1,400 square feet for a helicopter, and 1,800 square feet for a turboprop or turbojet aircraft. A standard of 1,400 square feet per T-hangar unit was used in calculating area requirements. These hangar areas were then applied to the based aircraft forecasts (after subtracting the based aircraft stored on the apron area as discussed above) to determine the actual hangar area requirements for each hangar type. The following assumptions were made regarding the type of hangar needed for each type of aircraft:

#### EXHIBIT 7 AIRCRAFT STORAGE

Percent of Aircraft Type	Type of Storage
100% of Turboprop/Jet/Helicopter	Conventional Hangar
60% of Multi-Engine Piston	Conventional Hangar
40% of Multi-Engine Piston	T-Hangar
30% of Single-Engine Piston	Conventional Hangar
70% of Single-Engine Piston	T-Hangar

Using the above assumptions combined with the forecast of fleet mix, **Exhibit 8** sets forth the demand requirements for hangar space at Safford Regional Airport.

#### EXHIBIT 8 HANGAR AREA DEMAND (square feet / number of available spaces)

FINANCIAL AREA DEMAND (Square feet / Number of available spaces)				
Item	Existing	Year		
		2016	2021	2031
Conventional Hangars				
Helicopters		1,400 / 1	1,400 / 1	1,400 / 1
Turboprop/Jet		0 / 0	0 / 0	1,800 / 1
Single-engine piston		4,800 / 4	5,600 / 4	6,000 / 5
Multi-engine piston		12,600 / 9	14,000 / 10	15,400 / 11
Sub-total	35,926	18,800 / 14	21,000 / 15	24,600 / 18
T-Hangars				
Single-engine		14,000 / 10	14,000 / 10	15,400 / 11
Multi-engine piston		8,400 / 6	9,800 / 7	11,200 / 8
Sub-Total	4,994	22,400 / 16	23,800 / 17	26,600 / 19
Grand Total	40,920	41,200 / 30	44,800 / 32	51,200 / 37

Source: C&S Engineers, Inc.





Although there is enough conventional hangar space to accommodate anticipated future demand for this hangar type, there is very limited T-hangar space. The airport sponsor and FBO made it clear that there is already demand for additional hangar space. Therefore additional hangars should be constructed in the future.

### General Aviation Terminal Building

The existing 1,600 square foot terminal building includes a lobby, pilot lounge, administrative area for the Airport Manager/Fixed Base Operator (FBO), equipment room, and restrooms. The FAA has developed a “rule of thumb” for determining terminal building area needs, which estimates that 150 square feet of gross terminal building area are needed per design peak-hour passenger.

Using this standard, the recommended general aviation terminal function size for each design year is presented in **Exhibit 9**. Numbers of peak hour passengers shown in the table were derived by assuming two passengers and pilots per general aviation design hour operation.

**EXHIBIT 9**  
**GENERAL AVIATION TERMINAL BUILDING REQUIREMENTS**

Year	Design Hour Operations (GA Only)	Peak Hour Pilots & Passengers	Terminal Function Size (Square Feet)
2011	13	26	3,900
2016	14	28	4,200
2021	15	30	4,500
2031	17	34	5,100

Source: C&S Engineers, Inc.

The existing 1,600 square foot terminal building does not meet the recommended standards during the planning period. If operations levels continue to rise, the airport sponsor may consider increasing the size of the terminal once the existing building has reached the end of its useful life.

### General Aviation Automobile Parking

The number of auto spaces required at an airport is dependent upon the level of general aviation aircraft activity at the facility. The methodology for determining parking needs relates peak hour pilots, passengers, and airport employees to the number of parking spaces required. Numbers of peak hour pilots and passengers were previously derived for the general aviation terminal building requirements. Since there are no official airport employees this visitor type will be excluded from calculations. (All employees of the FBO or other private businesses generally



park in undesignated spots near their hangars for convenience purposes.) According to the City of Safford, the only other people utilizing this parking area are occasional maintenance providers and delivery services. It is assumed that at any given time there would be two or three of these transient vehicles parked in the lot. The number of auto parking spaces should therefore equal the sum of the peak hour pilots/passengers at the airport and the maximum anticipated number of maintenance/delivery automobiles visiting the airport. This number was converted into paved area by using a standard of 22 square yards per vehicle space (refer to **Exhibit 10**). Currently, the Airport has approximately 1,675 square yards of automobile parking. The forecasted operations indicate that there is adequate paved area to meet demand throughout the planning period. However, the airport sponsor may want to reconsider their needs if parking patterns drastically change over the planning period. For example, if FBO or private business employees begin utilizing this automobile parking area there will likely be a need for additional spaces.

**EXHIBIT 10**  
**AUTO PARKING AREA REQUIREMENTS**

Year	Peak Hour Pilots & Passengers	Maximum Visitors	Needed Parking Spaces	Area (SY)
2011	26	3	29	638
2016	28	3	31	682
2021	30	3	33	726
2031	34	3	37	814

Source: C&S Engineers, Inc.

There is an additional parking lot on the west side of the airport access road and directly south of East Aviation Way. This area is used almost exclusively for special events parking and activities due to its inconvenient location in relation to the airport hangars, terminal and other key buildings and structures. Airport visitors or pilots wishing to visit the terminal building would need to walk north along the airport access road, cross East Aviation Way, and walk through the existing terminal parking area before arriving at their destination. This is particularly impractical for visitors making deliveries or providing maintenance services. This area was therefore excluded from calculations to determine existing parking availability.

## Support Areas

There are two main issues with the existing fuel facility, which is operated by the FBO. Currently pilots wishing to fuel their aircraft must stretch the hose a good distance to reach from the tank to their parked aircraft, increasing the risks of spills. This is due to the lack of pavement/aircraft parking space available adjacent to the tanks. By paving the surrounding area aircraft would be able to fuel more conveniently and with less risk.



The second issue regarding the fuel facility is its location. The FBO (with the airport sponsor's support) may want to consider relocating to a more centralized location closer to the main terminal, which could benefit fuel sales and frequency of use.

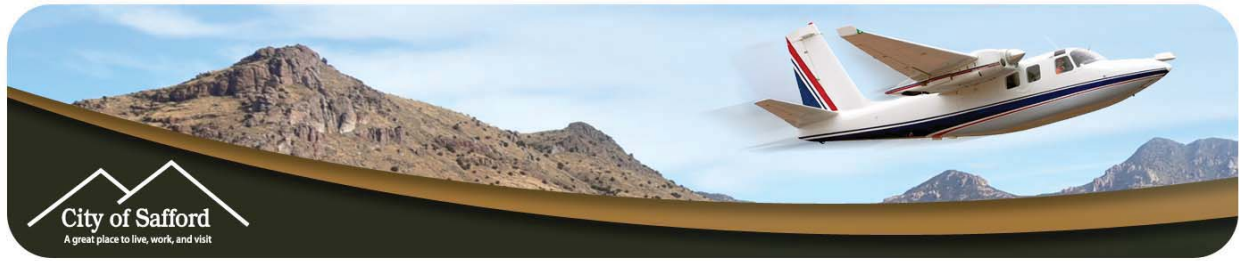
There are currently two electrical buildings serving the Airport. One is located adjacent to the airport access road and the other is just east of the terminal building. The building near the beacon is run-down and poorly located. The airport sponsor may consider closing this vault and expanding the capabilities of the terminal area vault to accommodate the entire airport's electrical needs.



# **APPENDIX C**

## **BACKGROUND INFORMATION**





Department of the Army  
Land Lease  
In Support of Fort Huachuca Signal and Communications  
Training  
With Safford Airport Authority

DEPARTMENT OF THE ARMY

LAND LEASE

IN SUPPORT OF FORT HUACHUCA  
SIGNAL AND COMMUNICATIONS TRAINING

With Safford Airport Authority

Lease No. DACA09-5-02-0304

THIS LEASE, made and entered into as of this 1<sup>st</sup> day of January 2002 by and between the Safford Airport Authority, an Arizona Corporation whose address is: P.O. Box 530, Safford Arizona 85548 and whose interest in the property hereinafter described is that of Owner, for his/her/it self; his/her heirs, executors, administrators, successors, and assigns, hereinafter called Lessor, and THE UNITED STATES OF AMERICA, hereinafter called the Government:

WITNESSETH: The parties hereto for the consideration hereinafter mentioned covenant and agree as follows:

The Lessor hereby leases to the Government the following described premises, viz: **See Exhibit A**

to be used for the following purpose: **Government Purposes**

1. Term

TO HAVE AND TO HOLD the said premises for the term beginning 1 Jan 2002 through 31 December 2007 provided that unless and until the Government shall give notice of termination in accordance with provision 4 hereof, this lease shall remain in force thereafter from year to year without further notice; provided further that adequate appropriations are available from year to year for the payment of rentals; and provided further that this lease may be similarly extended if still required by the Government and funding and appropriations are made available for this purpose through 31 December 2012

2. Consideration

The Government shall pay the Lessor rent at the following annual rate: **\$2500 per year payable in arrears at the end of each annual term** by the Finance and Accounting Officer, Fort Huachuca Arizona All payments and financial obligations are the responsibility of Fort Huachuca.

3. Fixtures

The Government shall have the right, during the existence of this lease to attach fixtures, and erect structures or signs in or upon the premises hereby leased, which fixtures and structures, or signs, so placed in upon or attached to the said premises shall be and remain the property of the Government and may be removed or otherwise disposed of by the Government.

4. Termination

The Government may terminate this lease at any time by giving sixty (60) days notice in writing to the Lessor, and no rental shall accrue after the effective date of termination.

5. Notice

Any notice under the terms of this lease shall be in writing signed by an authorized representative of the party giving such notice, and if given by the Government shall be addressed to the Lessor at Safford Airport Authority, Incorporated P.O. Box 530, Safford, Arizona 85546

and if given by the Lessor shall be addressed to U.S. Army Corps of Engineers, Arizona Real Estate Office 3636 North Central Avenue, Suite 770 Phoenix, Arizona 85012

## 6. Covenant Against Contingent Fees

The Lessor warrants that no person or selling agency has been employed or retained to solicit or secure this lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Lessor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this lease without liability or in its discretion to deduct from the lease price or consideration for the full amount of such commission, percentage, brokerage, or contingent fee.

## 7. Officials Not to Benefit

No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this lease or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this lease if made with a corporation for its general benefit.

## 8. Examination of Records by Comptroller General

The Lessor agrees that the Comptroller General of the United States or any duly authorized representative shall, until the expiration of three (3) years after final payment of the agreed rental, have access to and the right to examine any directly pertinent books, documents, papers and records of the lessor involving transactions related to this lease.

## 9. Assignment of Claims

Pursuant to the provisions of the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), if this lease provides for payments aggregating \$1,000 or more, claims for moneys due or to become due the lessor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned or reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. Notwithstanding any provisions of this contract, payments to an assignee of any moneys due or to become due under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or set off.

## 10. Gratuities

a. The Government may, by written notice to the lessor, terminate the right of the lessor to proceed under this lease if it is found, after notice and hearing, by the Secretary of the Army or his duly authorized representative, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Lessor, or any agent or representative of the lessor, to any officer or employee of the Government with a view toward securing a lease or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing, of such lease; provided, that the existence of facts upon which the Secretary or his duly authorized representative makes such findings shall be in issue and may be reviewed in any competent court.

b. In the event this lease is terminated as provided in paragraph (a) hereof, the Government shall be entitled (1) to pursue the same remedies against the Lessor, and (2) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary or his duly authorized representative) which shall be not less than three nor more than ten times the costs incurred by the Lessor in providing any such gratuities to any such officer or employee.


c. The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this lease.

IN WITNESS WHEREOF, the parties hereto have hereunto subscribed their names as of the date first above written.

FOR THE LESSOR

BY:

SAFFORD AIRPORT AUTHORITY.

  
\_\_\_\_\_  
R ARLYN FEIGHT  
CHAIRMAN

Tax Payer ID NO: \_\_\_\_\_

UNITED STATES OF AMERICA,

By:   
\_\_\_\_\_  
Robert W. Colangelo

Contracting Officer  
Los Angeles District  
U.S. Army Corps of Engineers

CORPORATE CERTIFICATION OF LESSOR

If Lessor is a corporation, the following certificate shall be executed by the secretary or assistant secretary.)

I, \_\_\_\_\_ {name} certify that I am the {insert title} \_\_\_\_\_ of Safford Airport Authority, the corporation that signed said lease and that Mr. R. Arlyn Feight who signed said lease on behalf of the Safford Airport Authority is duly authorized to sign this lease for and in behalf of said corporation, by authority of its governing body, and is within the scope of its corporate powers.

(signed)   
\_\_\_\_\_





# Vitro Services Corporation - Ft. Huachuca - Arizona (ITR) Geodetic Data Form

World Geodetic System 1984 (WGS 84)

\*GEOD96 (NOAA) \*\*NAVD 1988

ASA Number 2466

Station: NE COR 10 ACRE LEASE

Order: 2nd H Trig V

Date of Survey: FEB 4, 1997

This form prepared 02-11-1997

Type of Survey Mark: 2" Disk/Rebar in Concrete

Lat(N): 32° 50' 55.7939" Long(W): 109° 38' 22.0377"

\*\* Elev(m): 962.654

UTM Coordinates: ZONE 12 C.M. 111

\*Geoid Ht(m) -26.665

Northing (Y): 3635348.65 Easting (X): 627317.71

Land Description: SE 1/4 SW 1/4 T7S R26E S1

ECEF Coordinates:

X: -1802967.03 Y: -5052307.63 Z: 3440393.97

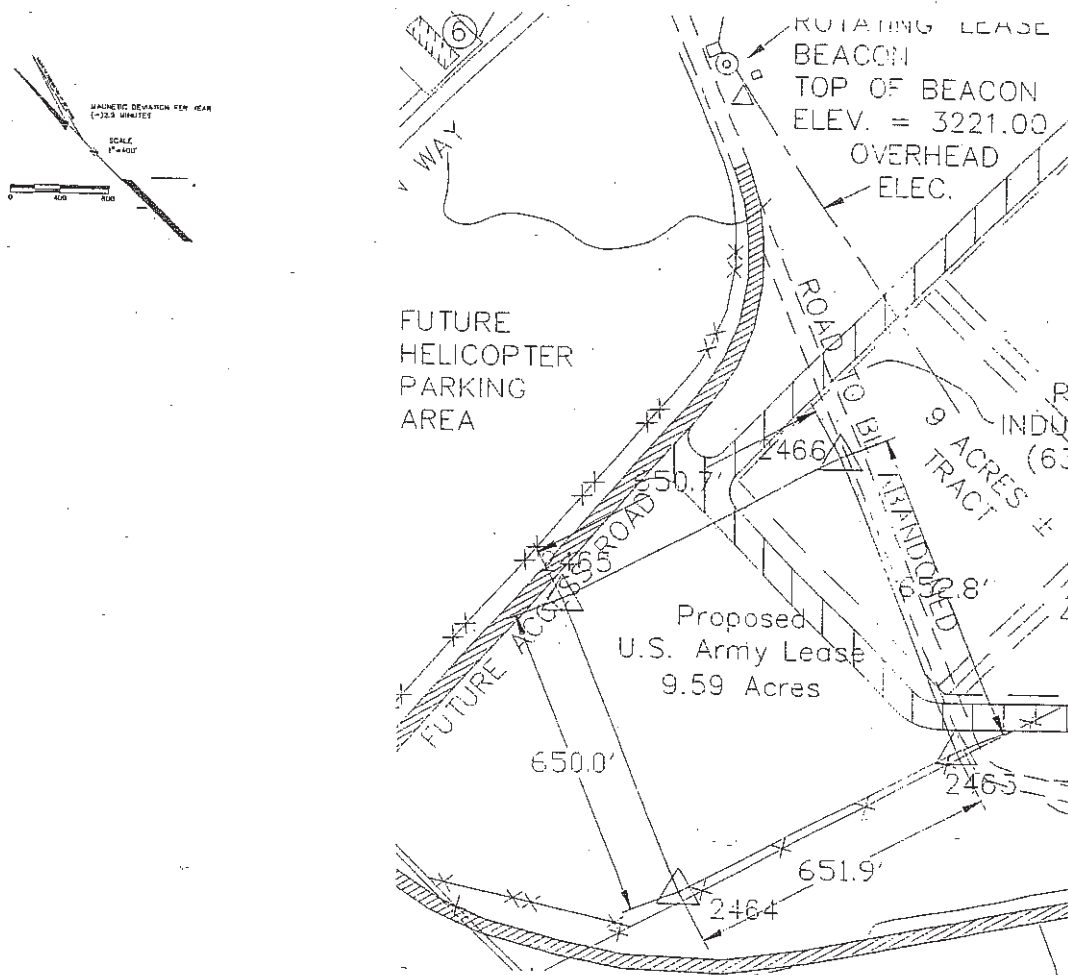
Ellip Ht(m) 935.989

NAD 27 Data: Lat(N): 32° 50' 55.563" Long(W): 109° 38' 19.750"

UTM Coordinates: N: 3635151.70 E: 627380.07

Elev(Ft): 3158.3

THIS SITE MARKS THE NE CORNER OF THE 10 ACRE LEASE PARCEL @ SAFFORD MUNICIPAL AIRPORT. IT IS LOCATED 259m (Approx) S OF BEACON TOWER & 2m W OF ROAD. POC AT AIRPORT IS DOUG BENSON, 520-428-7670, FAX 520-428-5368 OR CITY OF SAFFORD PUBLIC WORKS DIRECTOR, ROBERT PORTER, 520-348-3192, FAX 520-348-3150.





DEPARTMENT OF THE ARMY  
LOS ANGELES DISTRICT, CORPS OF ENGINEERS  
ARIZONA REAL ESTATE OFFICE  
3636 N. CENTRAL AVENUE, SUITE 770  
PHOENIX, ARIZONA 85012-1936

December 17, 2001

REPLY TO  
ATTENTION OF:  
Arizona Real Estate Office

Mr. Arlen Feight  
Safford Airport Authority  
P.O. Box 530  
Safford Arizona 85546

Dear Mr. Feight:

We are enclosing the signed lease a that supports the signal and communications training of military and reserve units based from Fort Huachuca. We are also sending a copy to Fort Huachuca and they will handle all payments and financial obligations of this lease. Thank you for making this area available. For any information concerning the lease instrument, please contact Steven Gale at 602 640-2016 extension 265.

Sincerely,

A handwritten signature in cursive script, appearing to read "Anne C. Gamson", is positioned above the printed name.

Anne C. Gamson  
Chief, Arizona Real Estate Office

Enclosure

CF:  
Commander, U.S. Army Garrison  
Director of Installation Support  
Attn: ATZS-ISE (M. Schaughnessy)  
Fort Huachuca, AZ 85613-6000



# Safford Regional Airport

Date	Invoice #
07/1/08	08-21-07

## INVOICE

Bill To:  
US Dept. of Army  
Directorate of Resource  
Attn: IMSU-HUA-RMB  
2854 Boyd Ave, Bldg 41407  
Fort Huachuca, AZ 85613

Item	Quantity	Description	Rate	Amount
Landing Area	1	Semi-Annual Payment for July to December 2008	1,250.00	1,250.00
<p><i>Payment schedule not 1st Land Lease #2 2500/yr payable in arrears at the end of each annual term. Request contact city for regarding this billing Please correct before next billing cycle. Then</i></p> <p><i>OK to pay Michael M. Shays 7/19/08</i></p>				
Total Due				1,250.00

Please Remit Payments to: City of Safford  
Attn: Sarah Britt  
P.O. Box 272  
Safford, AZ 85548



FOR OFFICE USE ONLY		
Date	Check #	Receipt #

Thank you!

USAN L McKay  
DIR PUBLIC WORKS  
IMWE HUA PWA  
3040 BUTLER ROAD  
FORT HUACHUCA, AZ 85613-5021

United States Government  
For Official Use Only  
US Government Tax Exempt

1041  
17-2/910 77770

10 Jul 08 DATE  
Pay TO THE ORDER OF Jefford Regional Airport \$ 1,250.00  
one thousand two hundred fifty and 00/100 DOLLARS  
USbank U.S. BANK CONVENIENCE CHECK  
U.S. Bank National Association  
Minneapolis, MN 55440  
NOT VALID FOR MORE THAN \$3000

FOR Land Lease, J.R. Rec 08 Susan L. McKay  
⑆091000022⑆47160006677125⑈1041



DEPARTMENT OF THE ARMY

LAND LEASE

IN SUPPORT OF FORT HUACHUCA  
SIGNAL AND COMMUNICATIONS TRAINING

With Safford Airport Authority

Lease No. DACA09-5-02-0304

THIS LEASE, made and entered into as of this 1<sup>st</sup> day of January 2002 by and between the Safford Airport Authority, an Arizona Corporation whose address is; P.O. Box 530, Safford Arizona 85548 and whose interest in the property hereinafter described is that of Owner, for his/her/it self, his/her heirs, executors, administrators, successors, and assigns, hereinafter called Lessor, and THE UNITED STATES OF AMERICA, hereinafter called the Government:

WITNESSETH: The parties hereto for the consideration hereinafter mentioned covenant and agree as follows:

The Lessor hereby leases to the Government the following described premises, viz: **See Exhibit A**

to be used for the following purpose: **Government Purposes**

1. Term

TO HAVE AND TO HOLD the said premises for the term beginning 1 Jan 2002 through 31 December 2007 provided that unless and until the Government shall give notice of termination in accordance with provision 4 hereof, this lease shall remain in force thereafter from year to year without further notice; provided further that adequate appropriations are available from year to year for the payment of rentals; and provided further that this lease may be similarly extended if still required by the Government and funding and appropriations are made available for this purpose through 31 December 2012

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and if given by the Lessor shall be addressed to U.S. Army Corps of Engineers, Arizona Real Estate Office 3636 North Central Avenue, Suite 770 Phoenix, Arizona 85012