WINNSBORO TEXAS Established 1854

Winnsboro Airport Board
Meeting Agenda
501 S. Main St., Winnsboro, TX
December 12, 2023 at 4:00 pm

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1) **Call to Order:**

2) **Roll Call:** Establish Quorum

3) **Public Comments:**

4) **Consent Items:** Minutes – 11/08/2022

5) **Discuss/Action:** Consider Re-Appointment of Members Miller, Stokes, White and Hoffman

6) **Discuss/Action:** Review of the Approved Airport Master Plan

7) **Discuss/Action:** Airport Board Recommendations to the City Council Regarding the Approved Airport Master Plan

8) **Adjournment:**

The entrance to this meeting is via the rear entrance to City Hall. The facility is wheelchair accessible and parking spaces are available. Request for accommodations or interpretive services must be made at least 72 hours prior to this meeting and may be made by contacting City Hall at 903-342-3654

I certify that the above agenda was posted at City Hall this _____day of December, 2023, at _____pm

Angie Pike, City Secretary

WINNSBORO AIRPORT BOARD

December 12, 2023

Item No. 3

Public Comments:

This is a time for the public to address the Commission on any subject. However, the Texas Open Meetings Act prohibits the Commission from discussing issues which the public has not been given seventy-two (72) hours' notice. Issues raised may be referred to city staff for research and possible future action. Comments are limited to three (3) minutes.

WINNSBORO AIRPORT BOARD

December 12, 2023

Item No. 4

Consent Items: – Approval of Minutes:
11/08/2022

Suggested Action/Language:
I move that the Winnsboro Airport Board approve/ not approve the Consent Items as presented.

MINUTES OF THE MEETING OF THE
WINNSBORO CITY COUNCIL
501 S. MAIN ST., WINNSBORO, TEXAS
ON 08 November 2022, AT 10:00 AM

Board Members Present:
Chair Brian Hoffman, Members Joes Stokes, Mary White and Carl Sutherland

Staff Present:
City Administrator Makenzie Lyons and City Secretary Angie Pike

1. **Call to Order** – 10:04 am
2. **Roll Call** – Members Miller and Love Absent
3. **Public Comments**
4. **Consent Items**
   Minutes – 08/18/2022

   Motion made to approve minutes as presented

	For	**Against**	**Abstained**
Joe Stokes (moved by)	X		
Brian Hoffman	X		
Mary White (seconded by)	X		
Carl Sutherland	X		

Motion Passed

5. **Discussion/Action**
   KSA Presentation – Development Alternatives and Recommended Plan and Implementation

   Logan Hutto, Michael Mitchell, KSA Engineering; spoke to the board about the ongoing airport master plan being developed by their firm. Hutto explained that in order to ensure that the airport maintains eligibility for future funding; FAA safety and design standards are priorities for the team. Mitchell spoke about specific recommended improvements, including terminal development, possible land or easement acquisition, Automated Weather Operating System (AWOS), a parallel taxiway, grading of existing land and widening of the runway. Members discussed other items with the team, including, the possibility of shifting or extending the runway, discretionary funding sources, changes to the approach, jet fuel, as well as the need for additional hangars. Consultants explained that alternative funding for hangar construction should be sought, as they are considered a revenue producing project. If such a project is completed, the entity would be barred from competing for discretionary funding for three years. The FAA assumes that if a revenue producing project is being completed, then there are no safety concerns at the location. As an alternative, a ground lease with a reversion clause could be ideal.
   City Administrator Lyons discussed the possibility of getting started with the AWOS and grading priority projects; with KSA advising that it could be possible to get that approved for the third quarter of the 2023 project year; with a high estimated cost to the City of $20,000.00 and a total of not more than $200,000.00.

6. **Adjournment:** 11:14 am

These Minutes of the November 08, 2022, Airport Board Meeting Are Hereby:

Approved:

By: ___________________________
Brian Hoffman, Board Chairman

Attest:

By: _________________________
Angie Pike, City Secretary

WINNSBORO AIRPORT BOARD
December 12, 2023

Item No. 5

Discussion/Action: Consider Re-Appointment of Members Miller, Stokes, White and Hoffman.

Members Cory Miller and Joe Stokes were approved for appointment by City Council in October of 2021.
Members Mary White and Brian Hoffman were approved for appointment by City Council in December of 2021.

WINNSBORO AIRPORT BOARD
December 12, 2023

Item No. 6

Discussion/Action: Review of Approved Airport Master Plan

F51 WINNSBORO MUNICIPAL AIRPORT

AIRPORT MASTER PLAN

Final Report

December 2022

Prepared for:

Winnsboro Municipal Airport
Winnsboro, Texas

&

Texas Department of Transportation (TxDOT)
Aviation Division
Austin, Texas

Prepared by:

McKinney, Texas

This document was funded by the Texas Department of Transportation Aviation Division. It was prepared in accordance with Federal Aviation Administration Advisory Circular (AC) 150/5070-6B, Airport Master Plans. The contents do not necessarily reflect the official views or policies of the TxDOT or the Federal Aviation Administration. Acceptance of this report by TxDOT or FAA does not in any way constitute a commitment on the part of the State of Texas or the United States to participate in any development depicted therein, nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with applicable public laws.

TABLE OF CONTENTS

CHAPTER ONE

INVENTORY

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

01 INVENTORY OF EXISTING CONDITIONS

1.1 OVERVIEW

The following Airport Layout Plan (ALP) Update narrative will define a concept for development at Winnsboro Municipal Airport – Frank M. White Memorial Airport (F51 or the Airport) to facilitate the growing aviation demands of the region. This plan will feature a 20-year planning period and has been prepared in collaboration with airport management, federal and state agencies, local officials, businesses, and interested airport users/stakeholders. A key goal of this study is to identify needs and evaluate development alternatives to guide future development of the Airport. The plan recommends improvements in accordance with Federal Aviation Administration (FAA) criteria, taking into consideration anticipated changes in aviation activity and development opportunities at the local, regional, and national levels.

The primary objective of this planning effort is to produce a comprehensive planning guide for the continued development of a safe, efficient, and successful aviation facility that meets the goals of the City of Winnsboro, airport users, tenants, and the surrounding market area. The plan must also satisfy FAA guidelines for developing airport plans and facilities while incorporating characteristics unique to the area. This study focuses on aeronautical forecasts, economic development opportunities, need and justification improvements, and a staged plan for recommended development. Specifically, the Winnsboro Municipal Airport (ALP) Update will consist of the following elements:

- Inventory of Existing Conditions
- Forecasts of Aviation Activity
- Facility Requirements
- Airport Development Alternatives
- Airport Plans
- Recommended Development Plan Implementation

Typically, the stages plan focuses on planning horizons of 0-5, 6-10, and 11-20 years. The first phase addresses existing facility deficiencies or non-compliance to airport design standards as outlined in FAA Advisory Circular (AC) 150/5300-13B, *Airport Design*.

The first step in the planning process includes collecting data about the Airport and its environment. The information gathered during this phase will provide the foundation for subsequent phases. The inventory of existing conditions for Winnsboro Municipal Airport will include the following:

- Existing physical facilities: runways, taxiways, parking aprons, navigational aids, and facilities associated with general aviation, corporate, and airport support.
- The Airport's role, including development history, location, and access relationship to other transportation modes.
- Socioeconomic and business trends with the Airport's service area.
- A review of the existing Airport, community, and regional plans and studies that contain information pertinent to developing and implementing the plan's overall recommendations.

The data for this phase was obtained from various sources, including airport management, tenants, users, the City of Winnsboro, area businesses, community organizations, and airport service providers. The data collected is current as of March 2022 and will serve as a baseline for the remainder of the study. Additional sources of information referenced include:

- City of Winnsboro website (www.cityofwinnsboro.org)
- City of Winnsboro Strategic Plan 2021-2036 (KSA)
- FAA 5010-1, Airport Master Record
- FAA Operational Data

1.2 CITY OF WINNSBORO

Winnsboro was first settled in the early 1850s by Englishman John E. Wynn. The city has seen many revisions of its name from Wynnsborough to Winnsborough and finally shortened to Winnsboro in 1893. Following the Civil War, the city rapidly grew because of the East Line and Red River Railroad. This industry penned Winnsboro the nickname of The Crossroads of East Texas. The city welcomed numerous churches, built schools, eight steam grist, cotton gins, an opera house, a weekly newspaper, and 700 residents. The community's practice of faith would continue for generations and is still strong to this day. In 1909, the city received a $10,000 grant for the construction of a Carnegie Library. The library remained operational until 1967, but the structure still stands today.

By 1914, Winnsboro welcomed an additional railroad, four banks, two potteries, a public library, a cottonseed mill, two weekly newspapers, and a population of 2,300. The Great Depression drove down cotton prices, forced multiple businesses to close, and reduced the city's population to 1,900. Following the Great Depression, Winnsboro began to recover. A hospital, high school, and 917-acre lake were all built after World War II. Autumn Trails, a fall nature show, was started and featured theater productions, arts and crafts, music conventions, and additional entertainment. The oil and agriculture industries created wealth opportunities for many in the community.

From 1960 to 1990, the city remained a small town but developed more amenities and established other public and community services. A fully equipped hospital was built, a renewed focus on education, and the Gilbreath Memorial Library was opened in 1987. In 2021, Winnsboro is a quiet East Texas town of 3,584 citizens. It is the "hub" for many East Texas communities such as Greenville, Mount Vernon, Pittsburgh, Quitman, and Mineola. Winnsboro is welcoming and attractive to retirees who desire a slower pace of life while living in a community with a high quality of life and special events. The city is positioning itself as a Texas destination with its Arts District, historic properties, memorable eateries, and ability to adapt while maintaining its agricultural and entrepreneurial roots.

1.3 AIRPORT LOCATION AND ACCESS

The City of Winnsboro, Texas, is located in Franklin/Wood counties, approximately 90 miles east of Dallas, Texas, 40 miles north of Tyler, Texas, and 70 miles west of Texas/Louisiana border. The Airport is located approximately 1.5 miles southeast of downtown Winnsboro and situated on 32 acres at an elevation of 513.1 feet above sea level. Direct vehicular access is provided by Airport Road, South Walnut Road, East Coke Road, and West Farm to Market Road 852. Texas State Highways 37 and 11 provide the primary arterial access to the City of Winnsboro and the Airport. Texas State Highway 37 spans approximately 92 miles from Mineola, Texas, to Albion, Texas, while Texas State Highway 11 spans approximately 153 miles from Sherman to Linden, Texas.

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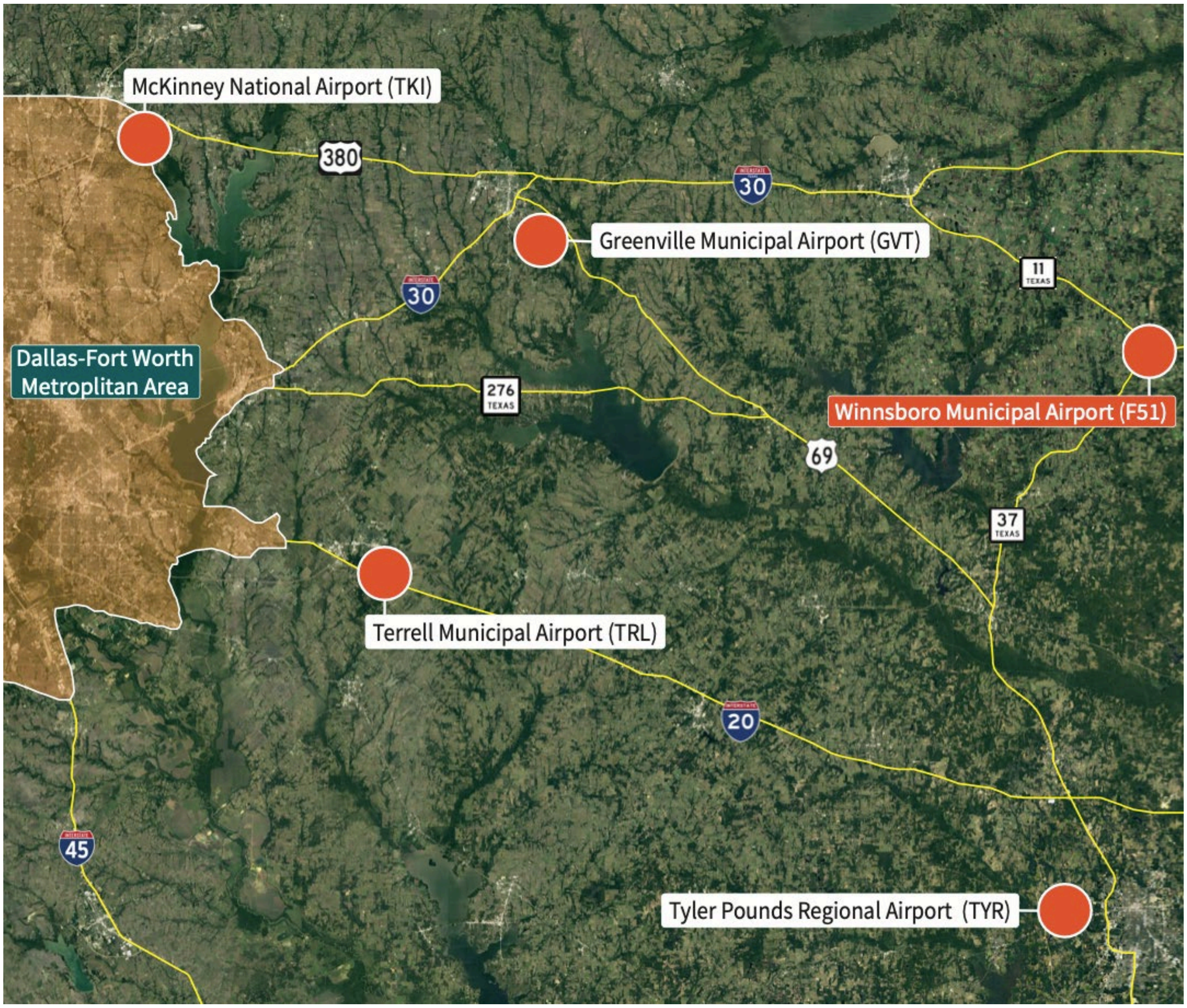
EXHIBIT 1.1 – AIRPORT LOCATION MAP



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1.4 AIRPORT PROJECT HISTORY

The FAA provides funding through the Airport Improvement Program (AIP) to assist in ongoing capital improvements. **Table 1.1** summarizes F51 capital improvement projects since 1971 that have been received through the FAA's AIP. Airports that apply for and accept AIP grants must adhere to various grant assurances, including maintaining the airport facility in a safe and efficient capacity per specific conditions. The duration of the assurances depends on the type of airport, the useful life of the facility being developed, and other factors. Typically, the useful life of an airport development project is a minimum of 20 years. Thus, when an airport accepts AIP grant funding, the airport is obligated to maintain that facility in accordance with FAA standards for the useful life expected. The project history at Winnsboro Municipal Airport, totaling nearly $1.5 million, highlights the importance of the airport to the state and surrounding community, as well as continued support from the FAA and the Texas Department of Transportation (TxDOT).

TABLE 1.1 – AIRPORT PROJECT HISTORY (1971 - 2021)

Year	Description	Project Cost
2021	TxDOT Routine Airport Maintenance Program (RAMP)	$7,678
2020	TxDOT Routine Airport Maintenance Program (RAMP)	$49,710
2019	Runway 1-19, Apron, Taxiway Rehabilitation	$377,704
2016	TxDOT Routine Airport Maintenance Program (RAMP)	$20,764
2015	TxDOT Routine Airport Maintenance Program (RAMP)	$2,800
2013	Security Fencing/Gates, Drainage, Lighted Wind Cone	$264,464
2011	Self-Service Fuel Card Reader/Improvements	$26,196
2007	Helipad, Terminal Repairs, Tree/Obstruction Removal	$7,158
2006	Flagpole, Windsock, Signage, Self-Serve Cover	$9,986
2005	Runway 1-19 Rehabilitation/Marking, Taxiway, Apron	$326,071
2004	Replace LIRLs w/ MIRLs, Rotating Beacon, and Tower	$185,671
2003	TxDOT Routine Airport Maintenance Program (RAMP)	$11,934
2003	Design/Engineering for Rehabilitation/MIRLs	$29,354
2000	Airport Master Plan	$9,030
1995	Airport Master Plan	$51,793
1986	Runway 1-19, Taxiway, Apron Seat Coat, Replace Beacon	$81,000
1971	Airport Construction	$27,500
	Total Project Amount	$1,488,803

Source: Texas Department of Transportation (TxDOT) Aviation

TABLE 1.2 – EXISTING CONDITIONS

Airport Name	Winnsboro Municipal Airport – Frank M. White Memorial Airport
FAA Designation	F51
Associated City	Winnsboro, Texas
Airport Owner/Sponsor	City of Winnsboro, Texas
Airport Management	Full-time Manager and city staff; on-site
Date Established	1930
Airport Roles	FAA NPIAS – General Aviation/Basic TASP – Basic Service
Commercial Air Service	None
Airport Acreage	32
Airport Reference Point (ARP)	32°56’19.8440” N / 95°16’43.8990” W
Airport Elevations	513.1 ft.
Area Mean Max Temperature	93° (August)

Source: Winnsboro Municipal Airport Administration, FAA Form 5010-1 Data

1.5 AIRPORT SYSTEM ROLE

Winnsboro Municipal Airport is a general aviation airport serving the needs of Franklin and Wood counties, the City of Winnsboro, and the surrounding market area. All airports play various functional roles and contribute at varying levels to meet the national, state, and local transportation and economic needs. Identifying and understanding an airport’s various roles is essential for any airport in a system, so it can continue developing facilities and services that appropriately fulfill its respective role.

1.5.1 ECONOMIC IMPACT

In 2018, TxDOT Aviation updated the Texas Aviation Economic Impact Study, a key component of the overall system planning effort. This study assists the Aviation Division in determining what capital improvements best serve the state’s aviation needs. Based on the information provided by the summary brochure for Winnsboro Municipal Airport, the Airport is directly involved in providing approximately $35,000 output for on-airport impacts and $42,000 output in visitor impacts. Overall, the Airport is integral to the local economy, providing jobs and $164,000 in output.

1.5.2 TEXAS AIRPORT SYSTEM PLAN (TASP)

The primary planning document for the Texas Department of Transportation, Aviation Division is the Texas Airport System Plan (TASP), which was last updated in 2010. The TASP focuses on general aviation needs and helps the Aviation Division determine the timing, location, and degree of airport facilities required over a 20-year period. The TASP provides minimum facility requirements for the state’s 292 airports and two heliports. Within the TASP, Winnsboro Municipal Airport is one of 68 Basic Service airports serving the state.

Basic Service airports are located within the service area of Commercial Service, Reliever, Business/Corporate, or Community Service airports or may be located in remote areas of the state. These airports are typically very low usage and provide additional convenience for clear weather flying and training operations. Many basic service airports cannot expand to meet the size and instrument approach standards to support business access and may represent the only public landing site for many miles.

1.5.3 NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS)

The federal government initially constructed many of the nation's existing airports, or their development and maintenance were partially funded through various federal grant-in-aid programs to local communities. The system of airports that exists today is due in part to federal policy that promotes the development of civil aviation. As part of the ongoing effort to develop a national airport system (NAS), the U.S. Congress maintains a national plan for the development and upkeep of airports.

The National Plan of Integrated Airport Systems (NPIAS) is a repository of airports that are eligible for AIP funding and used by the FAA to administer the AIP, which is the source of federal funds for airport improvement projects nationwide. The AIP is funded exclusively by user fees and user taxes, such as aviation fuel and airline tickets. An airport must be included in the NPIAS to qualify for federal assistance through the AIP.

The most current plan available is the NPIAS 2021-2025, which identified 3,304 public-use airports important and necessary to the national air transportation system. The plan estimates that approximately $43.6 billion in AIP-eligible airport projects will require financial assistance between 2021 and 2025. This is an increase of $8.5 billion (24 percent) from the NPIAS issued two years ago. The NPIAS categorizes airports by type of activities that occur at the facility – commercial service, air cargo, reliever operations, and general aviation. Winnsboro Municipal Airport is currently classified as a basic general aviation airport.

Basic airports fulfill the principal role of a community airport, providing a means for private general aviation flying, linking the community with the national airport system, and making other unique contributions. In some instances, the airport is the only way to access the community and provides emergency response access, such as emergency medical or firefighting and mail delivery. These airports have moderate activity levels with an average of nine propeller-driven aircraft and no jets. Many of these airports are located in rural areas. Basic airports account for 7 percent ($2.9 billion) of the development identified in the NPIAS and primarily focus on reconstructing airfield pavement and adhering to design standards.

1.5.4 SURROUNDING AIRPORTS

Table 1.3 details public-use airports within the Winnsboro Municipal Airport Market Area (25nm radius) with at least one paved runway. Identifying and comparing these facilities will help the Airport distinguish other types of service within the region and consider the capabilities and limitations of these airports when planning for future improvements.

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TABLE 1.3 – LOCAL AIRPORT CHARACTERISTICS

Airport Name	ID	Runway(s)	Based AC / Ops	NPIAS Role	State Role
Winnsboro Municipal Airport	**F51**	**1/19 – 3,213' x 50'**	**10 / 2,900**	**Basic – General Aviation**	**Basic Service (TASP)**
Wood County Airport	KJDD	18/36 – 4,002' x 60'	57 / 22,000	Local – General Aviation	Community Service (TASP)
Franklin County Airport	F53	13/31 – 3,900' x 60'	16 / 7,200	Unclassified – General Aviation	Community Service (TASP)
Mount Pleasant Regional Airport	KOSA	17/35 – 6,004' x 100'	123 / 13,200	Local – General Aviation	Business Corporate (TASP)
Mineola Wisener Field Airport	3F9	18L/36R – 3,203' x 40' 18R/36L – 3,234' x 60' (turf)	64 / 8,500	N/A	N/A
Sulphur Springs Memorial Airport	KSLR	1/19 – 5,001' x 75'	62 / 34,000	Regional – General Aviation	Business Corporate (TASP)
Gilmer Municipal Airport	KJXI	18/36 – 3,998' x 60'	33 / 18,000	Local – General Aviation	Community Service (TASP)

Source: FAA Form 5010-1 Data, CY 2021
National Plan of Integrated Airport Systems (NPIAS), 2021-2025
Texas Airport System Plan (TASP), 2010

1.6 AIRPORT ACTIVITY

Winnsboro Municipal Airport supports general aviation activities, including business aviation, flight training, medical transport, and recreational flying. Reviewing historical enplanement and operations activity helps provide a barometer of operation conditions and a necessary baseline for future demand activity. The following **Table 1.4** summarizes activity at the Airport since the year 2011.

Activity is segregated into specific categories:

- General Aviation – all other activity not classified as air carrier, air taxi, or military
- Local – operations within 20 nm of the airfield. It consists mainly of flight training and touch-and-go activity
- Itinerant – operations that are not local and have an origin and destination

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TABLE 1.4 – HISTORICAL AVIATION ACTIVITY

Year	Itinerant General Aviation	Local General Aviation	Military	Total
2011	1,100	2,200	0	3,300
2012	1,100	2,200	0	3,300
2013	1,100	2,200	0	3,300
2014	1,100	2,200	0	3,300
2015	1,100	2,200	0	3,300
2016	700	2,200	0	2,900
2017	700	2,200	0	2,900
2018	700	2,200	0	2,900
2019	700	2,200	0	2,900
2020	700	2,200	0	2,900
2021	700	2,200	0	2,900

Source: FAA Terminal Area Forecasts, Winnsboro Municipal Airport
FAA 5010-1, Airport Master Record

1.6.1 SOCIOECONOMIC CHARACTERISTICS

The various demographic and socioeconomic characteristics of the local area that an airport serves will affect its demand for aviation services and is collected to derive and assess the dynamics of growth within the study area. Typically, the demographic characteristics of an airport's service area can influence the level, type, and growth of aircraft operations. Whereas population activity (positive or negative) has been a simple and important measure of the potential demand for air services, levels of income are a standard predictor of the propensity for the population to travel, the level of use of existing based general aviation aircraft, and services at the Airport. Additionally, this type of information is essential in generating forecasting activity at the Airport and helps examine the ability of the region to sustain a strong economic base over an extended period. The following **Tables 1.5** and **1.6** provide a historical summary of the socioeconomic indicators for both Franklin and Wood counties.

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TABLE 1.5 – FRANKLIN COUNTY SOCIOECONOMIC CHARACTERISTICS

Historical						Projected				
1980	1990	2000	2010	2021	AAGR (1980-2021)	2027	2032	2037	2042	AAGR (2021-2042)
POPULATION										
6,949	7,841	9,459	10,607	10,843	1.09%	11,203	11,512	11,830	12,157	0.55%
PER CAPITA INCOME (in 2012 dollars)										
$19,155	$22,672	$30,654	$32,074	$37,354	1.64%	$43,086	$48,409	$54,213	$60,503	2.32%
MEDIAN HOUSEHOLD INCOME (in 2012 dollars)										
$49,625	$57,895	$75,731	$81,038	$84,393	1.30%	$96,193	$108,014	$121,451	$136,156	2.30%
EMPLOYMENT										
2,242	2,973	5,399	4,826	5,583	2.25%	6,116	6,592	7,101	7,649	1.51%

Source: Woods and Poole Complete Economic and Demographic Data, 2021; Franklin County
AAGR = Average Annual Growth Rate

TABLE 1.6 – WOOD COUNTY SOCIOECONOMIC CHARACTERISTICS

Historical						Projected				
1980	1990	2000	2010	2021	AAGR (1980-2021)	2027	2032	2037	2042	AAGR (2021-2042)
POPULATION										
24,779	29,451	36,811	41,977	46,175	1.53%	48,136	49,834	51,591	53,411	0.70%
PER CAPITA INCOME (in 2012 dollars)										
$20,311	$22,354	$24,632	$31,421	$37,557	1.51%	$42,489	$46,934	$51,648	$56,601	1.97%
MEDIAN HOUSEHOLD INCOME (in 2012 dollars)										
$52,056	$55,872	$59,958	$75,308	$86,700	1.25%	$96,907	$106,976	$118,170	$130,057	1.95%
EMPLOYMENT										
10,062	11,815	13,863	17,445	19,697	1.65%	21,003	22,065	23,097	24,107	0.97%

Source: Woods and Poole Complete Economic and Demographic Data, 2021; Wood County
AAGR = Average Annual Growth Rate

1.7 AIRSIDE FACILITIES AND SERVICES

Winnsboro Municipal Airport operates with a single runway and full-length parallel taxiway, which provides access to the terminal and other facilities at the Airport. The following **Exhibit 1.2** provides a graphic representation of the existing airport facilities.

1.7.1 RUNWAYS

The primary runway at the Airport has a designation of 1/19 and is 3,213 feet in length and 50 feet in width. It is constructed of asphalt and has a gross weight-bearing capacity of 12,000 lbs. single wheel. The runway is equipped with Medium Intensity Runway Lights (MIRL) and features non-precision approach runway markings (NPI). **Table 1.7** outlines the existing runway data for the Airport.

TABLE 1.7 – EXISTING RUNWAY DATA

Category	Runway	
	01	19
Aircraft Design Group (ADG)	B-I (Small Aircraft)	B-I (Small Aircraft)
Length	3,213'	
Width	50'	
Surface Composition (Condition)	ASPH (F)	
Effective Gradient	-0.08%	
Runway Bearing (True)	018	198
Runway End Elevations	492.7'	513.1'
Runway Lighting	MIRL	MIRL
Runway Marking	NPI-G	NPI-G
Navigational Aids	RNAV (GPS)A	RNAV (GPS)A
Visual Aids (Lighting)	None	None

Source: FAA Form 5010-1 Data, Winnsboro Municipal Airport Master Record, 2022

1.7.2 TAXIWAYS

The taxiway system at Winnsboro Municipal Airport consists of both parallel and connector taxiways. **Table 1.8** provides detail of each taxiway and its characteristics. Taxiways are designated to route aircraft quickly and efficiently between the runway and various locations around the airport.

Runway 1/19 features a full-length parallel taxiway. Taxiway "A" is situated 130 feet west of Runway 1/19 and offers four (4) connectors that are 25 feet wide and provide primary access to airport facilities, including the general aviation terminal, aircraft parking apron, self-service fuel, and all hangar facilities.

A review of the Federal Aviation Administration's (FAA) "hotspot" database revealed no current areas on the airfield being designated as "hotspots," which are defined as areas of increased risk or having a history or potential for runway incursions.

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TABLE 1.8 – EXISTING TAXIWAY DATA

Name	Width	Type	Lights/Reflectors	Pavement
A	25	Full-Length Parallel	Reflectors	Asphalt – Good
B	30	Connector	Reflectors	Asphalt – Good
C	30	Connector	Reflectors	Asphalt – Good
D	30	Connector	Reflectors	Asphalt – Good
E	30	Connector	Reflectors	Asphalt – Good

Source: FAA Form 5010-1 Data, Winnsboro Municipal Airport Master Record, 2022

1.7.3 WEATHER REPORTING SYSTEM

Currently, the Airport does not feature on-site weather reporting. The nearest Automated Weather Observing System (AWOS-3) is located at Wood County Airport, approximately 16 nautical miles southwest of the field. The AWOS at KJDD is accessible on frequency 118.9 and via phone at 903.768.3065. An AWOS unit is a suite of automated sensors that measure, collect and disseminate minute-by-minute weather data to help aircrews and flight dispatchers monitor weather conditions and plan routes for navigation to or from the Airport.

1.7.4 AIRFIELD LIGHTING AND VISUAL AIDS

Beacon – Operating from sunset to sunrise, the beacon is a visual navigation aid displaying white and green flashing to indicate a lighted airport or white flashes only for an unlighted airport. The Airport beacon is situated approximately 100 feet west of the general aviation terminal.

Additional aids to navigation include a lighted wind cone and segmented circle, located approximately 115 feet east of the Runway 1/19 centerline, midfield. Windcones are free rotating, truncated cones that indicate wind direction and velocity. The segmented circle aids pilots in locating the Airport and provides traffic pattern information.

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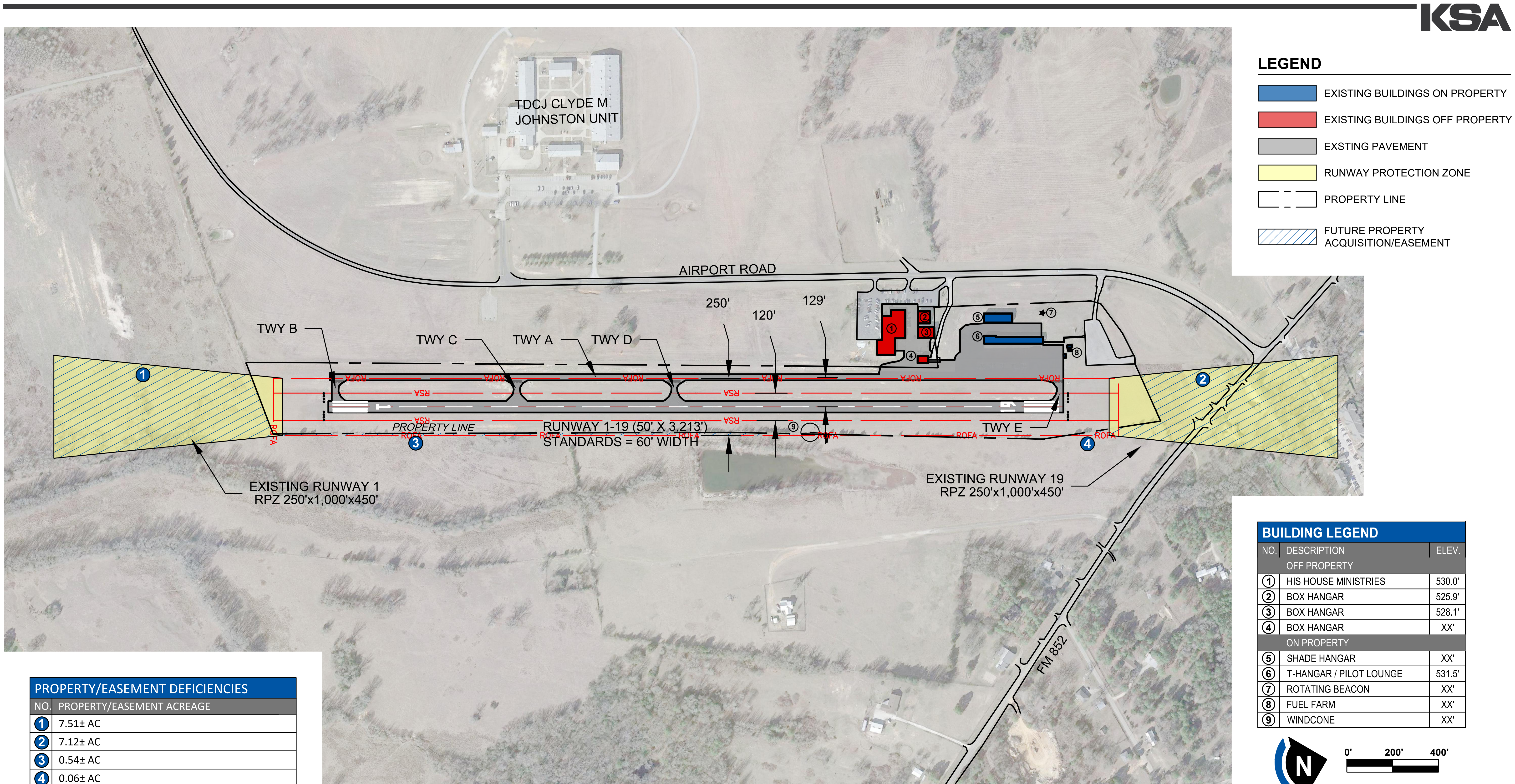


BUILDING LEGEND		
NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'

PROPERTY/EASEMENT DEFICIENCIES	
NO.	PROPERTY/EASEMENT ACREAGE
1	7.51± AC
2	7.12± AC
3	0.54± AC
4	0.06± AC

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

Exhibit 1.2 EXISTING FACILITIES

1.8 LANDSIDE FACILITIES

As reflected in **Exhibit 1.2**, the existing landside development area at the Airport consists of a general linear layout. The primary development area runs parallel and west of Runway 1/19 and parallel to Taxiway "A." The various landside facilities include city-owned general aviation hangar facilities, a pilot lounge, and self-service fuel.

1.8.1 HANGAR FACILITIES, PILOT LOUNGE, AND APRONS

In the northwest corner of the Airport, there are two hangar structures owned by the Airport. One is a shade hangar, which provides protection from the sun. The other hangar is a T-hangar structure with six T-hangar units. Attached to this T-hangar is a pilot lounge offering approximately 700 square feet of space. Further south, two privately-owned box hangars and one shade hangar are not on Airport property, classifying them as through-the fence-development. The Airport currently has approximately 6,000 SY of apron adjacent to the T-hangar, with six tie-down spaces available.

1.8.2 FUEL STORAGE FACILITIES

Currently, the Airport's fuel storage area is located on the north end of the Airport's apron. The fuel system is owned by the city and is stored in two above-ground storage tanks. Tanks consist of one 5,000-gallon AVGAS/100LL and one 1,000-gallon MOGAS tank. All tanks comply with Environmental Protection Agency (EPA) guidelines, including associated spill containment requirements. **Table 1.9** details 100LL fuel sales for CY 2020 and 2021.

TABLE 1.9 – ANNUAL FUEL SALES IN GALLONS

Year	100LL
2020	1,841
2021	7,007

Source: Airport Administration

1.8.3 SECURITY / PERIMETER FENCING

There are 3-strand barbed wire fence sections near the hangar facilities, but they do not extend around the airfield's perimeter.

1.9 AIRSPACE SYSTEM / NAVIGATION AND COMMUNICATION AIDS

Winnsboro Municipal Airport operates within the larger National Airspace System (NAS), which comprises a wide array of services, systems, and requirements for airports and the pilots that function within it. The following sections provide an overview of the Airport's critical considerations concerning navigating and operating within the NAS.

- Air Traffic Service Areas
- National Airspace System
- Navigational Aids
- Part 77 Airspace Surfaces

1.9.1 AIR TRAFFIC SERVICE AREA AND AVIATION COMMUNICATIONS

FAA Order 7110.65Y, *Air Traffic Control (ATC)*, established that the mission of ATC is safety by stating that the "primary purpose of the ATC system is to prevent a collision between aircraft operating in the system and to organize and expedite the flow of traffic." ATC is how aircraft are directed and separated within controlled airspace.

Within the continental United States, some 22 geographic areas are under ATC jurisdiction. Air traffic services within each area are provided by air traffic controllers in Air Route Traffic Control Centers (ARTCCs). The ARTCCs provide air traffic service to aircraft operating on Instrument Flight Rules (IFR) flight plans within controlled airspace and primary during the en route phase of flight. Those aircraft operating under Visual Flight Rules (VFR) that depend primarily on the "see and avoid" principle for separation may also contact the ARTCC or other ATC services to request traffic advisory services. A traffic advisory service alerts pilots of other known aircraft in the vicinity or within the aircraft's flight path. The airspace overlying F51 is contained within the Fort Worth (ZFW) ARTCC jurisdiction, which has a coverage area of airspace in portions of Texas, Southern Oklahoma, Northwest Louisiana, Southwest Missouri, and Southeast New Mexico.

Aircraft operating on instrument flight plans approaching or departing an airport are also subject to airspace and ATC. At F51, clearance delivery services are provided by Fort Worth ARTCC on frequency 132.85, while Longview Approach provides approach and departure services on frequency 128.75. Air traffic controllers' primary means of controlling aircraft is computerized radar systems supplemented with two-way radio communications. Altitude assignments, speed adjustments, and radar vectors are examples of techniques used by controllers to ensure that aircraft maintain proper separation. The specified lateral and vertical separation criterion for aircraft used by controllers is as follows.

- Lateral Aircraft Separation: three (3) miles (radar environment)
- Lateral Aircraft Separation: five (5) miles (non-radar environment)
- Vertical Aircraft Separation: 1,000 feet below (below 29,000 feet) and 2,000 feet (29,000 feet and above)

1.9.2 NATIONAL AIRSPACE SYSTEM

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure through the Federal Aviation Regulations (FAR) that regulates and establishes procedures for aircraft that use the NAS. This airspace structure essentially provides two basic categories of airspace: controlled (classified as A, B, C, D, and E) and uncontrolled (classified as G).

Further, FAR Part 71 and FAR Part 73 established these airspace classifications with the following characteristics.

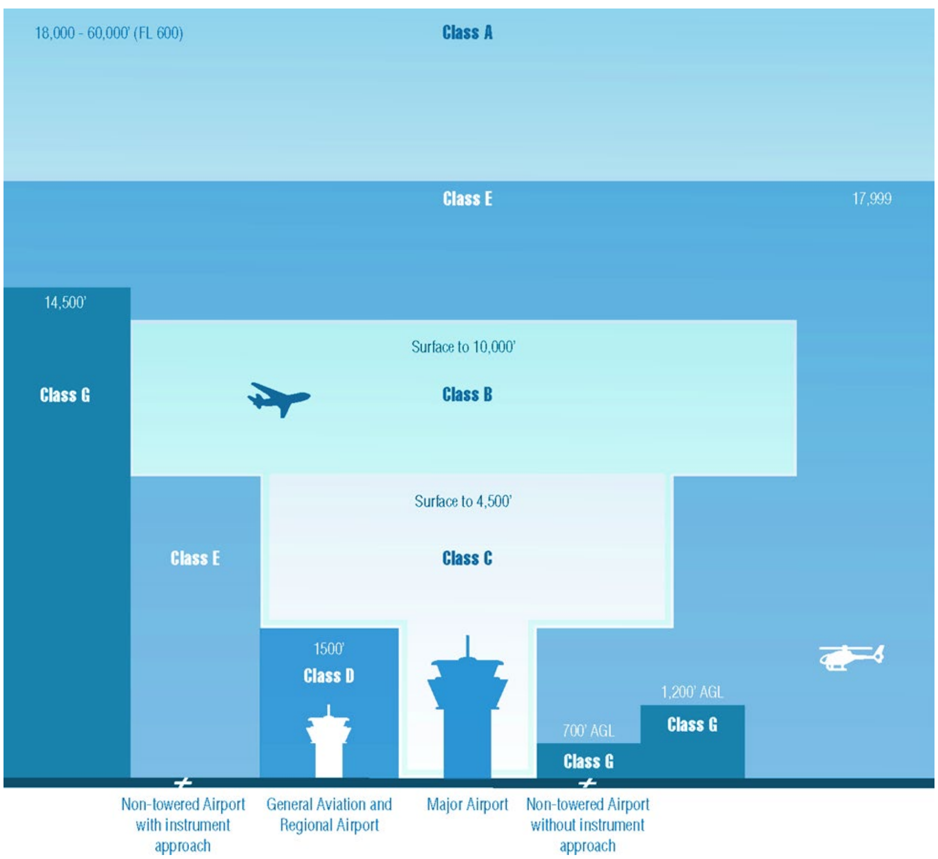
- **Class A** airspace is generally the airspace from 18,000 feet mean sea level (MSL) up to Flight Level 600 (or 60,000 feet MSL). Unless otherwise authorized, all operations in Class A airspace are conducted under instrument flight rules (IFR).
- **Class B** airspace is generally airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of operations or passenger enplanements. An ATC clearance is required for all aircraft to operate within Class B airspace, and all aircraft that are so cleared receive separation services within the airspace. Clearance into Class B airspace can only be received when the controller calls explicitly the aircraft's tail number and grants explicit clearance to enter the airspace (e.g., "N1234, you are cleared to enter the Class B airspace").
- **Class C** airspace is generally airspace from the surface up to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control, and have a certain number of IFR operations or passenger enplanements. Each aircraft must establish two-way radio communications with the ATC facility providing air traffic services before entering the airspace and, after that, maintain those communications while in the airspace.
- **Class D** airspace is generally from the surface up to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports with an operational control tower. Unless otherwise authorized, each

aircraft must establish two-way radio communications with the ATC facility providing air traffic services before entering the airspace and, after that, maintain those communications while in the airspace.

- If the airspace is not classified as A, B, C, or D, and is controlled airspace, then it is Class E airspace. **Class E** airspace extends upward from the surface or designated altitude to the overlying or adjacent controlled airspace. Only aircraft operating under IFR must be in contact with ATC when operating within Class E airspace.
- **Class G** or uncontrolled airspace is the portion of airspace that has not been designated with any of the above classifications. It extends from the surface to the overlying Class E airspace base. Although ATC has no authority or responsibility to control air traffic, pilots must still abide by visual flight rules (VFR) minimums in Class G airspace.

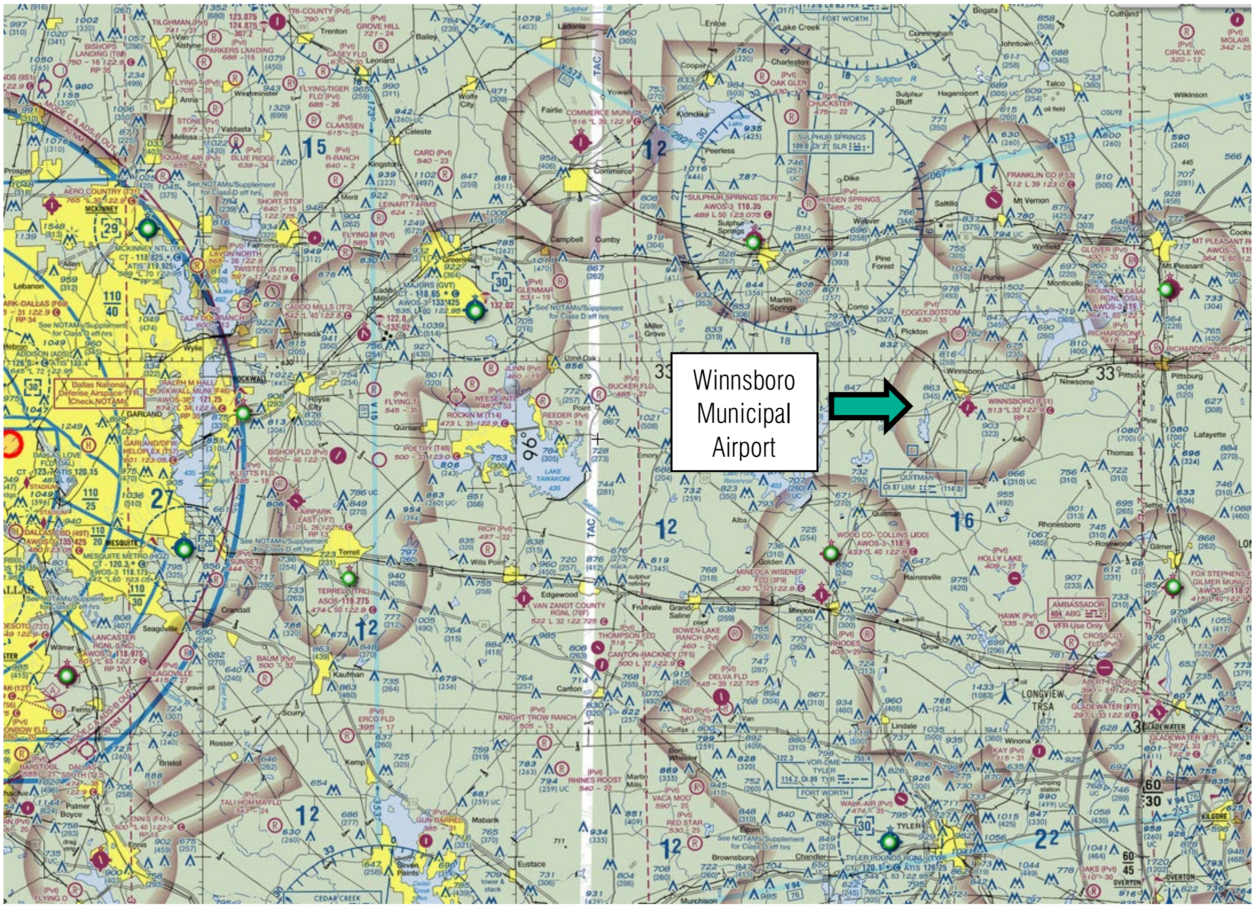
Winnsboro Municipal Airport lies within Class E airspace, which is controlled airspace not classified as A, B, C, or D airspace. A large amount of the airspace over the United States is designated Class E airspace. In most areas, the Class E airspace base is either 700 or 1,200 feet AGL. Class E airspace typically extends up to, but not including, 18,000 feet MSL (the lower limit of Class A airspace). **Exhibits 1.3** and **1.4** show airspace classifications and the portion of the sectional chart published by the FAA's National Aeronautical Charting Office for the immediate regional airspace around F51.

EXHIBIT 1.3 – FAA AIRSPACE CLASSIFICATION



Source: Federal Aviation Administration

EXHIBIT 1.4 – FAA SECTIONAL CHART



Source: SkyVector, 17 March 2022

1.9.3 NAVAIDS / COMMUNICATIONS

In 2003, the FAA implemented the Wide Area Augmentation System (WAAS) availability to public airports. Pilots are now benefiting from the large number of Area Navigation (RNAV) Global Positioning System (GPS) approaches and lower minimums provided by WAAS-enabled systems. These systems are greatly more abundant than Instrument Landing Systems (ILS) and other ground-based systems from the 20th century. As of October 7, 2021, 4,088 Wide Area Augmentation System (WAAS) Localizer Performance with Vertical Guidance (LPV) approach procedures serve 1,965 airports; 1,195 of these airports are non-ILS facilities. Currently, there are also 731 Localizer Performance (LP) approach procedures in the U.S., serving 535 airports, 432 of which are non-ILS facilities.

Various navigational facilities are currently available to pilots around Winnsboro Municipal Airport, based at the field or other regional locations. Many of these navigational aids (NAVAIDs) are available en route air traffic. The NAVAIDs available for use by pilots in the vicinity of F51 are VOR/DME facilities.

A VOR is a Very High-Frequency Omnidirectional Range navigation station transmitting very high-frequency signals, 360 degrees in azimuth oriented from magnetic north, with equipment used to measure, in miles, the slant range distance of an aircraft from that navigational aid. A VOR/DME provides VOR azimuth and distance measuring equipment (DME) at one site. The VOR/DME nearest Winnsboro Municipal Airport is the SULPHUR SPRINGS VOR/DME (SLR, 109.00), located 20.5 miles northwest of the field.

One (1) published instrument approach procedure serves Winnsboro Municipal Airport. **Table 1.10** summarizes the published approach and associated visibility minimums.

TABLE 1.10 – INSTRUMENT APPROACH PROCEDURES

	Lowest Straight-In Minimums		Lowest Circling Minimums	
Instrument Approach	Ceiling	Visibility	Ceiling	Visibility
RNAV (GPS)-A	N/A	N/A	1,100'	1-Mile

Source: FAA Terminal Procedures, 30 December 2021 – 27 January 2022

1.9.4 PART 77 / IMAGINARY SURFACES

Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, is a tool used to protect the airspace over and around a given airport and each of its approaches from potential obstructions to air navigation. It is important to note that as a federal regulation, all airports included in the NAS are subject to the requirements of Part 77. To determine whether an object obstructs air navigation, Part 77 establishes several imaginary surfaces in relation to an airport and each runway end. The dimensions and slopes of these surfaces depend on the configuration and approach categories of each airport's runway system. The size of the imaginary surfaces depends largely on the type of approach to the runway. The principal imaginary surfaces are described in **Exhibit 1.5**.

- **Primary Surface:** Longitudinally centered on the runway at the same elevation as the nearest point on the runway centerline.
- **Horizontal Surface:** Located 150 feet above the established airport elevation, the perimeter of which is established by swinging arcs of specified radii from the center of each primary surface end and connected via tangent lines.
- **Conical Surface:** Extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet.
- **Approach Surface:** Longitudinally centered on the extended centerline and extending outward and upward from each runway end at a designated slope (e.g., 20:1, 34:1, 40:1, and 50:1) based on the runway approach.
- **Transitional Surface:** Extends outward and upward at a right angle to the runway centerline at a slope of 7:1 up to the horizontal surface.

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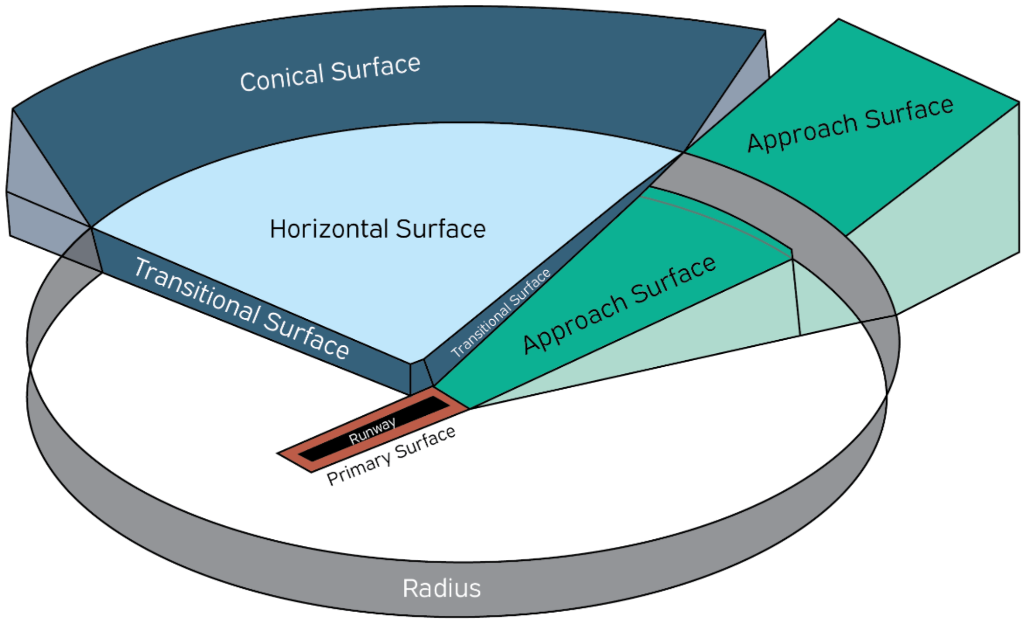
EXHIBIT 1.5 – PART 77 / IMAGINARY SURFACES



Known obstructions to the Part 77 surfaces described above will be illustrated on the ALP set being prepared alongside this planning effort. It is important to note that updated obstruction information for the Airport and its surroundings should be collected through an aerial photogrammetry/survey effort before any physical changes to the runway or modifications to approaches serving either runway end.

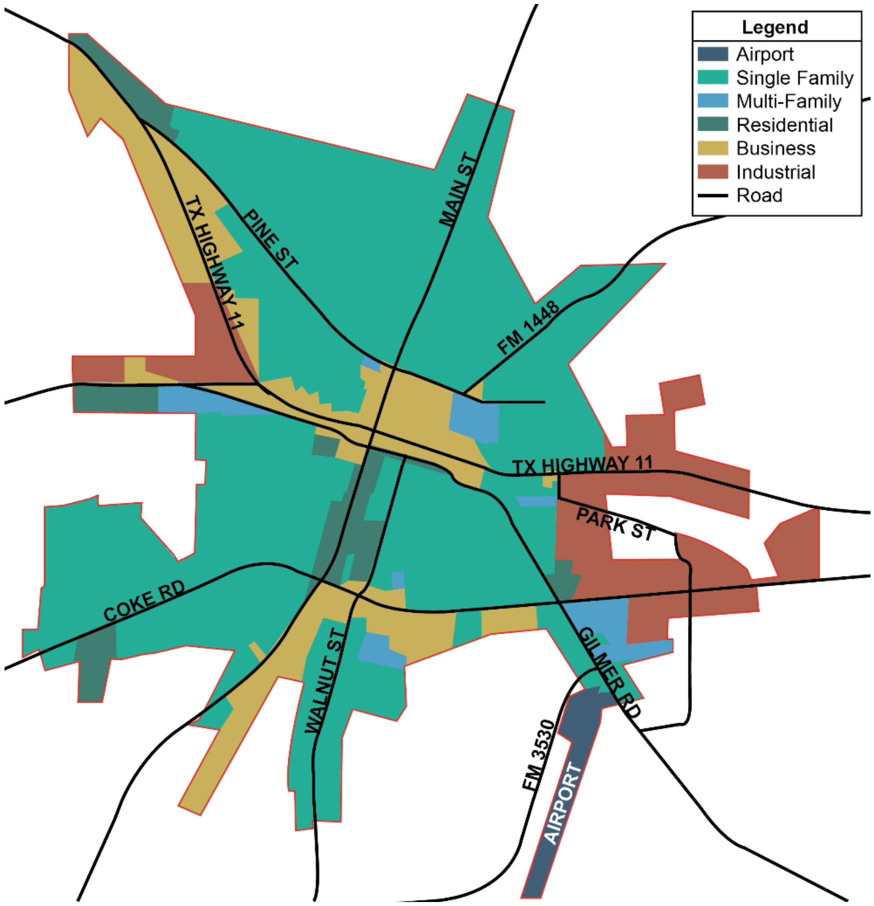
1.10 AIRPORT ENVIRONS

This section addresses and examines the airport's regional setting and land use surrounding it. This task is critical to the future development of the Airport because local land-use patterns will ultimately affect the potential for expansion and capital improvements.

1.10.1 EXISTING ZONING

The City of Winnsboro maintains a Geographic Information Database (GIS) that provides high-quality land use and zoning data for information purposes. This general reference database offers access to base maps, aerial imagery, and other pertinent information about the community, including the Airport. The City of Winnsboro Zoning Map currently depicts the Airport as its own zoning classification, with the code AIR. **Exhibit 1.6** graphically depicts the existing zoning surrounding the Winnsboro Municipal Airport. The area on the immediate north side of the airport is primarily classified as single and multi-family housing zones. In contrast, the east, west, and south areas are all unzoned and outside city limits.

EXHIBIT 1.6 – EXISTING ZONING



Source: City of Winnsboro

1.10.2 HEIGHT HAZARD ZONING

Although the Federal Aviation Administration (FAA) has the authority to regulate the flight of aircraft, it has only limited authority to ensure that areas surrounding airports are free of hazards. Without regulatory authority at the Federal level of government, the responsibility for ensuring that areas surrounding an airport are free from hazards is left to the local government.

The implementation of Avigation Easements may give the Airport further control over future land uses that might be hazardous to flight operations. An avigation easement protects the surrounding airspace, above a specific height, from future obstructions by retaining those rights to a property from a landowner to limit land use subject to the easement.

The City of Winnsboro has not adopted formal height hazard zoning standards. Following the completion of the Airport Layout Plan (ALP) Update, recommendations should be made to the council to adopt new height hazard zoning standards for the City of Winnsboro to protect the future development of Winnsboro Municipal Airport.

1.11 SUMMARY

This inventory chapter represents a consolidated resource containing the Airport's data that will be referenced during the completion of the Winnsboro Municipal Airport Layout Plan (ALP) Update. When necessary, the data presented in this chapter will be expanded on for the completion of specific planning tasks. In addition, as the development plan progresses, new and updated data related to facilities and infrastructure examined in this chapter may become available. New data will be incorporated into this chapter and the entire ALP Update narrative when appropriate.

The inventory data presented in this chapter provides a framework from which analysis of the Airport will proceed. Some inventory data, such as the Airport's history, provides general background knowledge. Other types of inventory data, such as airport role and existing airport facilities, are used to help determine future facility requirements. Subsequent chapters, especially the Forecast of Aviation Demand, will also be critical components to the development of facility requirements.

Much of the data presented in this chapter is used to conduct numerous analyses as the development planning process works towards identifying a recommended development plan for F51. The next step in the planning process is to formulate forecasts for the quantity and type of future aviation activity expected to occur at the Airport during the 20-year planning period.

CHAPTER TWO

FORECAST

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

02 AVIATION DEMAND FORECAST

2.1 OVERVIEW

The demand forecast element of the planning process determines the need for future capital development and investment in the airport facility. Essential to this determination is the generation of forecasts and projected increases in airport activity. Demand forecasts determine the type, extent, size, location, timing, and financial feasibility of future capital improvements. Consequently, demand forecasts influence the remaining phases of the planning process.

Forecasting aviation activity requires more than an extrapolation of past trends; it involves the application of statistical measures to correlate future demand with population projections, economic performance, and demographic data. Because demand forecasting is not an exact science, it requires the application of professional judgment and experience and an understanding of the market forces that promote or limit aviation growth.

Demand forecasts have been prepared and are presented in this chapter to assist the sponsor in evaluating the performance-based needs of the Airport during the next 20 years. Additionally, the Federal Aviation Administration (FAA) will review and accept the forecasts to ensure they are reasonable compared to current FAA forecasting projections. The forecasts include a range of activities, including based aircraft, operational fleet mix, annual operations (itinerant and local), and ultimate critical aircraft.

2.2 DATA SOURCES

The forecasting process begins by obtaining recorded data pertinent to the operation and administration of Winnsboro Municipal Airport. Generally, aviation activity forecasting commences by utilizing the present time as an initial point, supplemented with historical trends obtained from previous years' activity and recorded information. This data has evolved from a comprehensive examination of historical airport records provided by airport personnel, FAA Form 5010-1, *Airport Master Record*, *FAA Terminal Area Forecast*s, and the *FAA Aerospace Forecasts Fiscal Years 2022-2042*. Supplemental publications providing trends and conditions of the aviation industry include the *General Aviation Statistical Databook Industry Outlook* and *Business Aviation Fact Book, 2018*. These documents were assembled in different years, making the base year data quite variable and emphasizing the need for establishing a well-defined and well-documented set of historical information from which to project future aviation activity trends.

2.3 FACTORS AFFECTING FUTURE AVIATION DEMAND

Before examining future activity, several assumptions and conditions that help form the basis or foundation for the development of forecasts should be noted. These statements cover various physical, operational, industry, and socioeconomic considerations.

2.3.1 DEMOGRAPHICS

The existing socioeconomic condition of a particular region historically impacts aviation within an area and is often analyzed in the forecasts of aviation activity. Provided by Woods and Poole, the most current demographic data for Wood County shows average annual increases to the year 2042 for the population at 0.7%, per capita income at 2.0%, and employment at 1.0%. Data for Franklin County shows average annual increases to the year 2042 for the population at 0.5%, per capita income at 2.3%, and employment at 1.5%.

2.3.2 COMMUNITY SUPPORT

Winnsboro Municipal Airport benefits from the support of the surrounding community and government, local industry, strategic partnerships, and citizens. The Airport is recognized as a vital asset to Wood and Franklin Counties and the surrounding region, contributing to the stability and future of the area's economy. Additionally, much of the region benefits from the proximity of a regional aviation facility and, in turn, provides an economic base that can attract additional based aircraft and industrial/business development to the airport.

2.3.3 COVID-19

Nothing has impacted the global or national aviation industry since the 2008/09 recession to the extent that the COVID-19 pandemic has. This virus outbreak has led to major declines in demand for air carrier and general aviation activity and led those in the industry to announce severe cost-cutting measures, request government funding assistance, and ground fleets. The spread of the virus has created a concern for both short- and long-term effects within the aviation industry nationally and globally.

Similar to the well-known and stated declines with airlines, the general aviation sector has not been immune to similar impacts. General Aviation provides more than one (1) percent of $247 billion of the GDP in the U.S. and accounts for over 1.3 million jobs. Typically, the GA sector's strength is based on sales and aircraft deliveries to various purchasers across the globe. When analyzing details provided by the General Aviation Manufacturers Association (GAMA), 2020 started strong and was on par to replicate or exceed 2019; however, when health and safety restrictions were put into place to respond to COVID-19, supply chains and deliveries were shut down and negatively impacted. **Table 2.1** compares general aviation aircraft sales and deliveries from the first quarter of 2019 to the first quarter of 2020. As reflected, decreases are exhibited across the board from all aircraft sectors.

TABLE 2.1 – GAMA SALES COMPARISON 2019-2020

Aircraft Type	2019	2020	% Change
Piston Airplanes	877	889	1.4%
Turboprop Airplanes	348	254	-27.0%
Business Jets	516	378	-26.7%
Total Airplanes	1,741	1,521	-12.6%
Total Airplane Billings	$14.9B	$11.9B	-20.1%
Piston Helicopters	141	105	-25.5%
Turbine Helicopters	434	333	-23.3%
Total Helicopters	575	438	-23.8%
Total Helicopter Billings	$2.2B	$1.9B	-16.2%

Source: General Aviation Manufacturers Association (GAMA).

While overall shipments were down, discussions provided by the National Business Aviation Association indicate the industry is on a trajectory that is turning the corner and headed back in the right direction. Fractional aircraft owner shares have witnessed significant increases in customer base who understand the "inherent advantages of business aviation: going more places in less time, reaching destinations they didn't think they could reach, and flying in a safe, secure, and healthy manner" and "clients see business aviation as an option to eliminate concerns about airlines cabins packed with people." These statements, along with the approval and dissemination of COVID-19 vaccines, provide the framework to help put general aviation back on course for growth and potential record-breaking activity. **Table 2.2** provides an updated comparison of aircraft deliveries from the third quarter of 2020 to the third quarter of 2021, showing an upward trend.

TABLE 2.2 – GAMA SALES COMPARISON 2020-2021

Aircraft Type	2020	2021	% Change
Piston Airplanes	901	895	-0.7%
Turboprop Airplanes	254	357	40.6%
Business Jets	378	438	15.9%
Total Airplanes	1,533	1,690	10.2%
Total Airplane Billings	$11.9B	$13.4B	13.0%
Piston Helicopters	105	131	24.8%
Turbine Helicopters	332	410	23.5%
Total Helicopters	437	541	23.8%
Total Helicopter Billings	$1.8B	$2.4B	37.3%

Source: General Aviation Manufacturers Association (GAMA).

2.4 GENERAL AVIATION TRENDS

At the national level, fluctuating trends related to general aviation usage and economic uncertainty resulting from the national and international business cycles all significantly impact general aviation demand levels. General aviation aircraft are classified as all aircraft not flown by commercial airlines or the military. This includes an incredibly diverse array of flying ranging from a personal vacation getaway in a small single-engine plane to overnight package delivery to an emergency medical evacuation to a morning sightseeing flight to flight instruction that trains new pilots to helicopter traffic reports keep drivers informed of rush-hour delays. Simply stated, general aviation encapsulates all those individual unscheduled aviation activities that enrich, enhance, preserve, and protect our lives.

As defined by the FAA, general aviation activities are divided into six use categories:

- Personal – About a third of all private flying in the United States is for personal reasons, including practicing flight skills, personal or family travel, personal enjoyment, or personal business.
- Instructional – All private flight instruction for purposes ranging from private pilot to airline pilot is conducted through general aviation.
- Corporate – About 12 percent of the total private flying in the U.S. is done in aircraft owned by a business and piloted by a professional. Many of these flights are in jets and cover long distances, with some flying to intercontinental and international destinations. Businesses elect to fly these trips to save time and expand their geographic and operational networks.
- Business – About 11 percent of the total private flying in the U.S. is done by business individuals flying themselves to meetings or other events, primarily piston or turboprop aircraft. Most pilots own or work for relatively small businesses and use the aircraft to accomplish missions that would otherwise take more

time or be infeasible.

- Air Taxi – When scheduled air service is unavailable or inconvenient, businesses and individuals use charter aircraft from air taxi service providers. These flights save time and make it possible to fly directly to those places that cannot be reached by scheduled service. (Note that "air taxi" is also utilized as a charter or on-demand commercial air service classification).
- Other – All other activities are classified as being "other." The diverse nature of general aviation includes disaster relief, search and rescue, police operations, news reporting, border patrol, forest firefighting, aerial photography and surveying, crop dusting, and tourism activities, among many others.

2.4.1 BUSINESS USE OF GENERAL AVIATION

Business and corporate aviation are the fastest-growing facets of general aviation. Companies and individuals use aircraft as tools to improve the efficiency and productivity of their businesses and personnel. The use of general aviation aircraft allows businesses direct control of their travel itineraries and destinations and significantly reduces travel times and inconveniences often associated with scheduled airline service.

According to the NBAA's Business Aviation Fact Book, only 3 percent of the approximately 15,000 business aircraft registered in the U.S. are flown by large, Fortune 500 companies. The remaining 97 percent are operated by a broad cross-section of organizations, including government, universities, charitable organizations, and businesses of all sizes. Most U.S. companies that utilize business aircraft (85 percent) are small and mid-size businesses, many of which are based in the dozens of communities across the county where the airlines have reduced or eliminated service. The benefits of corporate general aviation are evidenced by the significant growth that business/corporate general aviation has recently experienced.

Business use of general aviation ranges from small, single-engine aircraft rentals to corporate aircraft fleets supported by dedicated flight crews and mechanics. Business aircraft usage by smaller companies has also escalated dramatically as various chartering, leasing, fractional ownership, interchange agreements, partnerships, and management contracts have emerged.

Of particular note is the immense popularity of fractional ownership operations, which began in 1986 with the creation of a program that offered aircraft owners increased flexibility in the ownership and operation of aircraft. The program uses current aircraft acquisition concepts, including shared or joint aircraft ownership, and provides for the management of the aircraft by an aircraft management company. The aircraft owners participating in the program agree not only to share their aircraft with others with a shared interest but also to lease their aircraft to others in the program. The aircraft owners use a common management company to provide aviation management services, including aircraft maintenance, crew training and assignment, and leasing management.

Even in an unsteady economy, fractional operators say business has continued to improve as existing customers re-enter the market or increase their fractional aircraft usage. In addition, they say an increasing number of new prospects are moving to fractional ownership as an alternative to flying commercially or owning a business jet outright. Fractional-share ownership makes up 15% of business aviation flights.

Growing segments of the business aircraft fleet mix include business liners and very light jets (VLJ). Business liners are large business jets, such as the Boeing Business Jet (BBJ) and Airbus ACJ, reconfigured versions of passenger aircraft flown by large commercial airlines. Labeled as "personal jets," VLJs are small, six-seat jets costing substantially less than typical business jet aircraft. Popular aircraft models in this category include the Eclipse 500 and 550, Embraer Phenom 100, Cessna Mustang, HondaJet, and the Cirrus Vision Jet.

2.4.2 GENERAL AVIATION OUTLOOK

National general aviation activity trends are monitored and forecasted by the FAA on an annual basis in the FAA Aerospace Forecasts publication. The most current edition covers Fiscal Years 2022-2042.

Single- and multi-engine piston aircraft experienced a decline in the number of total aircraft between 2010 and 2020. Although still the largest portion of aircraft in the active fleet, the number of single-engine aircraft fell from 139,500 in 2010 to 127,920 in 2020, a 0.9 percent average annual decline. During that same period, multi-engine piston aircraft had a much steeper decline, falling from 15,900 aircraft to 12,395, a 2.5 percent annual decrease. In total, active piston aircraft decreased by 1.0 percent annually over the last ten years. In its annual aviation forecast, the FAA indicates that it expects the number of active piston general aviation aircraft to continue to decline, but by a lower rate than in the past decade. Over the next decade, the decrease in the number of piston aircraft is expected to be 0.9 percent per year over the next two decades. These predictions show total piston aircraft (combined single and multi-engine) falling from 143,396 in 2019 to 116,905 in 2041.

Conversely, turboprop and jet aircraft experienced substantial growth between 2010 and 2020, increasing from approximately 20,853 to 25,450 aircraft, a 2 percent average annual increase over that period. One of the most important trends identified by the FAA in their forecasts is the growth anticipated in active general aviation jet aircraft. The active general aviation turboprop and jet aircraft fleet is anticipated to increase dramatically over the projection period to 35,780 aircraft in 2041, with jet aircraft almost doubling in numbers within this same period.

The FAA also tracks and projects a valuable metric known as active general aviation and air taxi hours flown. This measurement captures activity-related data, including aircraft utilization, frequency, and duration of use. Hours flown in general aviation piston aircraft experienced a decrease of 1.0 percent annually from 2010 to 2020, while turboprop and jet aircraft hours flown reflected a 2.0 percent average annual growth for the same period. Combined, general aviation hours flown are expected to grow at a 1.0 percent per year through 2041.

2.4.3 SUMMARY

The aviation industry has navigated significant challenges (9/11 and 2008 global financial crisis), after which passenger numbers flatlined for 2-3 years before continuing the upward trajectory. Following these crises, many companies and their supply chains emerged and restructured to thrive. While there is no crystal ball on predicting when the turnaround will be realized, the International Air Transport Association (IATA) is postulating full recovery not occurring until at least 2023, with a worst-case scenario of 2025, assuming vaccine implementation continues, restrictions for international travel have relaxed, the global economy rebuilds, and passenger confidence increases. This sentiment is echoed by the airline data analytics firm OAG, which states, "several years of industry growth has been lost, and it could take until 2022 or 2023 before the volume of fliers returns to levels expected in 2020".

Additionally, it is anticipated general aviation will witness the same rebound as the airlines, with a more expedited time frame. Increases in general aviation activity have already shown signs of rebound and are expected to hit pre-COVID levels sooner than anticipated. Based on this information, the forecasting outcomes for Winnsboro Municipal Airport in the following sections will be based on a combination of industry trends pre- and post-COVID. Ultimately, the forecasts will be based on lower baseline numbers or reflect slower demand in the short-term while the long-term will be unaffected.

2.5 AVIATION FORECAST METHODOLOGY

2.5.1 DEMAND FORECAST APPROACH

To garner FAA approval and acceptance of aviation forecasts, certain methods of forecast development are necessary for evaluation. Choosing the appropriate forecasting methodology is as important as developing forecasting scenarios to plan for the future properly. Forecast scenarios developed for F51 will consider historical operational data but rely largely upon expert judgment. It is important to emphasize that aviation forecasting is not an "exact science," so experienced aviation judgment and practical considerations will influence the level of detail and effort required to establish a reasonable forecast and the development of decisions that result from them.

A qualitative forecast will explain, understand, or interpret current airport conditions and explain why future development scenarios are justifiable. Forecasting scenarios for F51 will be developed by examining qualitative data's meaningful and symbolic content, coupling it with available historical data. Several FAA documents provide sources and methods for forecasting, including Federal Aviation Administration Advisory Circular 150/5070-6B, *Airport Master Plans*, FAA Office of Aviation Policy and Plans, *Forecasting Aviation Activity by Airport, Review and Approval of Aviation Forecasts, 2008*.

Projections of aviation demand incorporate local and national industry trends in assessing current and future demand. Therefore, socioeconomic factors such as local population, income, and employment are also analyzed for their effect on historical and future activity levels. Comparing relationships among these various indicators provides the initial step in developing realistic forecasts of aviation demand. Methodologies used to develop forecasts described in the section include:

- Time-Series Methodologies
- Market Share Methodologies
- Socioeconomic Methodologies

2.5.2 TIME SERIES METHODOLOGY

Historical trend lines and linear extrapolation are widely used methods of forecasting. These techniques utilize time-series data types and are most useful for a pattern of demand that demonstrates a historical relationship with time. Linear extrapolation establishes a linear trend by fitting a straight line using the least-squares method to known historical data. Historical trend lines used in this chapter examine historical compounded annual growth rates (CAGR) and extrapolate future data values by assuming a similar compounded annual growth rate.

2.5.3 MARKET SHARE METHODOLOGY

Market share, ratio, or top-down models compare local activity levels with larger entities. Such methodologies imply that the proportion of activity aligned to the local level is a regular and predictable quantity. This method has been used extensively in the aviation industry to develop forecasts for the local level. It is most commonly used to determine the share of total national traffic activity that a particular region or airport will capture. Data is examined to determine the ratio of local traffic to total national traffic. The FAA develops national forecasts annually in its FAA Aerospace Forecasts document. This data source is compared with historical levels of activity reported by the Airport.

2.5.4 SOCIOECONOMIC METHODOLOGY

Though trend line extrapolation and market share analysis may provide mathematical and formulaic justification for demand projections, many factors beyond historical activity levels may identify aviation trends and impact aviation demand locally. Socioeconomic or correlation analysis examines the direct relationship between two or more historical data sets. Local conditions examined in this chapter include population and per capita income. Future aviation activity projects are developed based on the observed and projected correlation between historical aviation activity and the socioeconomic data sets.

2.6 GENERAL AVIATION ACTIVITY FORECASTS

2.6.1 BASED AIRCRAFT

Based aircraft are those permanently stored at an airport, either in a hangar or on an aircraft parking apron. Estimating the number and types of aircraft expected to be based at F51 over the 20-year study period will impact the planning for its future facility and infrastructure requirements. As the number of aircraft based at an airport increases, so do the aircraft storage requirements at the facility.

Many factors determine the number of general aviation aircraft that can be expected to be based at an airport, such as available facilities and services, proximity and access to the airport, and nearby airport facilities. General aviation aircraft owners and operators are particularly sensitive to the quality and location of their basing facilities. Owners would rather be near their home and work and typically consider this need primary when considering aircraft storage needs. According to airport personnel, ten aircraft are stored on the field.

According to *FAA Aerospace Forecasts, Fiscal Years 2022-2042*, between 2010 and 2020, the active general aviation aircraft in the U.S. decreased at a Compound Annual Growth Rate (CAGR) of -0.9 percent. During this same time frame, the number of piston aircraft (single-engine and multi-engine) in the U.S. fleet decreased at an average annual rate of 1.0 percent. In comparison, turbine (turboprop and jet) aircraft increased at an average CAGR of 2.0 percent. As has been the trend, piston aircraft continue to see yearly decreases while turbine aircraft remain in a positive growth mode. Conversely, for the projected years 2022-2042, the FAA predicts a negative growth rate of 0.8 percent for piston aircraft and a positive rate of 1.9 percent for turbine aircraft. The total general aviation fleet (including rotorcraft, experimental, and light sport aircraft) is projected with a positive CAGR of 0.1 percent.

2.6.2 MARKET SHARE METHODOLOGY

Winnsboro Municipal Airport's market share of the total U.S. general aviation fleet between 2010 and 2021 has fluctuated from a low of 0.0033% in 2019 to a high of 0.0065% in 2013, with the average calculated at 0.0056%. For the constant market share, the 2021 value of 0.0049% will be utilized for the 20-year planning period. Based on these percentages, based aircraft growth based on the constant market share provides a CAGR of 0.1 percent, and the increasing market share reflects a CAGR value of 2.0%. **Table 2.3** show both market share scenarios.

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TABLE 2.3 – MARKET SHARE BASED AIRCRAFT FORECASTS

Year	F51 Based Aircraft	Total U.S. Active Aircraft	F51 Market Share
2010	12	223,370	0.0054%
2011	12	220,453	0.0054%
2012	12	209,034	0.0057%
2013	13	199,927	0.0065%
2014	13	204,408	0.0064%
2015	13	210,031	0.0062%
2016	13	211,794	0.0061%
2017	13	211,757	0.0061%
2018	13	211,749	0.0061%
2019	7	210,981	0.0033%
2020	10	204,140	0.0049%
2021	10	204,405	0.0049%
Constant Market Share Projection			
2027	10	204,925	0.0049%
2032	10	205,195	0.0049%
2037	10	206,280	0.0049%
2042	10	208,905	0.0049%
CAGR (2021-2042) = 0.1%			
Increasing Market Share Projection			
2027	11	204,925	0.0055%
2032	12	205,195	0.0060%
2037	13	206,280	0.0065%
2042	15	208,905	0.0073%
CAGR (2021-2042) = 2.0%			

Source: KSA; *FAA Aerospace Forecasts, 2022-2042*.

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2.6.3 SOCIOECONOMIC – INCOME METHODOLOGY

Income can often strongly indicate one's propensity to own an aircraft. The socioeconomic income variable methodology compares historical-based aircraft at Winnsboro Municipal Airport to per capita income in Wood County. According to data from Woods and Poole, Inc., per capita income in Wood County has increased steadily from 2010 to 2021 and is anticipated to increase to $56,601 by 2042. The 2021 figure of 0.0003 based aircraft per $1 income is applied to per capita income projections and shown in **Table 2.4**. This forecast posits a CAGR of 2.0 percent for 15 based aircraft by the end of the planning period.

TABLE 2.4 – SOCIOECONOMIC – INCOME VARIABLE BASED AIRCRAFT FORECASTS

Year	F51 Based Aircraft	Wood County Per Capita Income	Based A/C per $1 Income
2010	12	$31,421	0.0004
2011	12	$32,596	0.0004
2012	12	$32,937	0.0004
2013	13	$33,423	0.0004
2014	13	$34,818	0.0004
2015	13	$35,529	0.0004
2016	13	$34,732	0.0004
2017	13	$35,118	0.0004
2018	13	$35,475	0.0004
2019	7	$36,233	0.0002
2020	10	$39,235	0.0003
2021	10	$37,557	0.0003
Socioeconomic – Income Variable			
2027	11	$42,489	0.0003
2032	12	$46,934	0.0003
2037	14	$51,648	0.0003
2042	15	$56,601	0.0003

CAGR (2021-2042) = 2.0%

Source: KSA; *FAA Aerospace Forecasts, 2022-2042*, Woods and Poole Socioeconomic Data, Wood County

2.6.4 SOCIOECONOMIC – POPULATION METHODOLOGY

The socioeconomic population variable methodology compares historical-based aircraft at the Airport with the population of Wood County. Between 2010 and 2021, the population of Wood County increased from 41,977 to approximately 46,175. The 2021 figure of 0.0002 based aircraft per capita is applied to the population projections of Wood County and reflected in **Table 2.5**.

TABLE 2.5 – SOCIOECONOMIC – POPULATION VARIABLE BASED AIRCRAFT FORECASTS

Year	F51 Based Aircraft	Wood County Population	Based A/C per capita
2010	12	41,977	0.0003
2011	12	42,092	0.0003
2012	12	42,383	0.0003
2013	13	42,346	0.0003
2014	13	42,764	0.0003
2015	13	43,117	0.0003
2016	13	43,753	0.0003
2017	13	44,263	0.0003
2018	13	45,157	0.0003
2019	7	45,539	0.0002
2020	10	45,856	0.0002
2021	10	46,175	0.0002
Socioeconomic – Population Variable			
2027	10	48,136	0.0002
2032	11	49,834	0.0002
2037	11	51,591	0.0002
2042	12	53,411	0.0002

CAGR (2021-2042) = 0.7%

Source: KSA; *FAA Aerospace Forecasts, 2022-2042*, Woods and Poole Socioeconomic Data, Wood County

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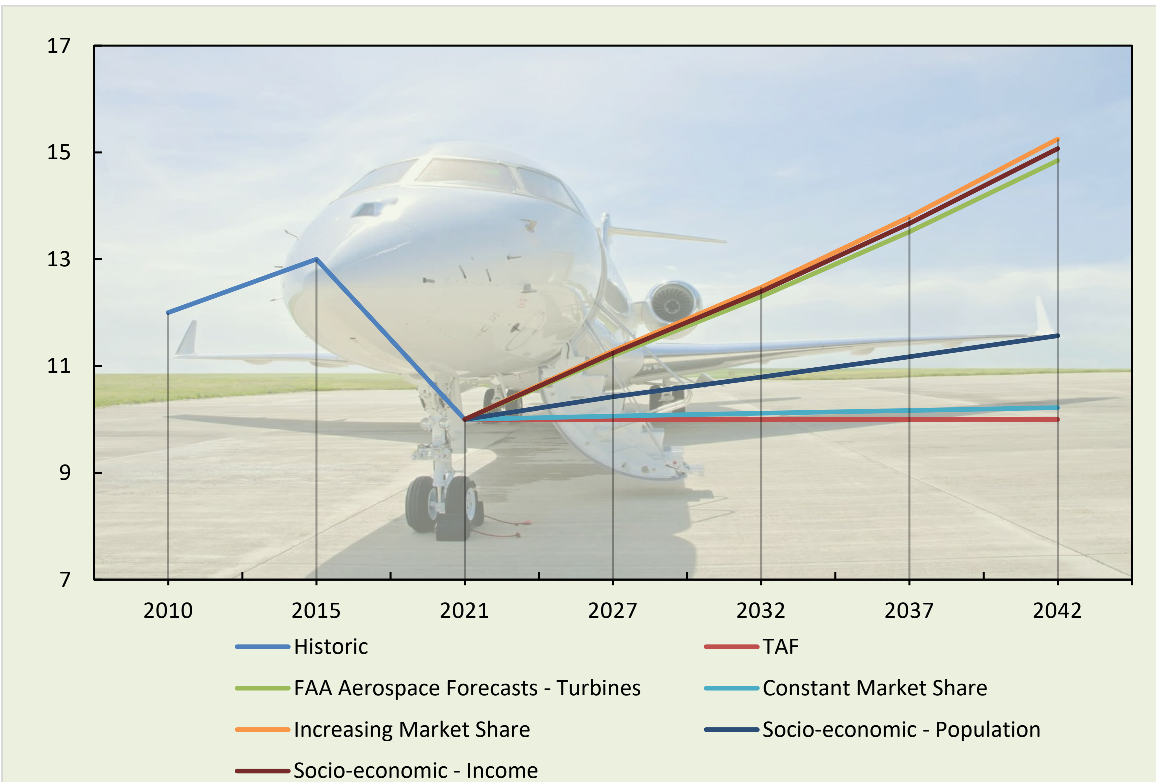
TABLE 2.6 – PREFERRED BASED AIRCRAFT FORECAST, 2021-2042

Year	FAA TAF Summary	FAA Aerospace Forecasts	Constant Market Share	Increasing Market Share	Socioeconomic Income	Socioeconomic Population
2021	10	10	10	10	10	10
2027	10	11	10	11	11	10
2032	10	12	10	12	12	11
2037	10	14	10	14	14	11
2042	10	15	10	15	15	12
CAGR	0.0%	1.9%	0.1%	2.0%	2.0%	0.7%

Source: KSA

EXHIBIT 2.1 – PREFERRED BASED AIRCRAFT FORECAST



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2.6.5 PREFERRED BASED AIRCRAFT FORECAST

A comparison of projected-based aircraft using the methodologies described in previous sections is shown in **Table 2.6** and **Exhibit 2.1**. All the methodologies anticipate either retention of the existing or an increase in based aircraft demand over the next 20 years. Linear extrapolation of historical trends over the last ten years did produce a negative growth rate, but this is unlikely to occur and is accordingly not included. The preferred based aircraft forecast follows course with the *FAA Aerospace Forecast, 2022-2042* for national fleet mix (of turbine aircraft). This scenario increases based aircraft from the current level of 10 to 15 by 2042, with an approximate CAGR of 1.9 percent.

2.7 BASED AIRCRAFT FLEET MIX

The current based aircraft fleet mix at F51 consists of nine (9) single-engine piston aircraft and one (1) helicopter. FAA's anticipated average annual growth rates for various components of the national general aviation fleet were considered when determining a projected based aircraft fleet mix for the airport. As reflected in **Table 2.7**, it is anticipated the number of piston aircraft (single and multi-engine) based at the airport as a percent of total will decrease over the 20-year forecast period. Additionally, based turbine aircraft will continue to increase during the planning period.

TABLE 2.7 – GENERAL AVIATION BASED AIRCRAFT FLEET MIX, 2021-2042

Aircraft Type	2021	2027	2032	2037	2042
Single-Engine Piston	9	9	10	11	12
Multi-Engine Piston	0	0	0	0	0
Single-Engine Turboprop	0	1	1	1	1
Multi-Engine Turboprop	0	0	0	1	1
Jet	0	0	0	0	0
Helicopter	1	1	1	1	1
Total	10	11	12	14	15

Source: KSA

2.8 GENERAL AVIATION OPERATIONS FORECASTS

General aviation operations are those which are not categorized as commercial or military. Several forecast scenarios were developed to reflect current general aviation operational activity and provide realistic projections for the 20-year planning period. The forecast scenarios generated assume, for the most part, straight-line growth. While it is recognized that straight-line (consistent) growth never occurs year after year, average annual growth methodologies often serve to illustrate intermediate- and long-range planning. It should be noted that it is not actual numbers that are most important but the reasoning, assumptions, and trends the numbers represent. The following methodologies were considered in determining projections of general aviation demand.

- FAA Terminal Area Forecasts (TAF) – Data from the May 2021 *FAA Terminal Area Forecast* (TAF) is shown (0.0 percent).
- FAA Aerospace Forecasts – As indicated in this projection and according to the *FAA Aerospace Forecasts, Fiscal Years, 2022-2042,* general aviation operations nationwide are expected to increase at an average annual rate of 1.0 percent.

- FAA Aerospace Forecasts (turbine growth) – As reflected in the *FAA Aerospace Forecasts, Fiscal Years, 2022-2042,* turbine-type aircraft are anticipated to grow at an average annual growth rate of 1.9%. This growth reflects increased flying by business and corporate aircraft overall.
- Operations Per Based Aircraft – Generally, there is a relationship between aviation activity and based aircraft, stated in terms of *Operations Per Based Aircraft (OPBA)*. The national trend has been changing, with more aircraft being used for business purposes and fewer for leisure. This impacts the OPBA because business aircraft are usually flown more often than recreational or leisure aircraft. It is anticipated the OPBA will provide a CAGR of 1.9 percent. This growth rate is the preferred option for anticipated general aviation operations for the planning period.
- Demographics (Population and Income) – As previously mentioned, socioeconomic conditions of a particular area or region can affect aviation activity. This methodology utilizes the combined average annual population and income growth for Wood County of 1.3 percent.

Table 2.8 shows the results of the various general aviation operations forecasts. Based on the long-term trends previously mentioned for the general aviation industry and the opportunity to attract additional business to the area, it is anticipated that the Airport is capable of achieving operational growth similar to national trends levels for general aviation at 1.0 percent annually. However, as previously shown, data for the general aviation fleet and operations is increasing rapidly within the turbine sector of aviation. This factor, coupled with the previously described income increase for Wood County, postulates a CAGR of 1.8% as the preferred general aviation operations forecast.

TABLE 2.8 – PREFERRED GENERAL AVIATION FORECASTS, 2021-2042

Year	FAA TAF Summary	FAA Aerospace Forecasts (Total GA)	FAA Aerospace Forecasts (Turbine Growth)	Wood County Income	Wood County Population / Income Avg.	OPBA
2021	2,900	3,000	3,000	3,000	3,000	**3,000**
2027	2,900	3,185	3,359	3,373	3,248	**3,185**
2032	2,900	3,347	3,690	3,719	3,471	**3,621**
2037	2,900	3,518	4,054	4,101	3,709	**3,978**
2042	2,900	3,697	4,454	4,521	3,963	**4,371**
CAGR	0.0%	1.0%	1.9%	2.0%	1.3%	1.8%

Source: KSA

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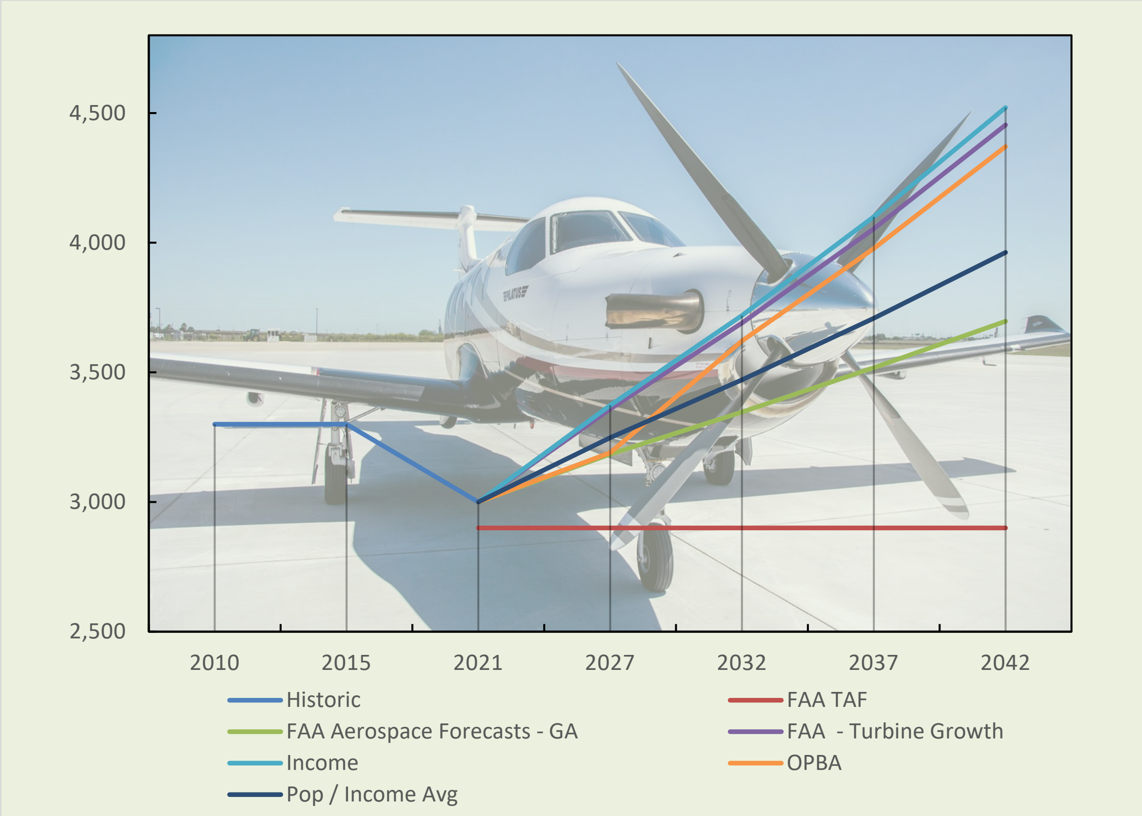
EXHIBIT 2.2 – PREFERRED GENERAL AVIATION OPERATIONS FORECAST



2.9 OPERATIONS FORECAST BY AIRCRAFT TYPE

As indicated in **Table 2.9**, total aircraft movements and operations are expected to increase an average of 1.9% annually from the current level of 3,000 to approximately 4,371 by the end of the planning period.

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TABLE 2.9 – SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2021-2042

Aircraft Type	2021	2027	2032	2037	2042
Air Taxi	0	0	0	0	0
Single-Engine Piston	2,400	2,548	2,897	3,143	3,453
Multi-Engine Piston	60	64	72	40	44
Turbo-prop (SE)	300	319	362	438	481
Turbo-prop (ME)	150	159	181	239	262
Business Jet	0	0	0	0	0
Helicopter	90	96	109	119	131
Military	0	0	0	0	0
Total	3,000	3,185	3,621	3,978	4,371

Source: KSA

2.10 LOCAL / ITINERANT OPERATIONS FORECAST

The FAA defines a local operation as any operation performed by an aircraft operating in the local traffic pattern, within sight of the tower, operating in local practice areas, or executing practice instrument approaches. All other operations are defined as itinerant operations, which usually involve an aircraft departing from one airport and arriving at another. According to the airport records, local operations constituted approximately 76 percent of the total operations, with itinerant operations contributing the remaining 24 percent. The airport will continue to serve people flying to the area for business and leisure and hosting flight training operations for general aviation. **Table 2.10** reflects the total local and itinerant operations for the planning period.

TABLE 2.10 – LOCAL AND ITINERANT OPERATIONS FORECAST, 2021-2042

Year	Itinerant Operations	Local Operations	Total Operations
2021	720	2,280	3,000
2027	764	2,421	3,185
2032	869	2,752	3,621
2037	955	3,023	3,978
2042	1,049	3,332	4,371

Source: KSA; Airport Master Record 5010-1

2.11 CRITICAL AIRCRAFT

The development of airport facilities is impacted by the demand for those facilities, typically represented by total based aircraft and operations at an airport and the type of aircraft that will use those facilities. Generally, airport infrastructure components are designed to accommodate the most demanding aircraft, referred to as the critical aircraft, which will utilize the infrastructure regularly. The factors used to determine an airport's critical aircraft are the approach speed and wingspan/tail height of the most demanding class of aircraft that is anticipated to perform at least 500 annual operations at the airport during the planning period. These 500 operations can be conducted by a single aircraft type or composite aircraft representing a collection of aircraft with similar qualities.

2.12 RUNWAY DESIGN CODE (RDC)

The RDC is a three-component code that defines the applicable design standards that apply to a specific runway. The first component, depicted by a letter (A-E), is the Aircraft Approach Category (AAC) and relates to the approach speed of the design aircraft. Generally, the AAC applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards. The second component, Airport Design Group (ADG), depicted by a Roman numeral (I-VI), relates to the greatest wingspan or tail height of the design aircraft, whichever is most restrictive. The ADG influences design standards for taxiways, aircraft wingtip clearances, and separation distances. The third component relates to runway visibility minimums as expressed in Runway Visual Range (RVR) equipment measurements. RVR-derived values represent feet of forward visibility that have statute mile equivalents (e.g., 2400 RVR = 1/2-mile). RDC classifications are summarized in **Table 2.11**.

TABLE 2.11 – RUNWAY DESIGN CODE

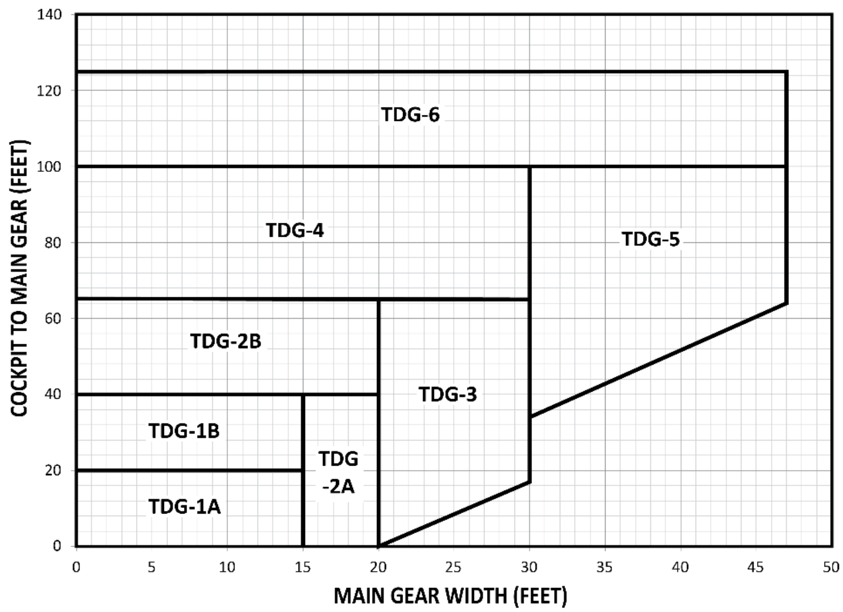
Aircraft Approach Category (AAC)		
AAC	**Approach Speed**	
A	Less than 91 knots	
B	91 knots or more but less than 121 knots	
C	121 knots or more but less than 141 knots	
D	141 knots or more but less than 166 knots	
E	166 knots or more	
Airplane Design Group (ADG)		
Group	**Tail Height (ft)**	**Wingspan (ft)**
I	< 20’	< 49’
II	20’ - < 30’	49 ‘ - < 79’
III	30’ - < 45’	79’ - < 118’
IV	45’ - < 60’	118’ - < 171’
V	60’ - < 66’	171’ - < 214’
VI	66’ - < 80’	214’ - < 262’
Approach Visibility Minimums		
RVR (ft)	**Flight Visibility Category (statute mile)**	
5000	Not lower than 1-mile	
4000	Lower than 1-mile but not lower than ¾-mile	
2400	Lower than ¾-mile but not lower than ½-mile (CAT-I)	
1600	Lower than ½-mile but not lower than ¼-mile CAT-II)	
1200	Lower than ¼-mile (CAT-III)	

RVR – Runway Visual Range. The approximate visibility (in feet) as measured by the RVR light transmission/reception equipment or equivalent weather observer report.

2.13 TAXIWAY DESIGN CODE (TDG)

Separation between runways, taxiways, taxilanes, and objects is related to the aircraft characteristics encompassed by the ADG wingspan or tail height restriction. The Taxiway Design Group (TDG) considers the dimensions of the aircraft undercarriage or landing gear to determine taxiway widths and pavement fillets to be provided at taxiway intersections. Other taxiway elements, such as taxiway safety and object-free areas (TSA and TOFA), taxiway/taxilane separation standards, and taxiway/taxilane wingtip clearances, are based solely on ADG.

EXHIBIT 2.3 – TAXIWAY DESIGN GROUP DETERMINATIONS



Source: FAA A/C 150/5300-13B, *Airport Design*

2.14 AIRPORT REFERENCE CODE (ARC)

The Airport Reference Code (ARC) is a coding system used to relate and compare airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the airport. The ARC is similar in scope to the RDC, minus the third element of visibility. Based on examining the operational information and existing airport layout, it is recommended to maintain the B-I (small aircraft) designation throughout the planning period. **Table 2.12** summarizes the critical aircraft and design aircraft components for Runway 1/19 at Winnsboro Municipal Airport.

TABLE 2.12 – CRITICAL AIRCRAFT PARAMETERS

Existing				
Runway	**Critical Design Aircraft**	**RDC**	**ARC**	**TDG**
1 / 19	Beech Baron 58	B-I-5000	B-I (Small Aircraft)	1A
Ultimate				
Runway	**Critical Design Aircraft**	**RDC**	**ARC**	**TDG**
1 / 19	Beech Baron 58	B-I-5000	B-I (Small Aircraft)	1A

Source: KSA, FAA A/C 150/5300-13B, *Airport Design*

2.15 SUMMARY

Aircraft activity at Winnsboro Municipal Airport has increased steadily in recent history. Despite rapid volatility in fuel cost and impacts and uncertainty associated with COVID-19, the forecasts developed for this Airport Layout Plan (ALP) Update suggest positive growth in the number of based aircraft and total aircraft operations at the Airport over the next 20 years.

The following tables summarize the forecasts of aviation activity presented in this chapter. This information will be utilized in the next chapter, *Facility Requirements*, to document, analyze, and quantify airside and landside needs. Therefore, the forecasts of aviation activity are an important part of the information base, which will be used to develop ultimate plans for the airport and formulate implementation decisions relating to airport development.

To secure approval for these projections, the FAA requires a comparison of forecasts to the annually produced TAF, completed for each airport in the NPIAS and updated yearly. The FAA prefers that airport planning forecasts not vary significantly from the TAF and looks for forecasts to be within 10 percent of their five-year forecasts and 15 percent of their ten-year forecasts. The FAA templates for summarizing and documenting airport planning forecasts and comparing projections with the FAA TAF Forecasts are presented in **Tables 2.13** and **2.14**. The final **Table 2.15** provides a final summary of the forecast aviation demand.

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TABLE 2.13 – SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2021-2042

Operations	2021	2027	2032	2037	2042
Air Taxi	0	0	0	0	0
Single-Engine Piston	2,400	2,548	2,897	3,143	3,453
Multi-Engine Piston	60	64	72	40	44
Turbo-prop (SE)	300	319	362	438	481
Turbo-prop (ME)	150	159	181	239	262
Business Jet	0	0	0	0	0
Helicopter	90	96	109	119	131
Military	0	0	0	0	0
TOTAL OPERATIONS	3,000	3,185	3,621	3,987	4,371
Local Operations	2,280	2,421	2,752	3,023	3,322
Itinerant Operations	720	764	869	955	1,049
Based Aircraft					
Single-Engine Piston	9	9	10	11	12
Multi-Engine Piston	0	0	0	0	0
Single-Engine Turboprop	0	1	1	1	1
Multi-Engine Turboprop	0	0	0	1	1
Jet	0	0	0	0	0
Helicopter	1	1	1	1	1
TOTAL	10	11	12	14	15

Source: KSA

TABLE 2.14 – COMPARISON OF ACTIVITY AND TAF FORECASTS, 2021-2042 (FAA FORMAT)

Year	Airport Forecasts	TAF Forecast	AF / TAF % Difference
Base Year (2021)	3,000	2,900	3.4%
2027	3,185	2,900	9.8%
2032	3,621	2,900	24.9%
2037	3,978	2,900	37.2%
2042	4,371	2,900	50.7%

Source: KSA

TABLE 2.15 – SUMMARY OF AIRCRAFT PLANNING FORECASTS, 2021-2042 (FAA FORMAT)

						Average Annual Compound Growth Rate			
	2021	2027	2032	2037	2042	2027	2032	2037	2042
Operations – Itinerant									
General Aviation	720	764	869	955	1,049	1.8%	1.8%	1.8%	1.8%
Operations – Local									
General Aviation	2,280	2,421	2,752	3,023	3,322	1.8%	1.8%	1.8%	1.8%
TOTAL OPERATIONS	**3,000**	**3,185**	**3,621**	**3,978**	**4,371**	**1.8%**	**1.8%**	**1.8%**	**1.8%**
Peak Hour Operations	0.36	0.38	0.43	0.48	0.52	1.8%	1.8%	1.8%	1.8%
Based Aircraft									
Single-Engine Piston	9	9	10	11	12	0.04%	0.93%	1.13%	1.32%
Multi-Engine Piston	0	0	0	0	0	0.00%	0.00%	0.00%	0.00%
Turbo-prop (SE)	0	1	1	1	1	100.00%	100.00%	100.00%	100.00%
Turbo-prop (ME)	0	0	0	1	1	0.00%	0.00%	100.00%	100.00%
Jet	0	0	0	0	0	0.00%	0.00%	0.00%	0.00%
Helicopter	1	1	1	1	1	0.00%	0.00%	0.00%	0.00%
TOTAL BASED AIRCRAFT	**10**	**11**	**12**	**14**	**15**	**1.60%**	**1.58%**	**2.19%**	**1.95%**

Source: KSA

CHAPTER THREE

FACILITY REQUIREMENTS

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

03 FACILITY REQUIREMENTS

3.1 OVERVIEW

A key step in the planning process is developing requirements of airport facilities, which will allow for airside and landside evolution over the planning period. By comparing the existing conditions of the Airport to forecast aviation activity based on both existing and future aircraft usage, the requirements for runways, taxiways, aprons, terminals, and other related facilities to accommodate growth over the short, intermediate, and long-term planning periods can be determined. Demand-capacity analyses aid in identifying airport deficiencies, surpluses, and opportunities for future development.

This chapter of the Airport Layout Plan (ALP) Update narrative will analyze the ability of the current facilities at Winnsboro Municipal Airport (F51) to meet the forecast planning activity shown in Chapter 2, *Forecast of Aviation Demand*. Using Federal Aviation Administration (FAA) methodologies and typical sizing factors, the aviation projections are converted into facility requirements over the 20-year planning period.

An essential step in the process of estimating airport needs is the determination of an airport's current capacity to accommodate anticipated demand. Demand-capacity analysis yield information that is ultimately used to design the airport layout plan and state facility development. This chapter will examine the ability of F51 to accommodate anticipated aviation demand and outline specific facility requirements necessary to address any deficiencies in the existing airport system. Specifically, this analysis will extend into the following areas:

- Airfield Capacity, Runway Orientation, Design Standards including Runway and Taxiway System
- Approach and Navigational Aids
- Airfield Lighting, Signage, and Pavement Markings
- Aircraft Parking Aprons
- Aircraft Storage Hangars
- Aircraft Fuel Storage
- Public Automobile Parking
- Ground Access
- Airport Security and Fencing

3.2 AIRFIELD DEMAND AND CAPACITY

The major components of the airfield system to be considered when determining capacity include runway orientation and configuration, runway length, and runway exit locations. Additionally, the capacity of a given system is affected by operational characteristics such as fleet mix, climatology, and air traffic control (ATC) procedures. Each component has been examined as part of the airside capacity analysis. Runway orientation and the degree to which it meets wind coverage requirements influence how the runway is utilized. Design standards established by the FAA set geometric clearance guidelines for airfield components. Upon analyzing these elements, a review of existing facilities is performed, and any additional requirements necessary to meet the forecasted demand are identified.

According to the FAA, airfield capacity is generally defined as the number of aircraft operations that can be safely accommodated on both the runway and taxiway system at a given time before an unacceptable level of delay is experienced. FAA guidance for airfield capacity is contained in AC 150/5060-5, Airport Capacity and Delay. The method of analysis for determining airside capacity is Annual Service Volume (ASV). The ASV identifies the maximum number of annual operations that can be accommodated at the Airport without excessive delay. The following conditions specific to F51 need to be identified to determine ASV.

- Predominant Meteorological Conditions
- Runway Use Configuration
- Aircraft Mix (based on existing aircraft group demand)
- Percentage of Arrival Operations
- Touch and Go Operations

3.2.1 ANNUAL SERVICE VOLUME

Using the guidance from FAA AC 150/5060-5, the ASV for the existing runway layout at F51 is calculated to be approximately 230,000, with a VFR capacity of 98 operations per hour and an IFR capacity of 59 operations per hour. For the base year 2021, the recorded operations at Winnsboro Municipal Airport were calculated at 3,000, with a forecast of 4,500 by 2042. This number accounts for approximately two (2) percent of the current ASV. Based on the current operations level and forecast level of demand at F51, no capacity enhancement projects will be needed during the planning period.

Using this measure, it is easy to compare current and projected annual operations numbers and analyze capacity. Although not always viable for hourly capacity or delay peak periods, this guideline is helpful for long-range 20-year planning horizons. Planning guidelines typically assume that planning for capacity enhancements should begin when an airport meets 60 percent capacity. At 80 percent capacity, construction for those projects should begin. If 100 percent capacity is reached, serious impacts to airport operations may occur, resulting in increased delay.

3.3 AIRFIELD REQUIREMENTS

The design or critical aircraft is defined as the largest aircraft family or single aircraft anticipated to utilize an airport regularly. The FAA defines a "regular basis" as conducting at least 500 annual itinerant operations, with an operation classified as a take-off or landing. The selection of the design aircraft allows for the identification of the Airport Reference Code (ARC).

3.3.1 RUNWAY DESIGN CODE

The RDC is a coding system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the airplane types that will operate at a particular airport. The RDC has three components relating to the airport design aircraft. The first component, depicted by a letter (A-E), is the Aircraft Approach Category (AAC) and relates to the approach speed of the design aircraft. The second component, Airport Design Group (ADG), depicted by a Roman numeral (I-VI), relates to the greatest wingspan or tail height of the design aircraft, whichever is most restrictive. The third component relates to runway visibility minimums as expressed in Runway Visual Range (RVR) equipment measurements.

Generally, aircraft approach speed applies to runways and runway length-related features. Airplane wingspan primarily relates to separation criteria and width-related features. Airports expected to accommodate single-engine airplanes typically fall into Airport Reference Code A-I or B-I. Airports serving larger general aviation and commuter-type planes are usually Airport Reference Code B-II or B-III. Small to medium-sized airports serving air carriers are usually Airport Reference Code C-III, while larger air carrier airports are usually Airport Reference Code D-VI or D-V. As established in the forecast chapter of this study, the RDC at Winnsboro Municipal Airport is B-I-5000. **Table 3.1** details the FAA Runway Design Code guidelines. Based on existing and ultimate operations at the Airport and the existing ultimate critical aircraft, the existing B-I (Small Aircraft) ARC should be evaluated for elevation to B-II (Small Aircraft) by the end of the 20-year planning period.

3.3.2 TAXIWAY DESIGN GROUP (TDG)

Similar to runways, taxiways must be designed to certain limitations and offer a set of criteria referred to as Taxiway Design Group (TDG). TDG is based on guidance that establishes requirements based on overall Main Gear Width (MGW) and the Cockpit to Main Gear Distance (CMG) for all aircraft operating at the Airport. This criterion helps establish design standards for fillets and edge safety margins to help limit pilot error and use a consistent taxi method throughout the Airport. FAA Advisory Circular 150/5300-13B, *Airport Design*, **Table 3.2** provides the essential requirements for taxiway design and the associated groups.

TABLE 3.1 – RUNWAY DESIGN CODE

Aircraft Approach Category (AAC)		
AAC	**Approach Speed**	
A	Less than 91 knots	
B	91 knots or more but less than 121 knots	
C	121 knots or more but less than 141 knots	
D	141 knots or more but less than 166 knots	
E	166 knots or more	
Airplane Design Group (ADG)		
Group	**Tail Height (ft)**	**Wingspan (ft)**
I	< 20’	< 49’
II	20’ - < 30’	49 ‘ - < 79’
III	30’ - < 45’	79’ - < 118’
IV	45’ - < 60’	118’ - < 171’
V	60’ - < 66’	171’ - < 214’
VI	66’ - < 80’	214’ - < 262’
Approach Visibility Minimums		
RVR (ft)	**Flight Visibility Category (statute mile)**	
5000	Not lower than 1 mile	
4000	Lower than 1 mile but not lower than ¾-mile	
2400	Lower than ¾-mile but not lower than ½-mile (CAT-I)	
1600	Lower than ½-mile but not lower than ¼-mile CAT-II)	
1200	Lower than ¼-mile (CAT-III)	

RVR – Runway Visual Range. The approximate visibility (in feet) as measured by the RVR light transmission/reception equipment or equivalent weather observer report.

Source: FAA A/C 150/5300-13B, *Airport Design*

EXHIBIT 3.1 – AIRCRAFT CHARACTERISTICS

AIRPLANE DESIGN GROUP (ADG)

A-I

CESSNA 182 - SINGLE ENGINE AIRCRAFT (2 - 6 SEATS)

Maximum Take-off Weight (MTOW): 3,100 lbs. Length: 29' Wingspan: 36'
Similar Aircraft: Beechcraft Bonanza, Cessna 172, Cirrus SR-22

B-I

BEECH KING AIR C90 - SMALL CABIN AIRCRAFT (4 - 10 SEATS)

Maximum Take-off Weight (MTOW): 10,100 lbs. Length: 35' 6" Wingspan: 50' 3" Tail Height: 14' 3"
Similar Aircraft: Citation Mustang, Eclipse 500, HondaJet

B-II

CITATION XLS - SMALL CABIN AIRCRAFT (6 -12 SEATS)

Maximum Take-off Weight (MTOW): 20,200 lbs. Length: 52' 6" Wingspan: 56' 4" Tail Height: 17' 2"
Similar Aircraft: Citation II/III/VII, Citation M2, Phenom 300

C-II / D-II

GULFSTREAM G-IV - COMMERCIAL/BUSINESS JET (14 -70 SEATS)

Maximum Take-off Weight (MTOW): 73,200 lbs. Length: 88' 4" Wingspan: 77' 10" Tail Height: 24' 5"
Similar Aircraft: Bombardier Challenger 600, Embraer E-175

C-III / D-III

BOEING 737-800 - LARGE COMMERCIAL/BUSINESS JET (14 TO 160 SEATS)

Maximum Take-off Weight (MTOW): 174,200 lbs. Length: 129' 6" Wingspan: 112' 7" Tail Height: 41'2"
Similar Aircraft: Bombardier BD-700 Global Express, Boeing 757, Airbus A320

TABLE 3.2 – TAXIWAY DESIGN GROUP (TDG) CRITERIA

Item	Taxiway Design Group							
	1A	1B	2A	2B	3	4	5	6
Taxiway Width	25'	25'	35'	35'	50'	50'	75'	75'
Taxiway Edge Safety Margin	5'	5'	7.5'	7.5'	10'	10'	14'	14'
Taxiway Shoulder Width	10'	10'	15'	15'	20'	20'	30'	30'

Source: FAA Advisory Circular 150/5300-13B

3.3.3 RUNWAY ORIENTATION / WIND ANALYSIS

Surface wind conditions have a direct effect and impact on airport functionality. Runways that are not oriented to take the fullest advantage of prevailing winds will restrict the capacity of the Airport to varying degrees. When landing and taking off, aircraft are able to operate on a runway properly and safely as long as the wind velocity perpendicular to the direction of flight (i.e., crosswind) is not excessive. The wind coverage analysis translates the crosswind velocity and direction into a "crosswind component." Smaller aircraft are more easily affected by crosswinds than larger aircraft; thus, they have a smaller crosswind component.

The determination of the appropriate crosswind component is dependent upon the RDC, as described above, which is B-I for Runway 01/19 at F51. According to AC 150/5300-13B, *Airport Design*, the maximum crosswind component used for RDC's A-I and B-I is 10.5-knots, a 13-knot crosswind component is used for RDC A-II and B-II, and for RDC's C-I and C-II, a 16-knot maximum crosswind component is used.

Accurate wind velocity and directional data during all weather conditions were obtained from the National Climate Data Center (NCDC), which compiles the data provided by the on-field Automated Weather Observing System (AWOS-3). Since F51 does not currently have an on-field weather reporting station, data from Wood County Airport – Collins Field (Mineola, TX, 16 NM Southwest) was used for the analysis. Using the data, an all-weather wind rose was constructed and is presented in the following **Exhibit 3.2.**

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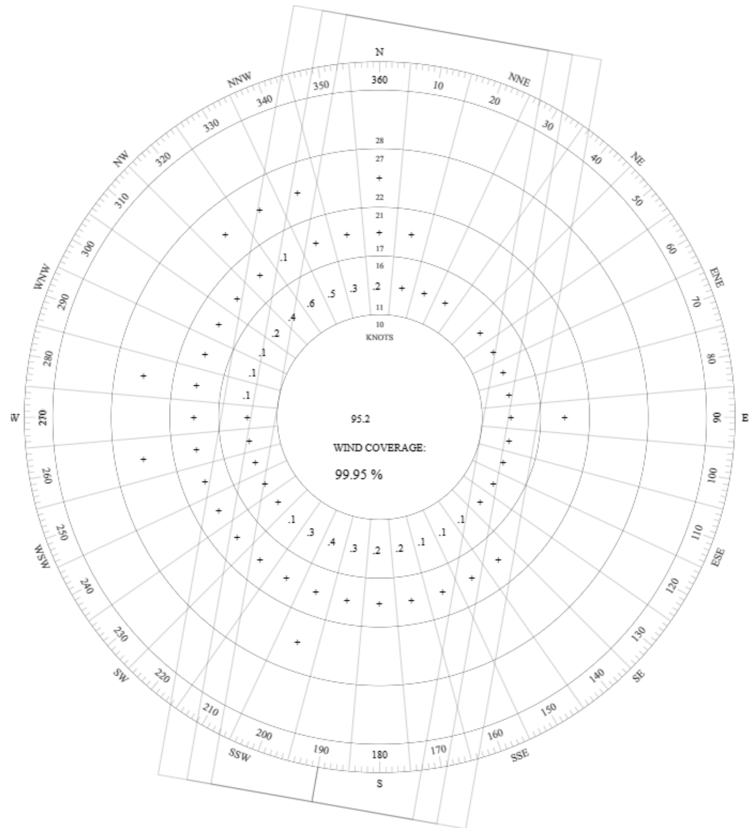
EXHIBIT 3.2 – ALL-WEATHER WIND ROSE



Source: National Climate Data Center, Station 722042, Wood County Airport Mineola, Period 2011-2020

The desirable wind coverage for an airport is 95%, meaning the runway system should be oriented so that the maximum crosswind component is not exceeded by more than 5% of the time annually. Based on the all-weather wind analysis for Winnsboro Municipal Airport, Runway 01/19 provides 99.95% wind coverage for the 10.5-knot crosswind component, 98.97% for the 13-knot crosswind component, and 97.5% for the 10.5-knot crosswind component. **Table 3.3** quantifies the wind coverage provided by Runway 01/19 during all weather conditions at the Airport.

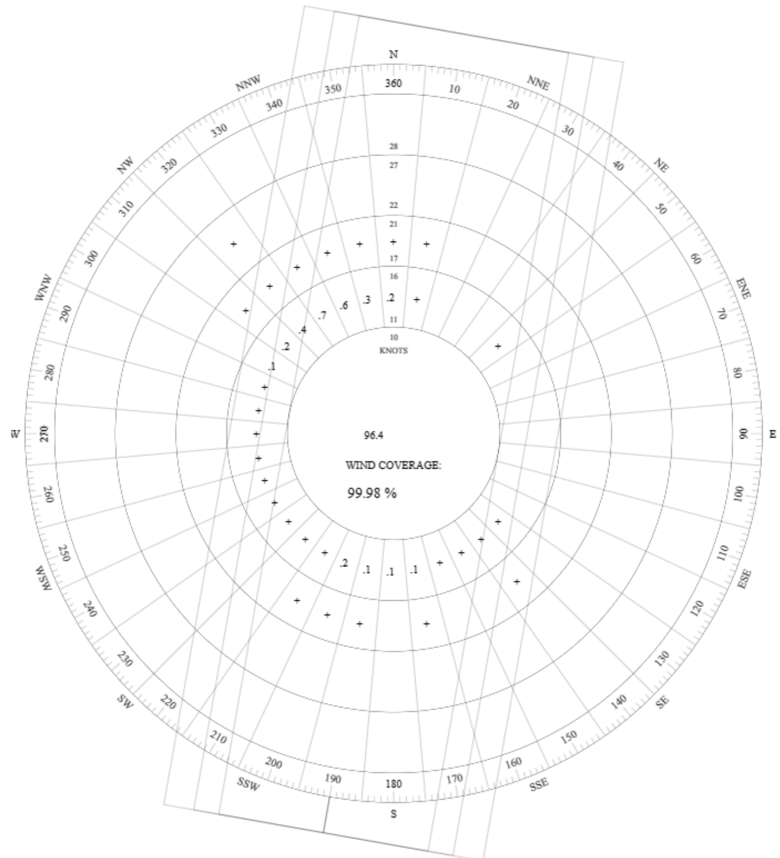
TABLE 3.3 – ALL-WEATHER WIND COVERAGE

	10.5 Knot	13-Knot	16-Knot
Runway 1	84.85%	85.40%	85.67%
Runway 19	91.85%	92.05%	92.21%
Runway 01/19	99.00%	99.64%	99.95%

Source: National Climate Data Center, Station 722042, Wood County Airport Mineola, Period 2011-2020

To analyze the effectiveness of the existing instrument procedures and the need for the placement of improved or additional procedures, an Instrument Flight Rules (IFR) wind rose has been constructed and is presented in the following **Exhibit 3.3**.

EXHIBIT 3.3 – IFR WIND ROSE



Source: National Climate Data Center, Station 722042, Wood County Airport Mineola, Period 2011-2020

Table 3.4 presents wind coverage analysis provided during IFR meteorological conditions (i.e., weather conditions having a ceiling less than 1,000 feet but equal to or greater than 200 feet and visibility less than 3-miles but equal to or greater than ½ mile). The table quantifies the wind coverage provided by Runway 01/19 and the individual ends. From this analysis, it can be concluded that Runway 1 provides the best wind coverage for all crosswind components.

TABLE 3.4 – IFR WIND COVERAGE

	10.5 Knot	13-Knot	16-Knot
Runway 1	92.16%	92.63%	92.83%
Runway 19	87.94%	88.06%	88.16%
Runway 01/19	99.24%	99.76%	99.98%

Source: National Climate Data Center, Station 722042, Wood County Airport Mineola, Period 2011-2020

3.3.4 RUNWAY LENGTH

As outlined in FAA AC 150/5325-4B, *Runway Length Requirement for Airport Design*, the runway length necessary for an airport is dependent on several factors, including airport elevation, temperature, wind velocity, aircraft operating weight and configurations, runway surface condition (wet or dry), obstructions present in the vicinity of the Airport, and departure/arrival procedures.

Winnsboro Municipal Airport's primary runway, Runway 01/19, is 3,213 feet in length. This runway length allows the Airport to serve small cabin aircraft and single-engine general aviation aircraft, common in flight training and many personal general aviation activities. The airport regularly sees operations from small single-engine Cessna, Beech, and Piper aircraft.

The method for determining the recommended runway length is based on examining the Airport's critical aircraft (ARC B-I) and the characteristics of aircraft included in that design category. Several factors must be considered to determine the ultimate required length of a runway, including the characteristics of the critical aircraft that will use the runway, the typical stage length being flown by the critical aircraft, and common atmospheric conditions at the Airport. In general, longer stage lengths require aircraft to carry more fuel, thereby increasing the aircraft's weight at take-off and, subsequently, the runway length required for take-off. Similarly, warmer air temperatures (and the corresponding impact on air density) result in increased runway take-off length requirements for most aircraft.

FAA runway length requirements are based on small aircraft with weights of 12,500 pounds or less, large aircraft between 12,500 and 60,000 pounds, and large aircraft weighing greater than 60,000 pounds. The King Air 90 has a maximum take-off weight (MTOW) of 10,100 lbs.

The results of the runway length analysis conducted for Winnsboro Municipal Airport indicate that the current runway length is more than sufficient to accommodate operations by all small cabin and single-engine general aircraft. Runway length requirements for large aircraft between 12,500 and 60,000 pounds are calculated based on the percentage of aircraft in that category that can be accommodated and the useful load of those aircraft. As shown in Table 3.5, the runway length analysis indicates that a runway length of 4,800 feet is sufficient to accommodate approximately 75% of large airplanes (less than 60,000 pounds) when operating at 60% of their average useful load, and 7,000 feet would be required for 75% of large aircraft at 90% useful load. A runway length of approximately 5,700 feet would be required to accommodate 100% of the aircraft at 60% useful load, while 8,700 feet would be needed to accommodate 100% of large aircraft at 90% useful load.

It is important to note that aircraft greater than 12,000 pounds can safely operate at the Airport with its current runway length; however, many aircraft may have to fly at less than 100 percent of their useful load and may not be able to fly the maximum range of their aircraft when temperatures are high. Again, aircraft performance characteristics determine the required runway length.

Table 3.5 presents the recommended FAA design standard lengths for runways using various categories of aircraft at standard useful loads.

TABLE 3.5 – RUNWAY LENGTH ANALYSIS SUMMARY

Airport and Runway Data	
Airport Elevation (MSL)	513.1'
Mean daily maximum temperature of the hottest month	93°
Maximum difference in runway centerline elevation	20.4'
Existing Runway Condition Runway 01/19	3,213'
Small aircraft ≤ 12,500 pounds with less than 10 seats	
95% of the fleet	3,400'
100% of the fleet	3,900'
Small aircraft with more than 10 seats	4,200'
Aircraft between 12,500 pounds and 60,000 pounds	
75% of fleet – 60% useful load	4,800'
75% of fleet – 90% useful load	7,000'
100% of fleet – 60% useful load	5,700'
100% of fleet – 90% useful load	8,700'
Large Aircraft > 60,000 pounds	Refer to individual aircraft manufacturer's planning manual

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design.* Lengths based on 513.1' MSL, 93 degrees F Mean Max Temperature, 500 NM stage length, and maximum difference in runway centerline elevation of 20.4'.

As the runway length analysis indicates, the existing runway length at Winnsboro Municipal Airport is sufficient to accommodate a small portion of the active general aviation fleet, like the small cabin and single-engine aircraft. As the number of larger corporate general aviation turboprops and jets in the national fleet increases and the number of operations conducted by these aircraft at the Airport increases, a runway extension resulting in an ultimate runway length of 4,000 feet may be warranted at the Airport. This length would allow 100% of the small aircraft fleet, in addition to some large aircraft, to operate in most conditions

3.3.5 BALANCED FIELD LENGTH

While the FAA runway analysis provides an overview for categories of aircraft, balanced field length is a more precise calculation to determine the runway length needs for a certain aircraft. Specific to each aircraft and determined by the aircraft manufacturer, balanced field length is defined as the "*distance required to stop an accelerating aircraft in exactly the same distance as that required to reach take-off speed*." As with those distances presented in **Table 3.5**, balanced field length requirements are based on airport elevation, temperature, MTOW, and stage length. **Table 3.6** details a cross-section of the largest aircraft operating at the field or within the national fleet.

TABLE 3.6 – BALANCED FIELD LENGTH ANALYSIS SUMMARY

Aircraft	MTOW	Approximate Length	
		Standard Day (59°)	Mean Max Temp (93°)
Beechcraft King Air 350	15,000 lbs.	3,654'	4,235'
Embraer Phenom 300	17,968 lbs.	3,484'	4,037'
Cessna Citation 550	15,100 lbs.	4,992'	5,798'
Cessna Citation CJ3+	13,870 lbs.	3,528'	3,778'
Cessna Citation Sovereign	30,775 lbs.	4,186'	4,858'
Challenger 604	47,600 lbs.	6,231'	7246'
Gulfstream G450	69,850 lbs.	6,100'	7,050'
Gulfstream G550	79,600 lbs.	6,400'	7,425'
Gulfstream G650	94,600 lbs.	6,163'	7,166'
Global Express 5500	92,500 lbs.	5,786'	6,727
Global Express 6500	99,500 lbs.	6,628'	7,710'
Global Express 7500	114,850 lbs.	6,225'	7,240'

Source: Flight Planning Guides, Airport Planning Manuals, Manufacturer websites

These lengths provide a general overview of the approximate requirements for larger corporate aircraft to operate at the field. As the Airport continues to grow and it is determined local demand justifies the implementation of a runway extension, this project could be completed in conjunction with other runway or taxiway improvements that may be planned at the Airport over the study period. Justification for a runway extension would be required to determine eligibility for funding. Such justification could include letters from operators requesting an extension for a specific aircraft or type of aircraft.

3.3.6 RUNWAY WIDTH

The required runway width is determined by the critical aircraft and the instrumentation available for the Airport. Based on FAA design criteria and existing instrument approach procedures, the width of 50 feet provided by Runway 01/19 is inadequate for any ARC design criteria. It should be widened to 60 feet for B-I (Small Aircraft).

3.3.7 PAVEMENT STRENGTH

Runway pavement strength is typically expressed by common landing gear configurations. Example aircraft for each type of gear configuration are as follows:

- Single Wheel: each landing gear unit has a single tire; for example, aircraft include light aircraft and some business jet aircraft.
- Dual Wheel: each landing gear unit has two tires; example aircraft are the King Air 350, Citation Longitude, and Gulfstream 500.
- Dual-Tandem: main landing gear unit has four tires arranged in the shape of a square, i.e., Boeing 757.

The aircraft gear type and configuration dictate how aircraft weight is distributed to the pavement and determines the pavement response to loading. As previously mentioned in the *Inventory of Existing Conditions*, the current runway pavement strength is 12,000 pounds for only single-wheel loaded aircraft (S).

The strength rating of a runway does not preclude aircraft weighing more than the published strength rating from utilizing the airfield; it simply provides the ability to support a high volume of aircraft at or below the published weight. While aircraft weighing more than the published weight could potentially damage the runway in severe conditions, it more commonly reduces the pavement's life cycle over time. To meet Texas Airport System Plan (TASP) minimum design standards for Basic Service airports, the pavement strength should be upgraded to at least 12,500 pounds for single-wheel loaded aircraft during the planning period.

3.3.8 TAXIWAYS

The FAA recently updated taxiway design requirements to aid in the appropriate design for the spacing and size of the taxiway. It is important to note that the FAA lists seven conditions that should be addressed to reduce the potential for runway incursions:

- Increase Pilot Situational Awareness: Keep taxiways simple "three-node" concept.
- Avoid Wide Expanses of Pavement: Requires signage placed away from the pilot's line of sight.
- Limit Runway Crossings: Reduces the number of occurrences and ATC workload.
- Avoid "High-Energy" Intersections: Intersections in the middle third of the runway create the potential for a high-speed/energy collision.
- Increase Visibility: Using right-angle intersections, both between taxiways and between taxiways and runways, provides the best visibility for pilots.
- Avoid "Dual Purpose" Pavements: Dual purpose runways/taxiways can lead to confusion.
- Indirect Access: Taxiways leading directly from an apron to a runway without requiring a turn increase the possibility for incursions.

Per AC 150/5300-13B, the FAA required a full-length parallel taxiway for runways configured with instrument approach procedures with visibility minimums below one mile and recommended for all other conditions. Runway 01/19 at Winnsboro Municipal Airport is served by a full-length parallel Taxiway "A." No additional taxiways are recommended for construction at this time.

It should be noted that Taxiway "A" is currently 25 feet wide with runway connectors of 30 feet. As the frequency of small cabin turbine aircraft such as the King Air C90 and larger increases, it may become necessary to consider the widening of parallel Taxiway "A" from 25 feet to 35 feet to coincide with Taxiway Design Group (TDG) 2A standards. This would increase large aircraft's ability to maneuver to and from the runway/parking apron while operating at the Airport.

Additionally, the distance between the centerline of Runway 01/19 and the centerline of Taxiway "A" is 129 feet. The FAA's design criteria for ARC B-I (Small Aircraft) specifies a minimum separation of 150 feet between runway and parallel taxiway centerline. The alternatives provided in the next section of this report will present options to eliminate this deficiency, increasing the distance to 150 feet for ARC B-I (Small Aircraft).

3.5.9 *AIRFIELD MARKING*

FAA AC 150/5340-1M, *Standards for Airport Markings*, provides guidance for establishing uniform airfield markings for runways, taxiways, and aprons. Runway markings typically coincide with the level of instrument capability the runway provides. Runway 1/19 should maintain non-precision approach markings until approaches to either runway end are changed. It is recommended that all runway markings be maintained in accordance with FAA AC 150/5340-1M.

3.5.10 *AIRFIELD LIGHTING AND SIGNS*

The Runway is recommended to retain its Medium Intensity Runway Lights (MIRL), which should be upgraded to LED lights. These features enhance safety along maneuvering areas, maintain consistency across the airfield, and enhance pilot awareness.

3.4 NAVIGATIONAL AIDS

Navigational Aids (NAVAIDs) are any visual or electronic devices, airborne or on the ground, that provide point-to-point guidance information or position data to aircraft in flight. Airport NAVAIDs provide guidance to a specific runway end or to an airport. An airport is equipped with precision, non-precision, or visual capabilities per design standards based on safety considerations and airport operational needs. The type, mission, and volume of activity associated with meteorological, airspace, and capacity considerations determine an airport's eligibility and need for various NAVAIDs.

3.4.1 INSTRUMENT NAVAIDS

This category of NAVAID assists aircraft performing instrument approach procedures to an airport. An instrument approach procedure is defined as a series of predetermined maneuvers for guiding an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing can be made visually.

The current instrument approaches outlined in Chapter 1, *Inventory of Existing Conditions*, sufficiently meet the current demand at F51; as operations continue to increase, the need for additional approaches may be justified.

3.4.2 AUTOMATED WEATHER

Winnsboro Municipal Airport is not served by an on-site Automated Weather Observing System (AWOS-3). Still, local aviation weather can be obtained from Wood County Airport – Collins Field (JDD, Mineola, TX, 16 NM Southwest) on the radio at 118.9 or by phone at (903) 768-3065. An AWOS unit provides pilots with a computer-generated voice message which is broadcast via radio frequency in the vicinity of the Airport. The message contains pertinent weather information, including wind speed and direction, visibility, temperature, dew point, and cloud ceiling heights.

FAA Order JC 6560.20C, *Siting Criteria for Automated Weather Observing Systems*, establishes siting criteria for observation systems that provide weather information at airports and heliports. This criterion applies to all federally owned and non-federal systems commissioned by the FAA. At airports supporting Visual and Non-Precision Instrument Runways, the preferred siting of the cloud height, visibility, and wind sensors is adjacent to the primary runway or runway with the lowest minimums.

This sensor should be located between 1,000 to 3,000 feet down the runway from the threshold at a minimum distance perpendicular to the runway centerline of 500 feet, with a maximum distance from the runway centerline not to exceed 1,000 feet. If the elevation of the wind sensor site is above the runway centerline elevation, a positive adjustment of seven (7) feet for every one (1) foot of elevation difference is required. Since F51 does not have an existing weather reporting station, the alternatives chapter will analyze the addition of an AWOS-3 system within the 20-year planning period.

3.5 DIMENSIONAL STANDARDS

Dimensional standards include measurements that account for physical runway and taxiway characteristics and safety-related areas. These standards, contained in FAA AC 150/5300-13B, are shown in **Table 3.7** and **Exhibit 3.4** as they pertain to F51. As established in previous sections, the design aircraft is within the ARC B-I (Small Aircraft) group category for Runway 01/19 and the supporting airfield infrastructure. Several aspects of the Airport's layout do not meet the minimum criteria established for this category, and these discrepancies are bolded below.

The following dimensional standards are important to the design of the runway and taxiway system at F51, as well as the safety of the aircraft operating within the airport environment.

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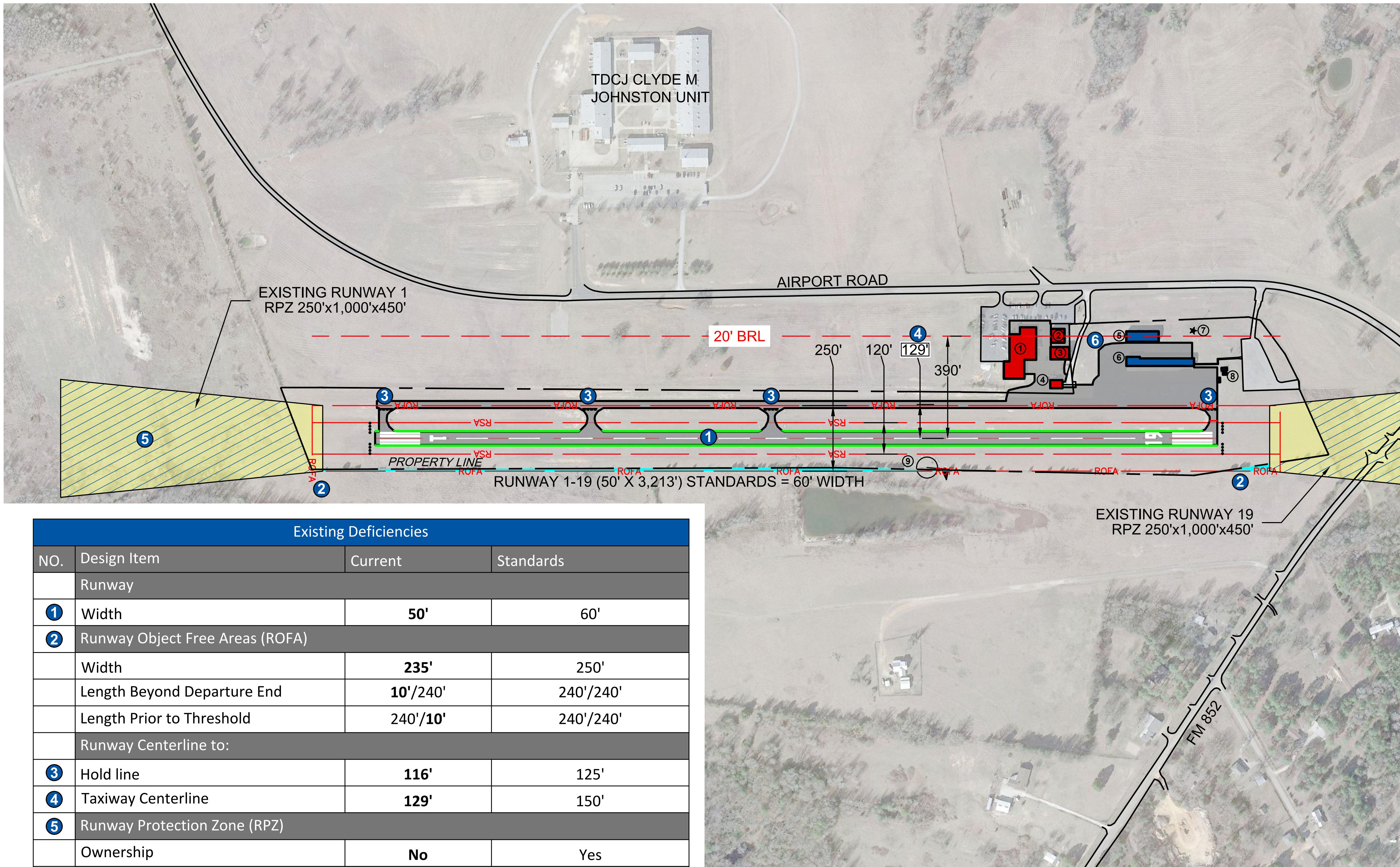
TABLE 3.7 – FAA DESIGN CRITERIA SUMMARY

Design Item	Runway 01/19 Existing Conditions	Runway 01/19 (B-I Small Aircraft); Not lower than 1-mile vis. Minimums (FAA Design Criteria)
Runway		
Width	**50'**	60’
Safety Areas (SA)		
Width	120'	120'
Length Beyond Departure End	240’ / 240’	240’ / 240’
Length Prior to Threshold	240’ / 240’	240’ / 240’
Object Free Areas (OFA)		
Width	**235'**	250’
Length Beyond Departure End	**10’**/ 240'	240’/ 240'
Length Prior to Threshold	240’ / **10'**	240’ / 240'
Obstacle Free Zone (OFZ)		
Width	**235'**	250’
Length Beyond Departure End	**10’** / 200’	200’ / 200’
Length Prior to Threshold	200’ / **10’**	200’ / 200’
Taxiway		
Width	25'	25’
Safety Area	49'	49’
Object Free Area	89'	89’
Centerline to Fixed or Movable Object	44.5'	44.5’
Runway Centerline to:		
Holdline	**116'**	125’
Taxiway Centerline	**129'**	150’

Source: FAA AC 150/5300-13B, *Airport Design*

KSA



LEGEND

- EXISTING BUILDINGS ON PROPERTY
- EXISTING BUILDINGS OFF PROPERTY
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- RUNWAY PROTECTION ZONE
- PAVEMENT DEMOLITION
- PROPERTY LINE
- FUTURE PROPERTY ACQUISITION/EASEMENT

Existing Deficiencies			
NO.	Design Item	Current	Standards
	Runway		
1	Width	**50'**	60'
2	Runway Object Free Areas (ROFA)		
	Width	**235'**	250'
	Length Beyond Departure End	**10'**/240'	240'/240'
	Length Prior to Threshold	240'/**10'**	240'/240'
	Runway Centerline to:		
3	Hold line	**116'**	125'
4	Taxiway Centerline	**129'**	150'
5	Runway Protection Zone (RPZ)		
	Ownership	**No**	Yes
6	Building Restriction Line		
		Buildings penetrating Part 77 surfaces	No building over 25' withing 425' of runway centerline

BUILDING LEGEND		
NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'

N

0' 200' 400'

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

Exhibit 3.4 Existing Deficiencies, ARC B-1 (Small Aircraft)

3.5.1 RUNWAY SAFETY AREA

The Runway Safety Area (RSA) is the surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot overshoot or excursion from the runway. Based on FAA RDC B-I (Small Aircraft) design standards for existing conditions, the RSA should extend beyond the departure end of the runway for 240 feet, prior to the runway threshold for 240 feet, and be 120 feet wide. Runway 01/19 meets the necessary dimensional criteria.

3.5.2 OBJECT FREE AREA

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

Currently, RDC B-I (Small Aircraft) standards indicate requirements for the OFA to be 250 feet wide, extending 240 feet beyond the departure end of the runway, and 240 feet prior to the runway threshold. Runway 01/19 does not meet the necessary dimensional criteria, as the Airport’s property line does not completely contain the ROFA, and a treeline runs through it.

3.5.3 RUNWAY OBSTACLE FREE ZONE

The Runway Obstacle Free Zone (ROFZ) is a 3D volume of airspace above the established airport elevation, which protects the operational transition of aircraft to and from the runway. The length of the ROFZ is fixed at 200 feet beyond the associated runway end. Still, the width is dependent upon the pavement strength, RDC, and visibility minimums associated with the instrument approach procedures associated with the runway. The ROFZ width requirement at F51 is 250 feet, and the elevation of the ROFZ is equal to the closest perpendicular point along the runway edge. Similarly to the ROFA, F51’s ROFZ does not meet dimensional criteria as there is a treeline to the northeast of Runway 19’s threshold, penetrating the ROFZ.

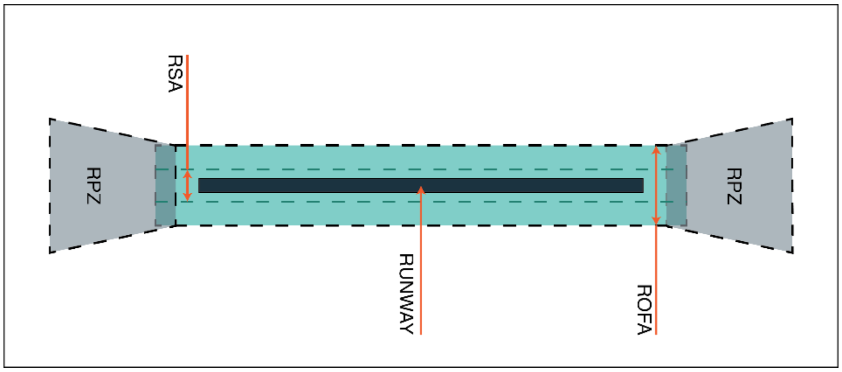
3.5.4 BUILDING RESTRICTION LINE

The FAA no longer has fixed-distance standards for the Building Restriction Line (BRL) location. Rather, the BRL is a line that identifies suitable building area locations on airports. It considered such things as runway protection zones, the appropriate OFAs and OFZs, NAVAID critical areas, areas required for TERPS, and air traffic control (ATCT) line of sight (at airports where ATCTs exist). Typically, the closer development is to the Aircraft Operations Area (AOA), the more impact it will have on future expansion capabilities of the Airport. One aspect of the BRL at Winnsboro Municipal Airport is the Transitional Surface, defined by Part 77. This requires that a structure at F51 be located at least 250 feet plus seven times its height away from the runway centerline. Several structures around the Airport do not meet this dimensional standard, and ways to mitigate this will be examined in Chapter 4, *Development Alternatives*.

3.5.5 RUNWAY PROTECTION ZONES

Runway Protection Zones (RPZ) are trapezoidal areas off the end of each runway end that enhance the protection of people and property on the ground in the event an aircraft lands or crashes beyond the runway end. RPZs underlie a portion of the approach closest to the Airport. FAA guidelines within these areas prohibit many land uses. However, these limitations are only enforceable if the RPZ is owned or controlled by the airport sponsor. Airport control of these areas is strongly recommended and is primarily achieved through airport property acquisition but can also occur through easements or zoning to control development and land use activities.

Runway 01/19 features RPZ dimensions of 1,000' x 250' x 450', accommodating the 1-mile approach visibility minimums for small aircraft. Currently, 7.12 acres of RPZ property relating to the Runway 19 is not owned by F51, and 7.51 acres of the 01 RPZ are not controlled by the Airport. It is recommended that the Airport pursue control of these areas via simple property acquisition or easement.



3.6 LANDSIDE REQUIREMENTS

This section describes the landside requirements needed to accommodate F51's general aviation activity throughout the planning period. Areas of particular focus include the hangars, aprons, tie-down areas, automobile parking, and associated support facilities.

3.6.1 HANGARS

Hangars are the preferred method for based aircraft storage at Winnsboro Municipal Airport to protect aircraft from high temperatures, sun exposure, and severe weather. The Airport currently has a waiting list for hangar rentals. Currently, one airport-owned T-hangar structure consists of six units, one airport-owned shade hangar, two privately-owned box hangars, and one privately-owned shade hangar.

All aircraft based at F51 are stored in hangars. The rate above is assumed for the future based aircraft at F51 and used in determining the demand for additional hangars. The aircraft type influences the type of storage required for based aircraft. Considering this, the projected aircraft fleet mix was used to identify the number of additional hangars by type projected over each phase of the planning period. For the end of the planning period (2042), hangar space requirements were calculated in **Table 3.8**.

TABLE 3.8 – AIRPORT HANGAR SPACE REQUIREMENTS

Percent of Aircraft Type	Type of Storage
100% of Turboprop Aircraft and Helicopters	Box/Corporate/Executive Hangar
50% of Multi-Engine Piston Aircraft	Box/Corporate Hangar
50% of Multi-Engine Piston Aircraft	T-Hangar
75% of Single Engine Piston Aircraft	T-Hangar
25% of Single Engine Piston Aircraft	Box/Corporate Hangar

Conventional hangar space requirements assumed 10,000 square feet per based jet aircraft, 2,500 square feet per turboprop, and 1,500 square feet per helicopter. T-hangar units assumed 1,200 square feet per single-engine piston and 1,500 square feet per multi-engine piston-based aircraft. Applying these standards to the forecasted based aircraft yielded the following hangar needs for the year 2042.

- Corporate/Conventional Hangar Space: 10,380 square feet
- T-Hangar Units: 10,665 square feet

3.6.2 AIRCRAFT PARKING APRONS

Aircraft parking area requirements were calculated assuming that paved apron areas will be provided for all based general aviation aircraft not kept in hangars at F51. This was estimated to be equivalent to 10 percent of all single-engine based aircraft throughout the planning period. A total of 229 square yards of apron per aircraft was used for planning the local apron requirement. By 2042, 344 square yards of based aircraft parking apron will be needed.

In addition, transient apron space required to meet itinerant general aviation demand was estimated using an approach outlined by the FAAs AC 150/5300-13B, *Airport Design*. This approach indicates that the area needed for transient aircraft parking will differ by airport, but principals should include an allowance for an appropriate amount of apron per transient aircraft. For this analysis, it was assumed that 50 percent of the daily itinerant operations on a busy day (a busy day is 10 percent busier than the average day) would represent aircraft on the ground at any time. Transient apron requirements for general aviation aircraft at F51 indicated 2,065 square feet per ADG-I itinerant aircraft, 5,800 square feet per ADG-II itinerant aircraft, and 10,000 square feet per ADG-III itinerant aircraft was a reasonable distribution. This will permit the accommodation of single-engine piston aircraft to large multi-engine turboprops and corporate jets. Based on the forecast demand, a total of 3,325 square yards will be needed by 2042.

3.6.3 AUTO PARKING

Auto space requirements are a function of the number of passengers, employees, and pilots expected to use an airport during the daily peak hour. At medium activity general aviation airports, planning standards indicated that roughly 1.3 auto parking spaces per total number of peak day general aviation pilots and passengers are adequate. F51 currently has a designated parking area north of the hangar facilities, but its pavement quality is poor, and the location is not ideal. The next chapter will investigate moving the parking area to a better location.

3.6.4 FUEL STORAGE FACILITIES

Winnsboro Municipal Airport is equipped with an above-ground 5,000-gallon AVGAS/100LL tank and an above-ground 1,000-gallon MOGAS tank. Given the demand forecast, it is anticipated that the Airport will only require approximately 701 gallons of AVGAS/100LL every two (2) weeks. The current tank capacity for AVGAS is expected to meet demands throughout the planning period. The Airport does not currently have any Jet A fuel storage facilities, despite seeing approximately 540 turboprop and jet aircraft operations per year. Adding an above-ground Jet A fuel tank would allow the Airport to serve these larger aircraft better.

3.6.5 FENCING

Airport security and fencing are an important part of airfield infrastructure. Tenants, users, and businesses count on airport management to provide secure and safe facilities to help protect their investments. Various types of fencing are used for wildlife and security and vary in height and type, depending on local security needs. These low-maintenance fences provide clear visibility for security sweeps and may include chain link, barbed wire, razor wire, or other elements to increase intrusion difficulty. The Airport currently has fencing in some areas but should consider installing a perimeter fence to increase security on the airfield.

3.7 SUMMARY OF FACILITY REQUIREMENTS

The information in this chapter provides the basis for understanding what facility improvements at the airport might help to efficiently and safely accommodate future demands. **Table 3.9** presents a summary of the facility needs for Winnsboro Municipal Airport. As shown, the forecast of aviation demands indicates the need for additional hangar and fuel storage facilities.

TABLE 3.9 – FACILITY REQUIREMENTS SUMMARY

Item	*Existing*	2027	2032	2042
Airport Reference Code	*B-I (Small Aircraft)*	B-I (Small Aircraft)	B-I (Small Aircraft)	B-I (Small Aircraft)
Pavement Load-Bearing Capacity	*12,000 lbs. (S)*	12,500 lbs. (S)	12,500 lbs. (S)	12,500 lbs. (S)
Lighting Systems & Approach Aids	*MIRL*	MIRL (LED)	MIRL (LED)	MIRL (LED)
Conventional Hangar Space*	*0 sq. ft.*	6,666 sq. ft.	6,828 sq. ft.	10,380 sq. ft.
T-Hangar Space*	*8,000 sq. ft.*	8,118 sq. ft.	8,964 sq. ft.	10,665 sq. ft.
Apron Area	*6,000 sq. yds.*	2,483 sq. yds.	2,730 sq. yds.	3,325 sq. yds.
Based Aircraft Apron	*0 sq. yds.*	252 sq. yds.	273 sq. yds.	344 sq. yds.
Itinerant Apron	*6,000 sq. yds.*	2,231 sq. yds.	2,457 sq. yds.	2,981 sq. yds.
Auto Parking	*Open 20,000 sq. ft.*	2 spaces	3 spaces	5 Spaces
Fuel Farm	*5,000-gallon 100LL 1,000-gallon MOGAS*	Add Jet A storage	Add Jet A storage	Add Jet A storage

*Only publicly-owned hangars are included

Following are development issues and improvement considerations from the narrative above that will be examined in Chapter 4, *Development Alternatives*.

- Extend Runway 1/19 to 4,000 feet
- Widen Runway 1/19 to 60 feet to meet FAA ARC B-I (Small Aircraft) design criteria
- Strengthen runway pavement to 12,500 pounds single-wheel loading to meet TASP design criteria for Basic Service airports
- Consider widening parallel taxiway and connectors to 35 feet to meet FAA TDG 2A design criteria
- Reconstruct parallel taxiway at a centerline-to-centerline distance of 150 feet from Runway 1/19 to meet FAA ARC B-I (Small Aircraft) design criteria
- Move runway holdline back to 129 feet from centerline to meet FAA ARC B-I (Small Aircraft) design criteria
- Evaluate the need for additional instrument approaches
- Evaluate the need for AWOS equipment on the airfield
- Remove obstructions within the ROFA and ROFZ
- Purchase remaining areas of ROFA and ROFZ not owned by the Airport
- Remove structures that violate Building Restriction Line

- Pursue control of areas underlying RPZs via simple property acquisition or easement
- Construct additional conventional/box hangars and T-hangars to meet forecasted demand
- Move the auto parking area to a better location
- Construct above-ground Jet A fuel storage tank
- Construct a perimeter security fence and implement security gates

CHAPTER 4

ALTERNATIVES

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

04 DEVELOPMENT ALTERNATIVES

4.1 OVERVIEW

The previous chapter identified the airside and landside facility requirements needed to satisfy the forecast demand throughout the 20-year planning period. Using the identified requirements, the following recommendations have been made to address how those requirements will be met using various development alternatives. This chapter will analyze the benefits and weaknesses associated with each alternative and provide a strategy for selecting a preferred airport development plan. Once selected, the preferred alternative will be implemented into the Airport Layout Plan (ALP) drawings.

This effort aims to develop a balanced airside infrastructure and appropriate landside aircraft storage infrastructure to best serve the forecast aviation demands. Assessment of each alternative is grounded primarily in local, state, and federal planning standards; however, technical judgment must also be applied to determine the appropriate course of action, and factors surrounding the development and evaluation of design options should be assessed. These factors include:

- Develop a safety-oriented and efficient aviation facility through compliance with Federal Aviation Administration (FAA) airport design standards and airspace criteria defined in FAA Advisory Circular (AC) 150/5300-13B, *Airport Design*.
- The short- and long-term development costs of the defined alternatives.
- Compatibility with existing and proposed land uses, concerning zoning ordinances and neighboring off-airport uses.
- Compatibility with the short-and long-range goals of the City of Winnsboro, Franklin, and Wood Counties, TxDOT, and the Federal Aviation Administration.
- Minimization of environmental impacts on and off-airport.

Alternatives to be considered will include options for both airside and landside development.

4.2 FACILITY REQUIREMENTS SUMMARY

Facility requirements are intended to compare existing facilities with current safety standards and the demand for new or expanded facilities. The facilities previously outlined in Chapter 3 have provided the baseline to determine the feasibility of accommodating various alternatives. In addition, airfield demand/capacity, airside facility requirements, and landside capacity have all been evaluated during the selection of alternatives. Two primary standards are considered when evaluating facility requirements. First, alternatives must meet the design requirements established by the current and future Airport Reference Code (ARC), and second, standards identified in FAA Advisory Circular 150/5300-13B, *Airport Design,* must be met.

To meet future facility requirements, Winnsboro Municipal Airport must make provisions to accommodate future operations while improving airport geometry to meet current FAA design standards. The demand for additional facilities was calculated in the previous chapter and can be summarized by examining forecast-based aircraft and operations.

1. Based Aircraft: F51 currently accommodates ten (10) based aircraft; this number is expected to increase to as much as 15 by 2042. **(Table 4.1)**
2. Operations: In 2021, F51 accommodated 3,000 operations; this is expected to rise to as many as 4,371 by 2042. **(Table 4.1)**

TABLE 4.1 – SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2021-2042

Operations	2021	2026	2031	2036	2042
Single-Engine Piston	2,400	2.548	2,897	3,143	3,453
Multi-Engine Piston	60	64	72	40	44
Turbo-prop (SE)	300	319	362	437	481
Turbo-prop (ME)	150	159	181	239	262
Business Jet	0	0	0	0	0
Helicopter	90	96	109	119	131
Total Operations	3,000	3,185	3,621	3,987	4,371
Local Operations	2,280	2,421	2,752	3,023	3,322
Itinerant Operations	720	764	869	955	1,049
Based Aircraft					
Single-Engine	9	9	10	11	12
Multi-Engine	0	0	0	0	0
Turbo-prop (SE)	0	1	1	1	1
Turbo-prop (ME)	0	0	0	1	1
Jet	0	0	0	0	0
Helicopter	1	1	1	1	1
Total	10	11	12	14	15

Source: KSA

4.2.1 AIRSIDE REQUIREMENTS

Airside facilities include infrastructure that interacts with the arrival and departure of aircraft as well as their subsequent movement around the airfield to parking and storage areas. Areas of focus include runway/taxiway dimensions and geometry, aprons, navigational aids (NAVAIDs), landing aids, and dimensional standards. These criteria are considered during the development of the airside alternatives.

The following airside improvements, outlined in **Table 4.2**, were recommended in the previous chapter and are intended to meet future design requirements as well as enhance the efficiency of the airfield. Each proposed alternative incorporates these improvements while ensuring compliance with FAA Airport Design Standards.

TABLE 4.2 – SUMMARY OF FACILITY REQUIREMENTS

Facility	Planning Considerations	Justification
Airport Reference Code	Existing B-I (Small Aircraft), Ultimate B-I	Safety/Capacity
Runway	Shift Runway 1/19 (500' South), Extend Runway 1/19 (287' South), Displace Runway 19 Threshold (500')	Safety/Capacity
Pavement Load Bearing Capacity	12,500 lbs. (Single)	Capacity
Lighting Systems & Approach Aids	MIRL (Upgrade to LED)	Safety/Capacity
Conventional Hangar Space	As the market dictates, construct conventional aircraft storage.	Capacity
T-Hangar Space	As the market dictates, construct conventional aircraft storage.	Capacity
Auto Parking	Provide expanded auto parking with new terminal development.	Capacity
Fuel Farm	As the market dictates, consider the addition of Jet-A fuel storage.	Capacity
RPZ Control	Acquire 5.95 acres of property to gain control of the RPZ	Safety
Runway/ Taxiway Object Free Area (ROFA/TOFA) Control	Acquire 7.88 acres of property to gain control of the ROFA/TOFA	Safety
Taxiway Separation	Relocate Parallel Taxiway to 225' from Runway Centerline	Safety/Standards
Security Fencing	Construct 21,500 lf. of 6' Wildlife/Security Fencing	Safety/Security

Source: KSA

4.2.2 LANDSIDE REQUIREMENTS

Various landside improvements are recommended to accommodate current and forecast aviation activity throughout the planning period at Winnsboro Municipal Airport. As stated in Chapter 3, *Facility Requirements*, areas of particular focus include:

- Provide additional aircraft storage hangars of various sizes
  - Conventional Hangars – 10,380 square feet
  - T-Hangars – 10,665 square feet
- Expanded Automobile Parking
- Security Fencing and Controlled Access
- Preservation of Land for the control of safety areas, expansion, and development of airport infrastructure

These facility requirements are developed from the analysis of the demand capacity and capacity requirements and are based on standards established by FAA Advisory Circular (AC) 150/5300-13B, Airport Design. Each of these proposed alternatives will incorporate these improvements while following compliance with FAA Airport Design Standards.

4.3 DEVELOPMENT ALTERNATIVES EVALUATION

The following section will evaluate four development alternatives representing a variety of airside and landside options. As outlined in Chapter 1, *Inventory of Existing Conditions*, Winnsboro Municipal Airport is based on a single runway system. Runway 1/19 is 3,213' by 50' and is served by full-length parallel taxiway "A."

To help determine terminal support area facilities for future planning periods, landside capacity and future demand were evaluated for itinerant and based aircraft parking aprons, aircraft storage facilities, automobile parking, fuel storage, and support area requirements. Both conventional and T-hangars are needed throughout the planning period.

Development strategies were explored at Winnsboro Municipal Airport based on the following criteria:

- Market Position
- Regional Economic Development opportunities
- SWOT analysis results from stakeholders

According to the forecast-based aircraft counts, expected increases in local and itinerant operations are anticipated. Alternative development options have been established to accommodate the projected demand for the 20-year planning period. It should be noted that future development of aircraft storage facilities is demand-based and market-dictated.

The number, size, and location of these facilities will vary depending on the demand for the specific type and flexibility to accommodate a variety of users. Additionally, there are important development guidelines that the airport sponsor should consider when making hangar placement determinations at the airport, which include:

- Each conventional hangar should be supplied with taxiway access that is separated from automobile access and adjacent automobile parking. This is most efficiently accomplished when a row of hangars is developed and provides taxiway access on one side and automobile access and parking on the other.
- Each T-hangar should be nested and developed with taxiway access to both sides of the hangar. Controlled automobile access should be provided to the taxiway/apron area near the T-hangars. A public parking area should be provided near the T-hangar facilities to accommodate users and visitors.

The following alternatives have been assembled to provide a full range of design options. These alternatives are based on the forecasts of aviation activity, facility requirement needs, and potential expansions at the Airport. These alternatives include hangar, apron, and access taxiway development improvements based on input from airport personnel and stakeholders and the projected aircraft storage improvements needed to serve aviation users. It is important to recognize that the ultimate build-out of the various aviation development areas presented far exceeds that which is projected for the 20-year planning period of this study.

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4.3.1 ALTERNATIVE ONE

Graphically depicted in Exhibit 4.1, Alternative One recommends retaining the existing runway length of 3,213 feet while focusing on revising airport geometry to meet design standards. The primary objective of this alternative is to promote safety by allowing the airport to meet minimum design standards for current operations. Consideration is given to relocating the parallel taxiway (150 feet from Runway 1/19 centerline).

Airside Design Considerations Summary

- Relocate parallel taxiway "A" to satisfy FAA design standards (150 feet from parallel taxiway centerline to runway centerline).
- Widen Runway 1/19 to 60' (Existing 50') to satisfy FAA design standards.
- The Runway Protection Zone (RPZ) serving the Runway 19 approach end is not currently owned by the City of Winnsboro in its entirety. It is recommended that the City pursues an avigation easement or fee-simple acquisition of the property.

Landside Design Considerations Summary

- Preservation of existing facilities
- Preservation of land on the west side of Runway 1/19 for future development

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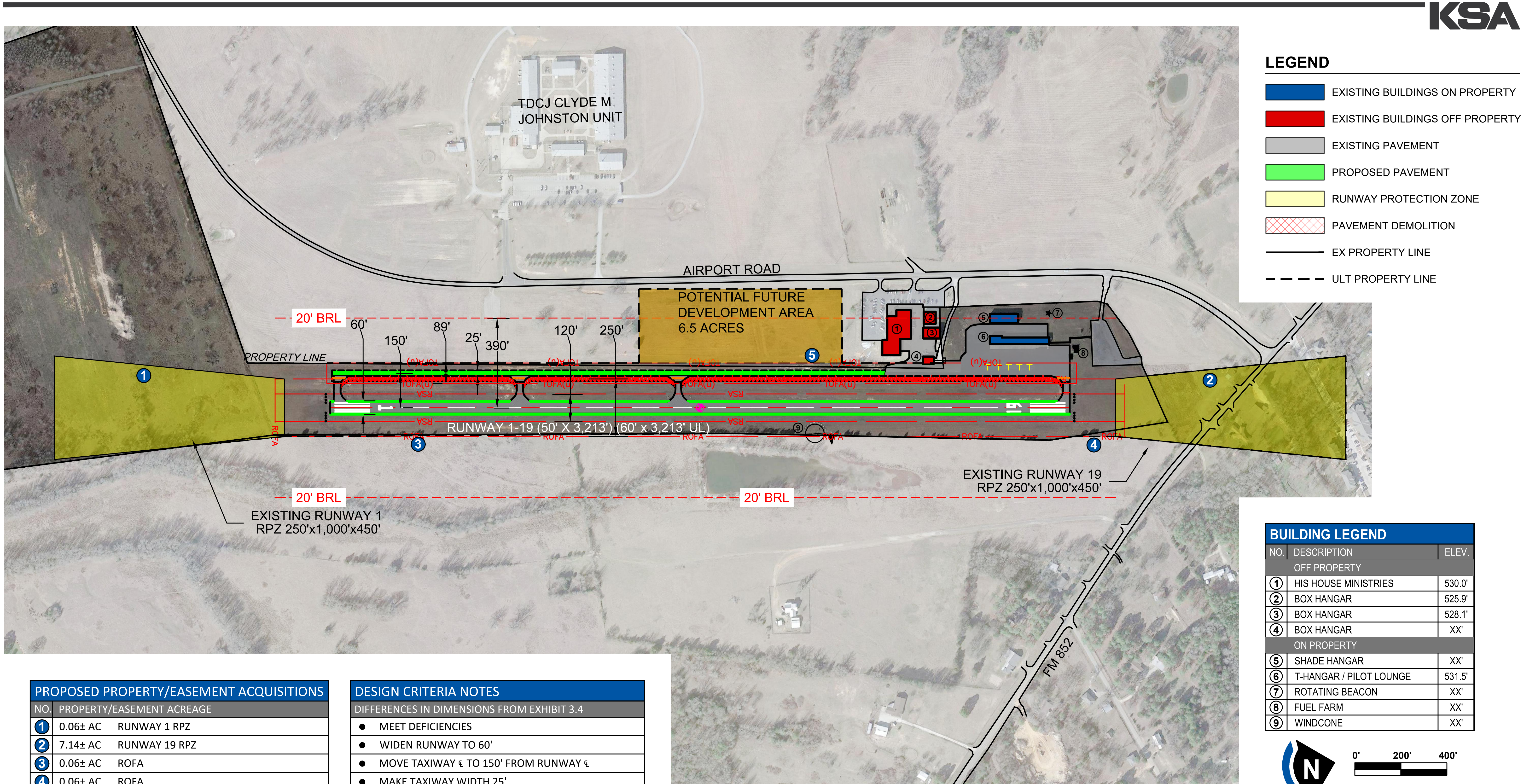

BUILDING LEGEND

NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'

PROPOSED PROPERTY/EASEMENT ACQUISITIONS

NO.	PROPERTY/EASEMENT ACREAGE	
1	0.06± AC	RUNWAY 1 RPZ
2	7.14± AC	RUNWAY 19 RPZ
3	0.06± AC	ROFA
4	0.06± AC	ROFA
5	7.21± AC	TOFA

DESIGN CRITERIA NOTES

DIFFERENCES IN DIMENSIONS FROM EXHIBIT 3.4

- MEET DEFICIENCIES
- WIDEN RUNWAY TO 60'
- MOVE TAXIWAY ℄ TO 150' FROM RUNWAY ℄
- MAKE TAXIWAY WIDTH 25'
- PROPERTY ACQUISITION FOR RPZ/ROFA CONTROL

WINNSBORO Municipal Airport
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Exhibit 4.1: Airside Alternative 1, B-1 (Small Aircraft), Not Lower than 1-mile minimums

4.3.2 ALTERNATIVE TWO

Graphically depicted in **Exhibits 4.2** and **4.3,** Alternative Two is divided into Alternative 2A and 2B and aims to correct deficiencies at the airport and plan for expansion from the existing B-I (small aircraft), not lower than 1-mile minimums to B-I, not lower than 1-mile minimums.

Airside Design Considerations Summary

- Extend Runway 1/19 (787’ South) for an ultimate length of 4,000 feet.
- Revise RPZ dimensions to meet B-I, not lower than 1 mile (500’ x 1,000’ x 700’).
- Relocate parallel taxiway “A” to satisfy FAA design standards (225 feet from parallel taxiway centerline to runway centerline).
- Widen Runway 1/19 to 60’ (Existing 50’) to satisfy FAA design standards.
- (Alternative 2B) Displace Runway 19 Threshold 550’ to gain RPZ control.

Landside Design Considerations Summary

- Preservation of existing facilities
- Preservation of land on the west side of Runway 1/19 for future development

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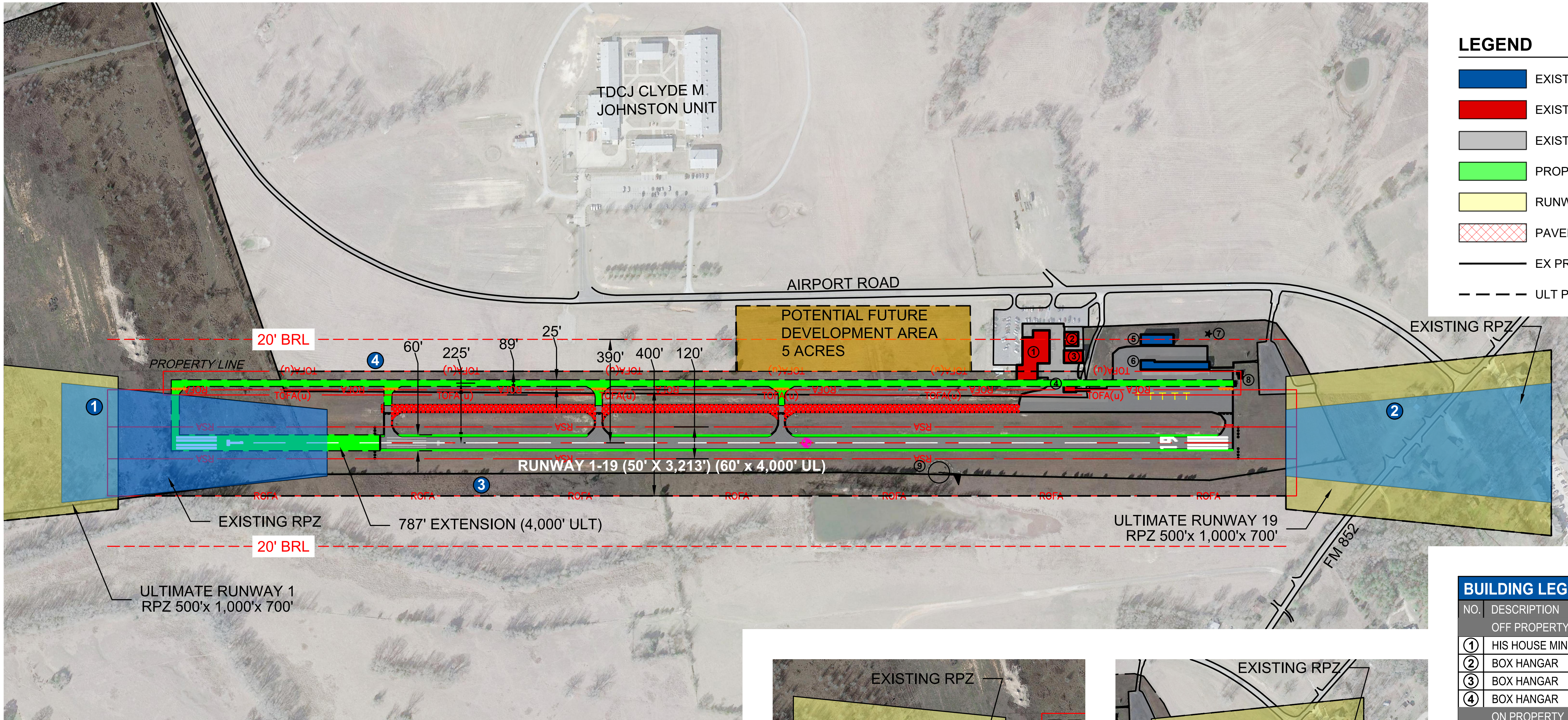
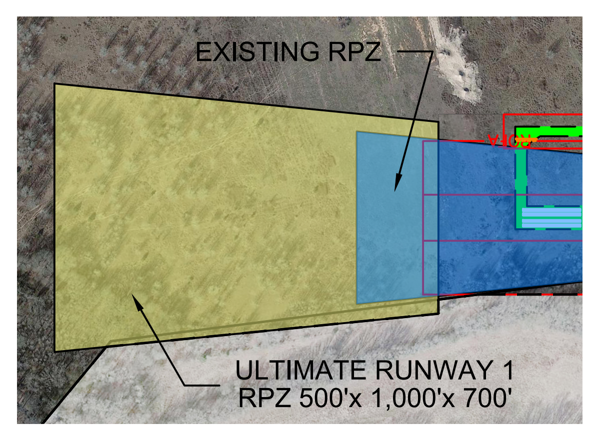
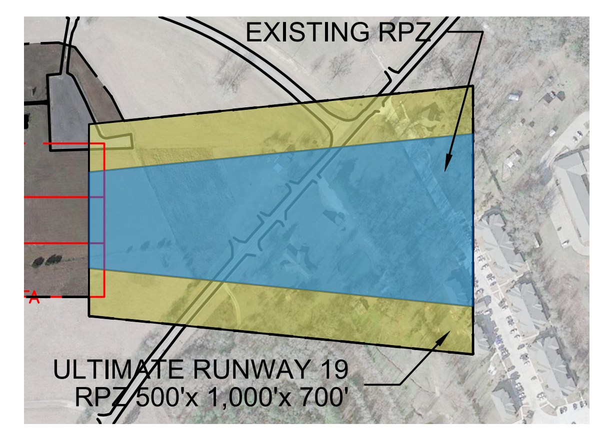


LEGEND

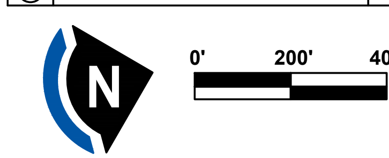
- EXISTING BUILDINGS ON PROPERTY
- EXISTING BUILDINGS OFF PROPERTY
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- RUNWAY PROTECTION ZONE
- PAVEMENT DEMOLITION
- EX PROPERTY LINE
- ULT PROPERTY LINE





BUILDING LEGEND

NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'



PROPOSED PROPERTY/EASEMENT ACQUISITIONS

NO.	PROPERTY/EASEMENT ACREAGE	
1	0.49± AC	RUNWAY 1 RPZ
2	12.55± AC	RUNWAY 19 RPZ
3	7.34± AC	ROFA/TOFA
4	10.92± AC	ROFA/TOFA

DESIGN CRITERIA NOTES

DIFFERENCES IN DIMENSIONS FROM ALTERNATIVE 2

- EXTEND RUNWAY 787' TO 4,000'
- MOVE PARALLEL TAXIWAY ℄ TO 225' FROM RUNWAY ℄
- REVISE RPZs TO 500' x 1,000' x 700'
- EXTEND ROFA WIDTH TO 400'
- MOVE HOLD LINES TO 200' FROM RUNWAY ℄

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Exhibit 4.2: Airside Alternative 2A, B-1, Not Lower than 1-mile minimums

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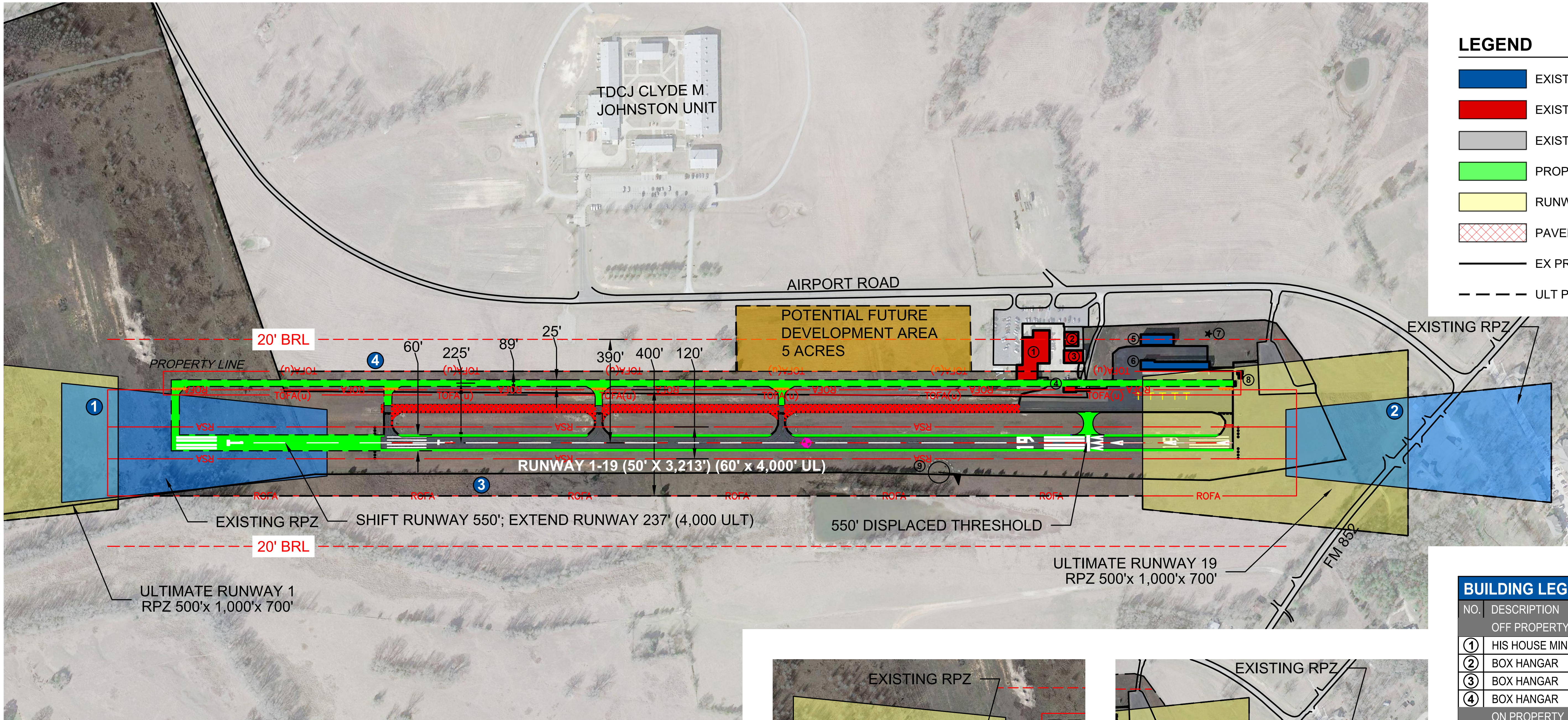
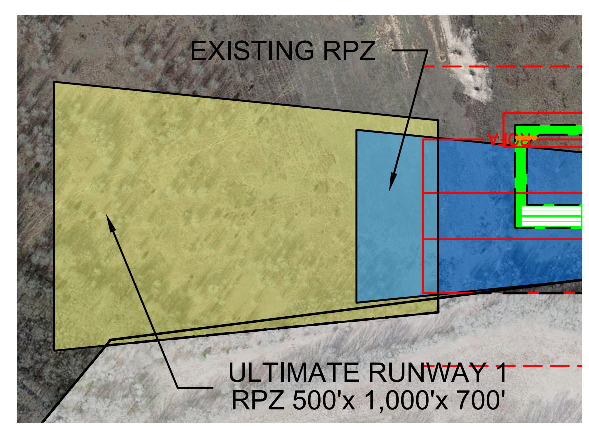


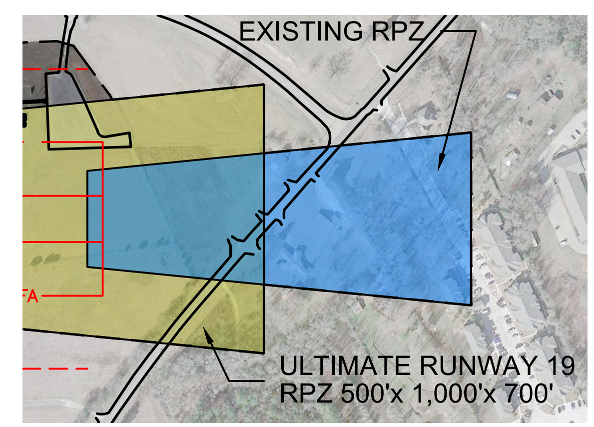
LEGEND

- EXISTING BUILDINGS ON PROPERTY
- EXISTING BUILDINGS OFF PROPERTY
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- RUNWAY PROTECTION ZONE
- PAVEMENT DEMOLITION
- EX PROPERTY LINE
- ULT PROPERTY LINE

BUILDING LEGEND

NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'





N 0' 200' 400'

PROPOSED PROPERTY/EASEMENT ACQUISITIONS

NO.	PROPERTY/EASEMENT ACREAGE	
1	0.49± AC	RUNWAY 1 RPZ
2	6.45± AC	RUNWAY 19 RPZ
3	7.43± AC	ROFA/TOFA
4	10.92± AC	ROFA/TOFA

DESIGN CRITERIA NOTES

DIFFERENCES IN DIMENSIONS FROM ALTERNATIVE 2

- EXTEND RUNWAY 787' TO 4,000'
- MOVE PARALLEL TAXIWAY ℄ TO 225' FROM RUNWAY ℄
- REVISE RPZs TO 500' x 1,000' x 700'
- EXTEND ROFA WIDTH TO 400'
- MOVE HOLD LINES TO 200' FROM RUNWAY ℄

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Exhibit 4.3: Airside Alternative 2B, B-1, Not Lower than 1-mile minimums

4.3.3 ALTERNATIVE THREE

Graphically depicted in **Exhibit 4.4**, Alternative Three proposes an expansion of the airport to B-I standards, with approach minimums of "not lower than 3/4 mile" and expanding airport development on the east side of Runway 1/19.

Airside Design Considerations Summary

- Extend Runway 1/19 (787' South) for an ultimate length of 4,000 feet.
- Revise RPZ dimensions to meet B-I, not lower than 3/4 mile (1,000' x 1,700' x 1,510').
- Relocate parallel taxiway "A" to satisfy FAA design standards (225 feet from parallel taxiway centerline to runway centerline).
- Widen Runway 1/19 to 60' (Existing 50') to satisfy FAA design standards.

Landside Design Considerations Summary

- Preservation of existing facilities
- Preservation of land on the east side of the runway for future development

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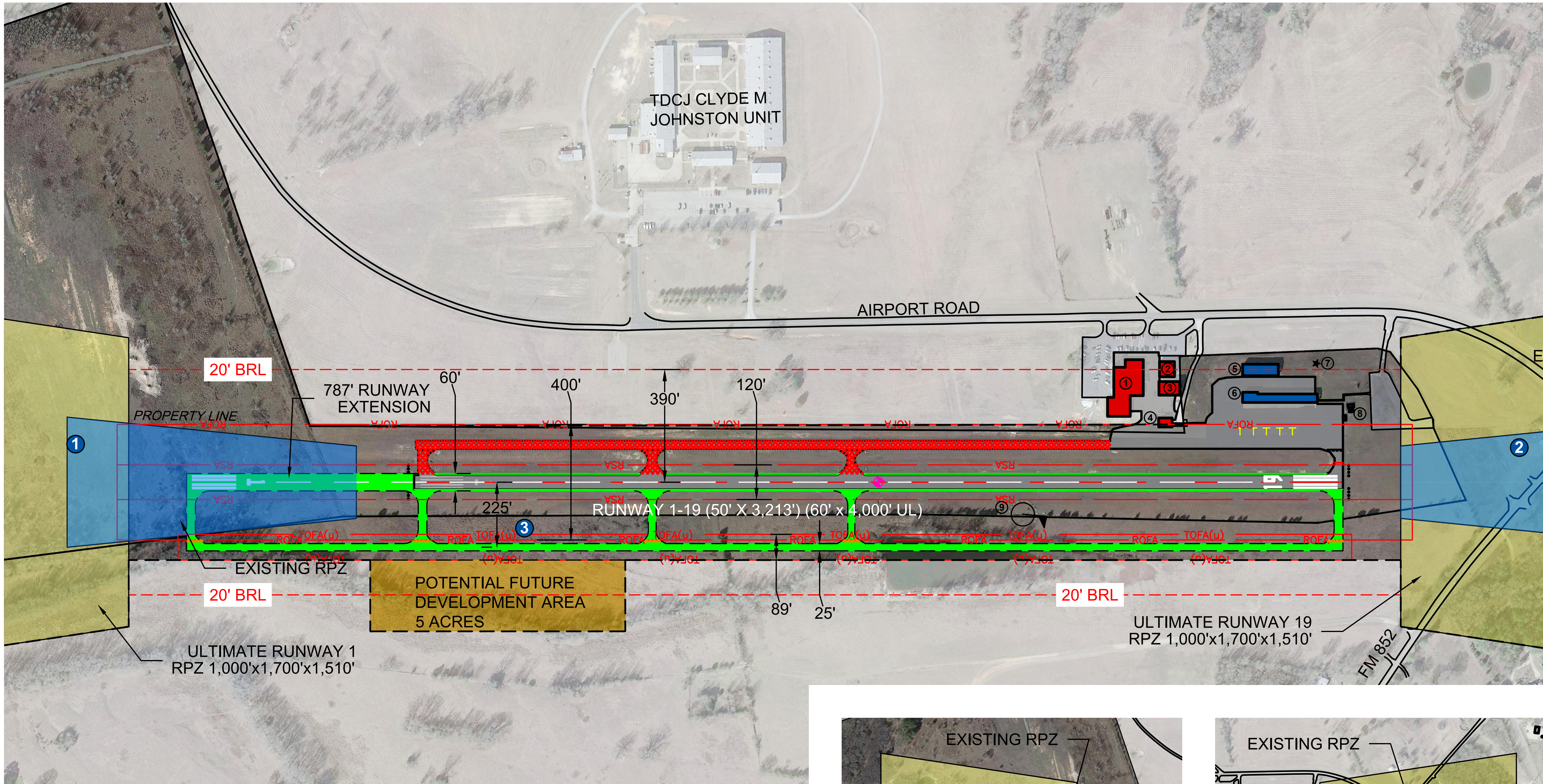


LEGEND

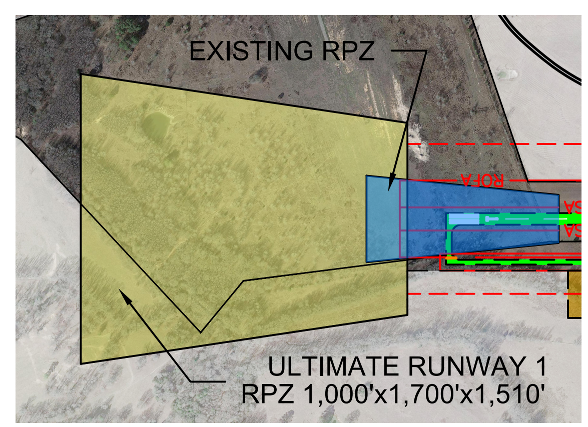
- EXISTING BUILDINGS ON PROPERTY
- EXISTING BUILDINGS OFF PROPERTY
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- RUNWAY PROTECTION ZONE
- PAVEMENT DEMOLITION
- EX PROPERTY LINE
- ULT PROPERTY LINE

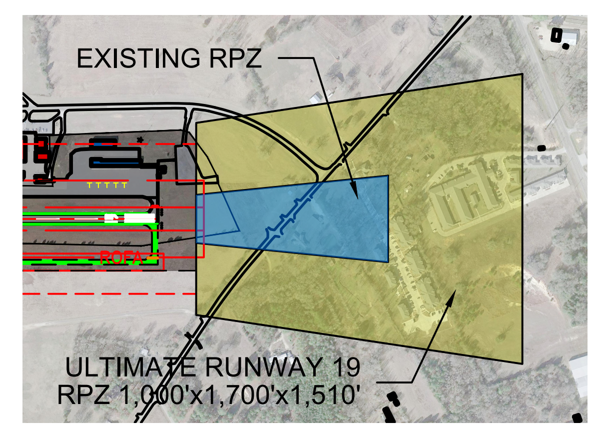
BUILDING LEGEND

NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'

N

0' 200' 400'





PROPOSED PROPERTY/EASEMENT ACQUISITIONS

NO.	PROPERTY/EASEMENT ACREAGE	
1	13.24± AC	RUNWAY 1 RPZ
2	47.58± AC	RUNWAY 19 RPZ
3	19.34± AC	ROFA/TOFA

DESIGN CRITERIA NOTES

DIFFERENCES IN DIMENSIONS FROM ALTERNATIVE 1

- EXTEND RUNWAY 787' TO 4,000'
- MOVE PARALLEL TAXIWAY ℄ TO 225' FROM RUNWAY ℄
- REVISE RPZs TO 1,000' x 1,700' x 1,510'
- EXTEND ROFA WIDTH TO 400'
- MOVE HOLD LINES TO 200' FROM RUNWAY ℄

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

Exhibit 4.4: Airside Alternative 3, B-1, Not Lower than 3/4-mile minimums; East side development

4.4 RECOMMENDED DEVELOPMENT PLAN

The Recommended Development Plan combines aspects of each airside and landside alternative. Selected after careful consideration and engagement from the Planning Advisory Committee (PAC), each alternative's most favorable elements were included to provide a consolidated plan for the future development of Winnsboro Municipal Airport. Understanding which projects should be expected during each phase of the planning period is essential to bring the airport into compliance with FAA design standards and provide an efficient and safe general aviation facility. This recommended plan will be included in the Airport Layout Plan (ALP) for approval and will be the basis of the implementation and Capital Improvement Plan (CIP) moving forward.

4.4.1 AIRSIDE

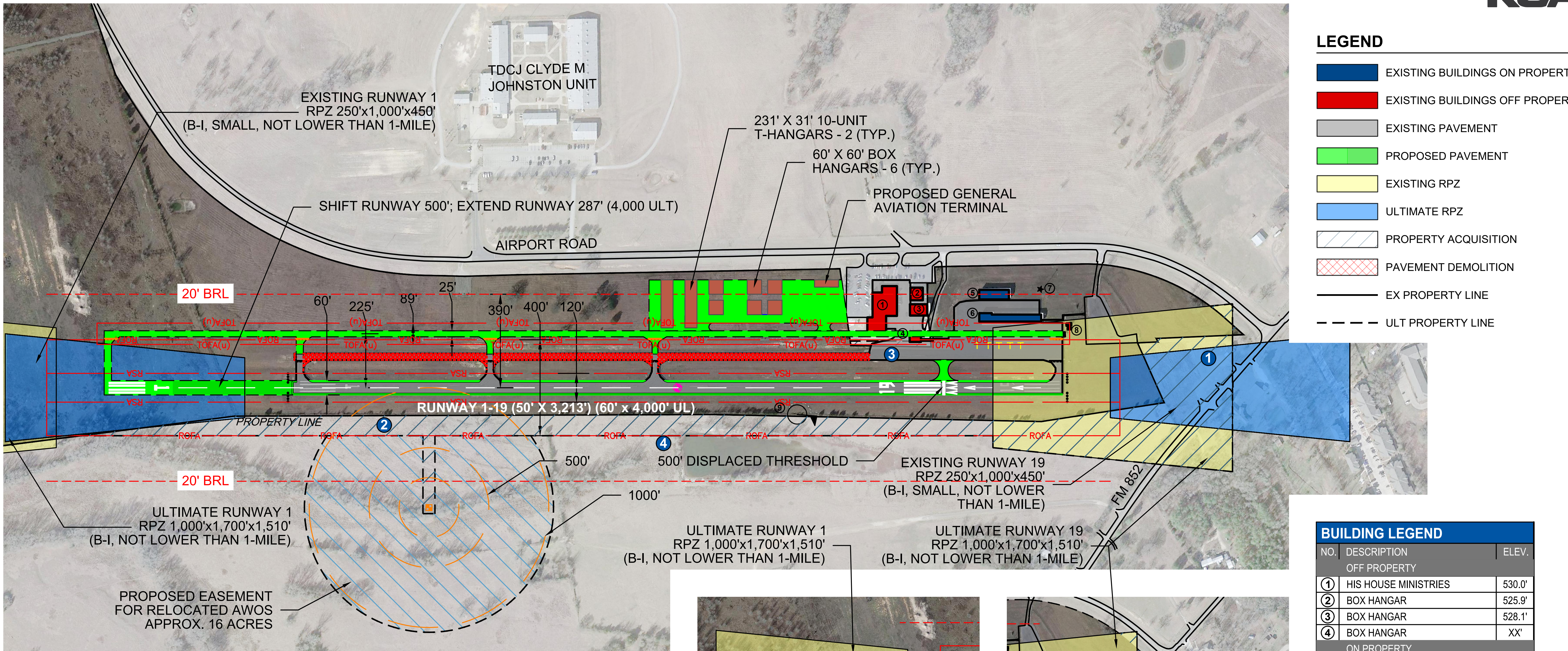
The airside portion of these recommendations focuses on improvements to runway and taxiway geometry/separation, safety, and capability to accommodate the Airport's existing and future operational needs. Safety deficiencies at Winnsboro Municipal Airport must be met to set the foundation for the airport's future growth. Major airside improvements addressed in the recommended plan include the following:

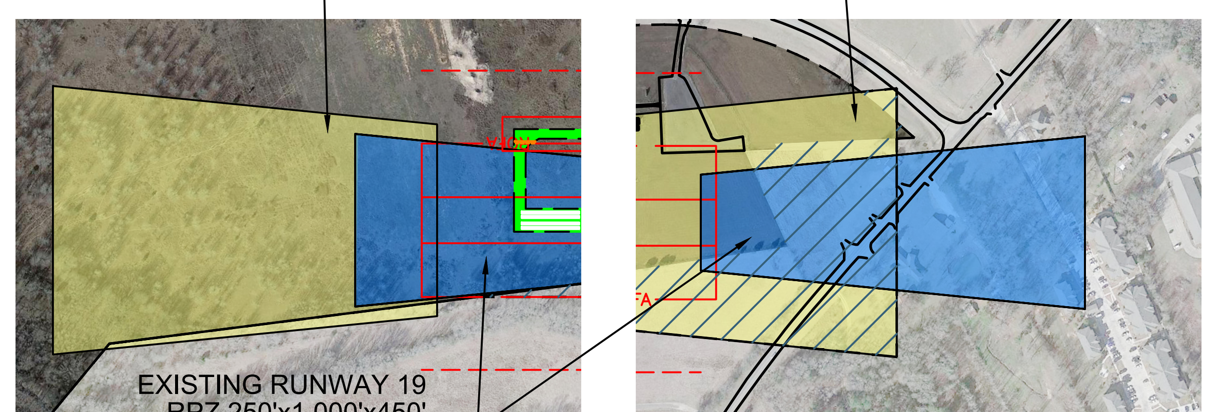
- Parallel Taxiway Object Free Area (TOFA) Grading
- Shift Runway 1/19 (500' South), Extend Runway 1/19 (287' South), Displace Runway 19 Threshold (500').
- Relocate parallel taxiway "A" to satisfy FAA design standards (225 feet from parallel taxiway centerline to runway centerline).
- Revise RPZ dimensions to meet B-I, not lower than 1 mile (500' x 1,000' x 700').
- Construct connector taxiway at Runway 19 threshold.
- Extend ROFA width to 400'.
- Construct new terminal apron.
- Relocate hold lines (200' from Runway 1/19 centerline).
- Property Acquisition – Runway 1/19 RPZ Control (5.95 Acres).
- Property Acquisition – AWOS/ROFA/TOFA (7.72 Acres).
- Property Acquisition – ROFA/TOFA (0.16 Acres).

4.4.2 LANDSIDE

The primary goal of these landside recommendations is to provide the Airport with adequate space preservation for future landside development and to plan for the forecasted growth at the airport with feasibility in mind. Major landside improvements addressed in the recommended plan include:

- Construct a new Automated Weather Observing System (AWOS)
- Construct new General Aviation Terminal facility.
- As the market dictates, construct conventional and T-hangar aircraft storage facilities.





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BUILDING LEGEND

NO.	DESCRIPTION	ELEV.
	OFF PROPERTY	
1	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	525.9'
3	BOX HANGAR	528.1'
4	BOX HANGAR	XX'
	ON PROPERTY	
5	SHADE HANGAR	XX'
6	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	XX'
8	FUEL FARM	XX'
9	WINDCONE	XX'

N 0' 200' 400'

PROPOSED PROPERTY/EASEMENT ACQUISITIONS

NO.	PROPERTY/EASEMENT ACREAGE	
1	5.95± AC	RUNWAY 19 RPZ
2	7.72± AC	ROFA/TOFA, AWOS
3	0.16± AC	ROFA/TOFA
4	21,500± LF	PERIMETER FENCEING

DESIGN CRITERIA NOTES

DIFFERENCES IN DIMENSIONS FROM ALTERNATIVE 2

- EXTEND RUNWAY 787' TO 4,000'
- MOVE PARALLEL TAXIWAY ℄ TO 225' FROM RUNWAY ℄
- REVISE RPZs TO 500' x 1,000' x 700'
- EXTEND ROFA WIDTH TO 400'
- MOVE HOLD LINES TO 200' FROM RUNWAY ℄

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

Exhibit 4.5: Recommended Plan

CHAPTER 5

AIRPORT PLANS

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

05 AIRPORT PLANS

5.1 OVERVIEW

As required by the Federal Aviation Administration, an Airport Layout Plan (ALP) set was prepared to graphically depict the airport environs and the subsequent recommendations for development described in this planning effort. Recommendations for airfield geometry, obstructions, and landside development are described in the following:

- Cover Sheet
- Airport Layout Plan Drawing
- Inner Portion of the Approach Surface Drawing (Runways 1 and 19)
- Runway Departure Surface Drawing (Runways 1 and 19)
- Terminal Area Drawing
- Land Use Plan
- Exhibit "A" Property Map

5.2 AIRPORT LAYOUT PLAN DRAWING

The Airport Layout Plan (ALP), which illustrates both airside and landside facilities, depicts the existing and ultimate airport facilities required for the airport to accommodate the forecast future demand adequately. Additionally, the ALP provides detailed information on airport and runway design criteria, which is necessary to define relationships with applicable standards.

5.3 INNER PORTION OF THE APPROACH SURFACE DRAWINGS

Inner portion drawings provide a more detailed view of the inner portion of the FAR Part 77 imaginary approach surfaces. This drawing offers large-scale plan and profile delineations of the approach surfaces out to a distance where the surface is 100 feet above the runway end elevation. They are intended to facilitate the identification of roads, utility lines, railroads, structures, trees, vegetation, and other possible obstructions that may lie within the confines of the approach surfaces close to the runway ends. Inner portion drawings are based on the ultimate planned runway lengths, the ultimate planned approaches to each runway end, and the ultimate end elevations.

5.4 RUNWAY DEPARTURE SURFACE DRAWINGS

This drawing is a large-scale plan and profile illustration depicting the dimension and slope of the departure end of the runway (DER) surfaces. This drawing is based on the ultimate planned runway length and the ultimate planned departure surface extending from the runway. No objects should penetrate a surface beginning at the elevation of the DER or end of the clearway, whichever is greater, that slopes to a 40 to 1 gradient.

5.5 TERMINAL AREA PLAN

The terminal area plan illustrates the projected facilities layout of the airport based on the recommended development plan. This plan specifies the location and size of hangars, aprons, taxilanes, fuel farms, and other improvements based on the 20-year footprint.

5.6 LAND USE DRAWING

The land use drawing aims to provide the airport with a plan for leasing revenue-producing areas on the airport. All existing and future development within the airport boundary will be compatible with the primary functions of the airport and will generate lease revenue for the airport's operation.

This drawing also guides local authorities in establishing appropriate land-use zoning near the airport. As specified by FAA Grant Assurance 21, *Compatible Land Use*, the airport sponsor "will take appropriate action, to the extent reasonable, including the adoption of zoning laws, restrict the use of land adjacent to, or in the vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and take-off of aircraft."

5.7 EXHIBIT "A" AIRPORT PROPERTY MAP

This map indicates how various tracks of airport property and easements were acquired and the dates of such acquisition. Its purpose is to provide documentation of the current, and future aeronautical use of land acquired with federal funds or through an FAA Administered Land Transfer Program.

AIRPORT LAYOUT PLAN

WINNSBORO MUNICIPAL AIRPORT (F51)

WINNSBORO, TEXAS

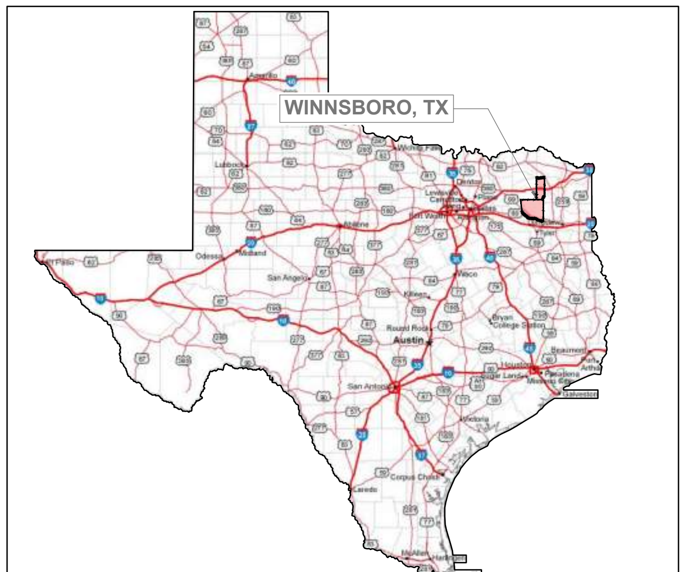
SPONSOR

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

PREPARED BY

KSA

June, 2023



LOCATION MAP

VICINITY MAP

Sheet List Table

Sheet Number	Sheet Title
01	COVER SHEET
02	AIRPORT DATA SHEET
03	AIRPORT LAYOUT DRAWING - EXISTING
04	AIRPORT LAYOUT DRAWING - ULTIMATE
05	AIRPORT AIRSPACE DRAWING
06	AIRPORT AIRSPACE PLAN - RUNWAY 17-35 EXTENDED APPROACH PROFILES
07	INNER APPROACH SURFACE DRAWING - RUNWAY 1
08	INNER APPROACH SURFACE DRAWING - RUNWAY 19
09	RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 1
10	RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 19
11	RUNWAY 1-19 OBSTRUCTION TABLE I
12	RUNWAY 1-19 OBSTRUCTION TABLE II
13	RUNWAY 1-19 OBSTRUCTION TABLE III
14	AIRPORT TERMINAL AREA DRAWING
15	AIRPORT LAND USE PLAN
16	AIRPORT PROPERTY MAP

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

TITLE, AIRPORT SPONSORS REPRESENTATIVE

SIGNATURE DATE

DESIGNED BY

SIGNATURE DATE

TxDOT APPROVAL DATE

KSA

DES: MM	DR: ED	CH: MM	APP: MM

ISSUE RECORD

NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

COVER SHEET

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

1

SHEET NO.

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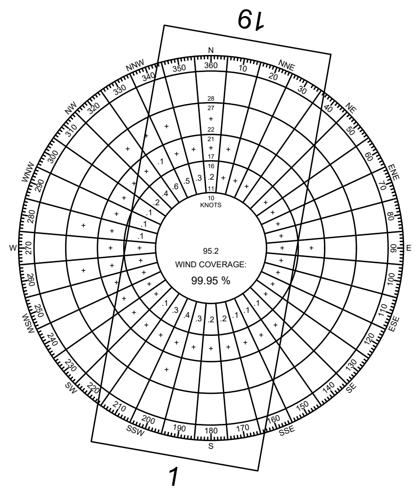
ALL-WEATHER WIND COVERAGE DATA

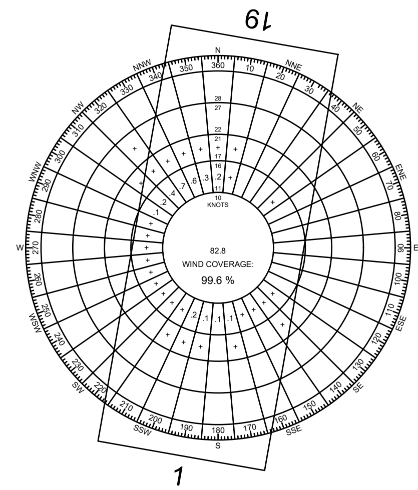


RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
1	84.85%	85.40%	85.67%
19	91.85%	92.05%	92.21%
1/19	99.00%	99.64%	99.95%

OBSERVATIONS: PERIOD= 2013 - 2022 STATION= 722041, WOOD COUNTY AIRPORT MINEOLA

DATA SOURCE: NATIONAL CLIMATE DATA CENTER

IFR WIND COVERAGE DATA



RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
1	92.16%	92.63%	92.83%
19	87.94%	88.06%	88.16%
1/19	97.24%	99.76%	99.98%

OBSERVATIONS: PERIOD= 2013 - 2022 STATION= 722041, WOOD COUNTY AIRPORT MINEOLA

DATA SOURCE: NATIONAL CLIMATE DATA CENTER

Runway Data Table	Runway 1/19			
	Existing		Ultimate	
	1	19	1	19
Runway Design Code (RDC)	B-I (SMALL)		B-I	
Runway Reference Code (RRC)	B-I-5000	B-I-5000	B-I-5000	B-I-5000
Pavement Design Strength (X 1,000 LBS.)	12 SW		12 SW	
Pavement Type	ASPHALT		ASPHALT	
Strength by PCN	N/A		N/A	
Maximum Gradient	0.29%		0.29%	
Line of Sight	7'		7'	
Percent Wind Coverage (13-Knots)	99.64%		99.64%	
Runway Length & Width	3,213' x 50'		4,000' x 60'	
Runway Displaced Threshold	N/A	N/A	N/A	500'
Runway Bearing (True)	18°	198°	18°	198°
Runway End Coordinates (NAD 83)	N 32° 56' 4.659" W 95° 16' 49.737"	N 32° 56' 34.901" W 95° 16' 38.108"	N 32° 56' 30.29" W 95° 16' 39.89"	N 32° 56' 34.901" W 95° 16' 38.108"
Runway End Elevations (NAD 88)	492.7'	513.1'	489.6'	513.1'
Displaced Runway End Coordinates (NAD83)	N/A	N/A	N/A	N 32° 56' 30.29" W 95° 16' 39.89"
Displaced Runway End Elevations (NAD88)	N/A	N/A	N/A	513.1'
Runway High / Low Point Elevation	513.1' / 492.7'	513.1' / 492.7'	513.1' / 489.6'	513.1' / 489.6'
Runway Touchdown Zone Elevation (TDZE)	512.4'	513.1'	489.6'	513.1'
Runway Lighting	MIRL		MIRL	
Runway Marking	NPI		NPI	
Runway Protection Zone Dimensions	250' X 1,000' X 450'	250' X 1,000' X 450'	1,000' X 1,700' X 1,510'	1,000' X 1,700' X 1,510'
Approach Visibility Minimums	VISUAL	VISUAL	> 1 Mile	> 1 Mile
Navigational Aids (Electronic)	GPS		GPS	
Visual Aids (Lighting)	N/A		N/A	
14 CFR Part 77 Approach Category	A(V)	A(V)	C(NP)	C(NP)
14 CFR Part 77 Approach Slope	20:1	20:1	34:1	34:1
Aeronautical Survey Required for Approach	N/A	N/A	VGS	NVGS
Runway Departure Surface	NO	NO	Yes	Yes
Runway Safety Area Width	120'		120'	
Runway Safety Area Beyond R/W End	240'	240'	240'	240'
Runway Object Free Area Width	250'		400'	
Runway Object Free Area Beyond R/W End	240'	240'	240'	240'
Runway Obstacle Free Zone Width	250'		400	
Runway Obstacle Free Zone Length	200'	200'	200'	200'
Approach Surface	2	2	2	2

Declared Distances Table	Runway 1/19			
	Existing		Ultimate	
	1	19	1	19
Take-Off Run Available (TORA)	3,213'	3,213'	4,000'	3,500'
Take-off Distance Available (TODA)	3,213'	3,213'	4,000'	3,500'
Accelerate Stop Distance Available (ASDA)	3,213'	3,213'	4,000'	3,500'
Landing Distance Available (LDA)	3,213'	3,213'	4,000'	3,500'

Airport Data Table	Existing	Ultimate
Airport Reference Code (ARC)	B-I (SMALL)	B-I
Mean Max Temp (Hottest Month)	94.3° F JULY	94.3° F JULY
Airport Elevation (AMSL) NAD 88	513.1'	513.1'
Airport & Terminal NAVAID's	VOR	VOR
Miscellaneous Facilities	Awos/ Segmented Circle/ Windcone	Awos/ Segmented Circle/ Windcone
Airport Reference Point (ARP) NAD 83	N 32° 56' 19.78" W 95° 16' 43.93"	N 32° 56' 13.77" W 95° 16' 46.24"
	502.9'	502.00'
NPIAS Service Level	RGNL	RGNL
State System Role	BASIC	RGNL BS
Critical Aircraft	Beech Baron 58	Beech Baron 58
Wingspan (Feet)	37.83'	37.83'
Undercarriage Width (Feet)	8'	8'
Approach Speed (knots)	95	95
Maximum Take-off Weight (LBS)	5,400	5,400
Airport Magnetic Variation	1° 53' 6" E	
	NOAA, October, 2022	

Survey Control Stations			
Designation	Identifier	Latitude	Longitude
PACS	CR1383	N 32° 56' 34.438"	W 95° 16' 39.399"
SACS	CR1384	N 32° 56' 19.552"	W 95° 16' 45.1387"
SACS	AB5970	N 32° 56' 05.963"	W 95° 16' 50.465"

Source: National Geodetic Survey Data Explorer; October 2022

Taxiway Data Table	Existing	Ultimate
Taxiway Design Group	1A	2A
Taxiway Width	25'	35'
Taxiway Safety Area Width	49'	79'
Taxiway Object Free Area Width	89'	124'
Taxiway Markings / Lighting	MITL / Centerline Markings	MITL / Centerline Markings
Taxiway/Runway Separation	150'	240'

Modifications to Standards Approval Table			
Approval Date	Airspace Case No.	Standard to be Modified	Description
		None Required	

KSA

DES: MM
DR: ED
CH: MM
APP: MM

ISSUE RECORD			
NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT DATA SHEET

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

02

SHEET NO.

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DRAWING LEGEND

ITEM	EXISTING
AIRPORT PROPERTY	
AIRPORT PAVEMENT RUNWAY/TAXIWAY	
AIRPORT PAVEMENT TO BE REMOVED	
ROAD/DRIVE/HIGHWAY	
BUILDING/HANGAR	
RUNWAY PROTECTION ZONE (RPZ)	RPZ(e)
PRECISION OBSTACLE FREE ZONE (POFZ)	POFZ
BUILDING RESTRICTION LINE (BRL)	BRL
RUNWAY OBJECT FREE AREA (ROFA)	ROFA(e)

RUNWAY SAFETY AREA (RSA)	RSA(e)
RUNWAY OBJECT FREE ZONE (ROFZ)	ROFA(e)
INNER APPROACH OBJECT FREE ZONE (OFZ)	OFZ(e)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA(e)
TAXIWAY SAFETY AREA (TSA)	TSA(e)
APPROACH SURFACE	
FENCE	x
RUNWAY THRESHOLD LIGHT	
RUNWAY END IDENTIFIER LIGHTS (REIL)	
ROTATING BEACON	
GLIDE SLOPE ANTENNA	
DME ANTENNA	

MALSR ARRAY	
MALSR	
LOCALIZER	
PAPI	
VASI	
WINDCONE	
SEGMENTED CIRCLE	
AIRPORT REFERENCE POINT (ARP)	
PRIMARY/SECONDARY AIRPORT CONTROL STATION (PAC/SAC)	
PACS AND SACS MARKERS	

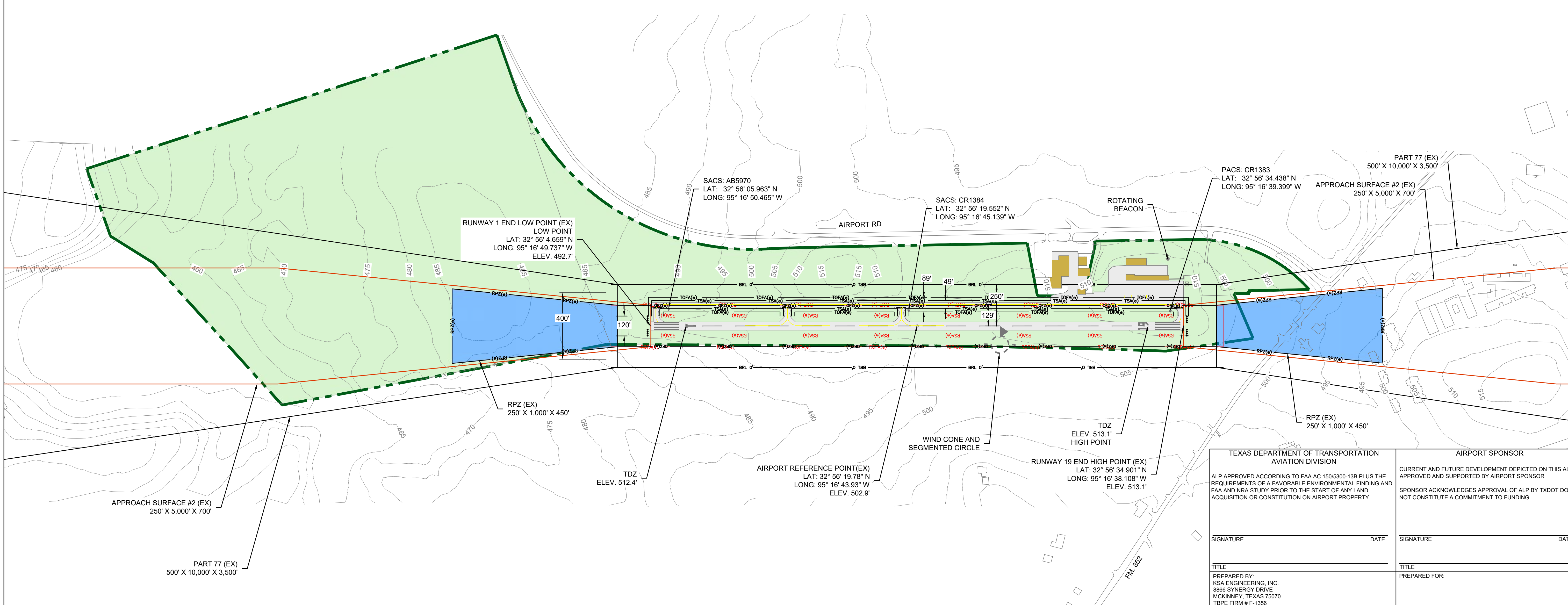
01°53'6"E

TRUE
MAGNETIC

DATE: OCTOBER, 2022
ANNUAL RATE OF CHANGE: 0.66' W
SOURCE: U.S. NGDC

300' 0 300' 600'
GRAPHIC SCALE IN FEET

NOTES:
1. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE NORTH CENTRAL ZONE, US FOOT, NAD 83/2019.
2. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.



TEXAS DEPARTMENT OF TRANSPORTATION AVIATION DIVISION	AIRPORT SPONSOR
ALP APPROVED ACCORDING TO FAA AC 150/5300-13B PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA AND NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTITUTION ON AIRPORT PROPERTY.	CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.
SIGNATURE DATE	SIGNATURE DATE
TITLE	TITLE
PREPARED BY: KSA ENGINEERING, INC. 8866 SYNERGY DRIVE MCKINNEY, TEXAS 75070 TBPE FIRM # F-1356 PH: 972.542.2995	PREPARED FOR:

KSA

DES:	MM
DR:	ED
CH:	MM
APP:	MM

ISSUE RECORD

NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51)
WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT LAYOUT DRAWING - EXISTING

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

03
SHEET NO.

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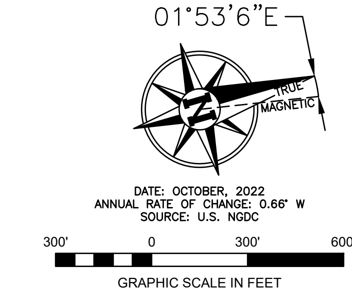
DRAWING LEGEND

ITEM	ULTIMATE
AIRPORT PROPERTY	
AIRPORT PAVEMENT RUNWAY/TAXIWAY	
AIRPORT PAVEMENT TO BE REMOVED	
ROAD/DRIVE/HIGHWAY	
BUILDING/HANGAR	
RUNWAY PROTECTION ZONE (RPZ)	RPZ(u)
PRECISION OBSTACLE FREE ZONE (POFZ)	POFZ
BUILDING RESTRICTION LINE (BRL)	BRL
RUNWAY OBJECT FREE AREA (ROFA)	ROFA(u)

RUNWAY SAFETY AREA (RSA)	RSA(u)
RUNWAY OBJECT FREE ZONE (ROFZ)	ROFA(u)
INNER APPROACH OBJECT FREE ZONE (OFZ)	OFZ(u)
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA(u)
TAXIWAY SAFETY AREA (TSA)	TSA(u)
APPROACH SURFACE	
FENCE	XX
RUNWAY THRESHOLD LIGHT	
RUNWAY END IDENTIFIER LIGHTS (REIL)	
ROTATING BEACON	
GLIDE SLOPE ANTENNA	
AWOS	

DME ANTENNA	
MALSR ARRAY	
MALSR	
LOCALIZER	
PAPI	
VASI	
WINDCONE	
SEGMENTED CIRCLE	
AIRPORT REFERENCE POINT (ARP)	
PRIMARY/SECONDARY AIRPORT CONTROL STATION (PAC/SAC)	
PACS AND SACS MARKERS	



NOTES:

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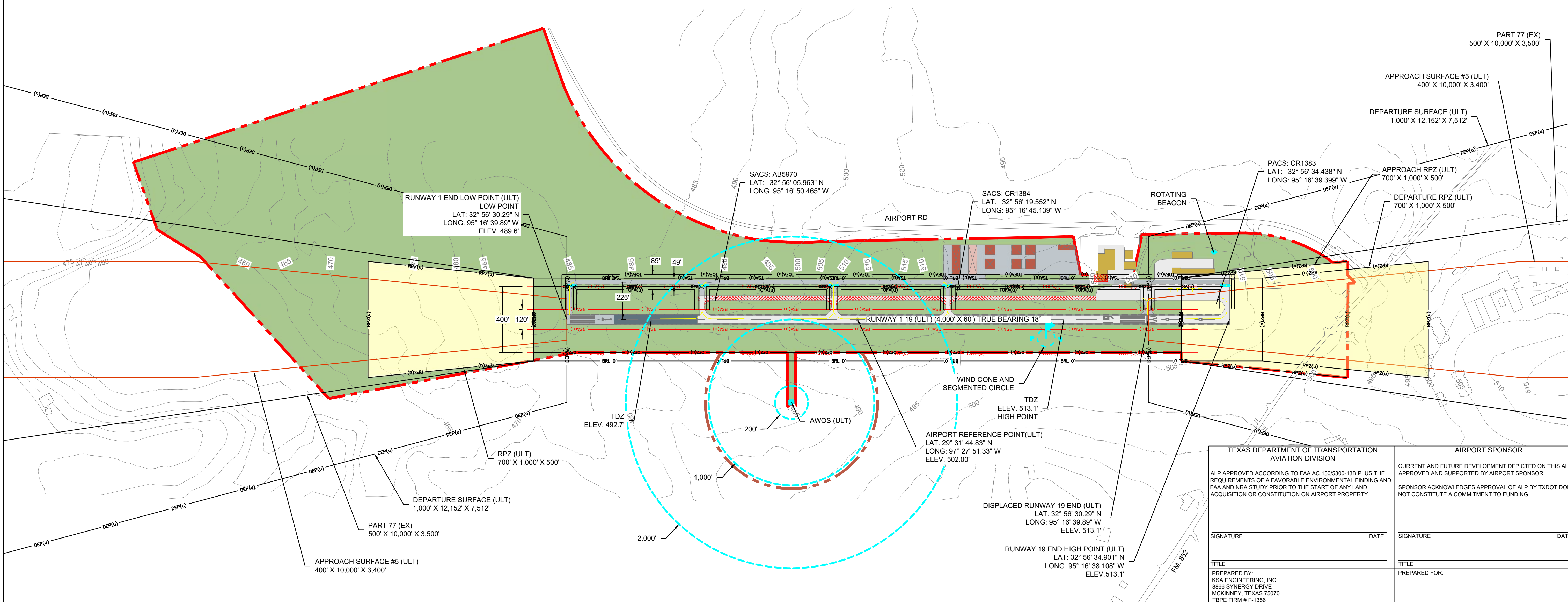
2. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.



TEXAS DEPARTMENT OF TRANSPORTATION AVIATION DIVISION	AIRPORT SPONSOR
ALP APPROVED ACCORDING TO FAA AC 150/5300-13B PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA AND NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTITUTION ON AIRPORT PROPERTY.	CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.
SIGNATURE DATE	SIGNATURE DATE
TITLE	TITLE
PREPARED BY: KSA ENGINEERING, INC. 8866 SYNERGY DRIVE MCKINNEY, TEXAS 75070 TBPE FIRM # F-1356 PH: 972.542.2995	PREPARED FOR:

KSA

DES:	MM
DR:	ED
CH:	MM
APP:	MM

ISSUE RECORD

NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51)
WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT LAYOUT DRAWING - ULTIMATE

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

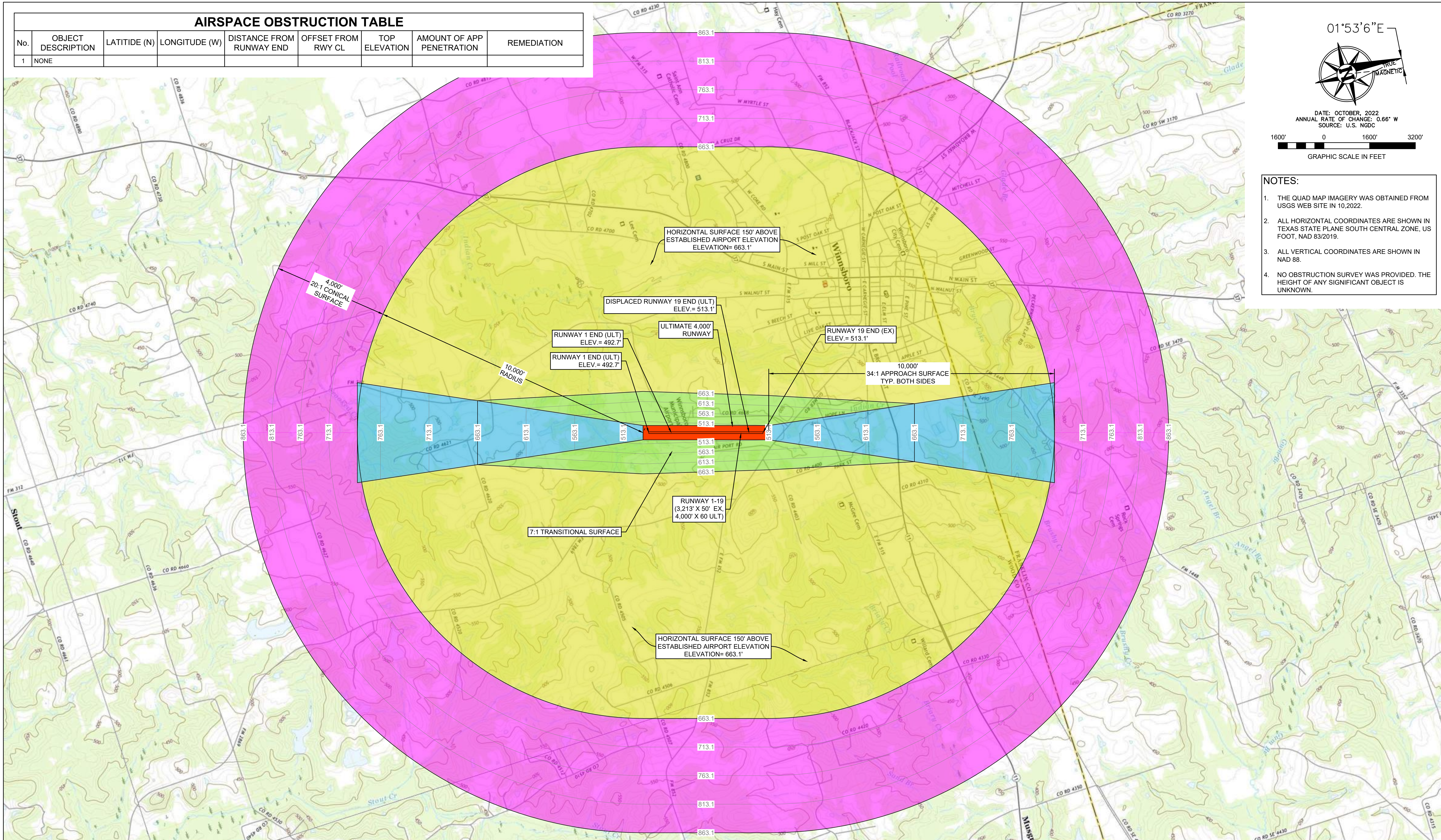
04

SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-ALD.dwg : AIRPORT LAYOUT DRAWING - ULTIMATE

AIRSPACE OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LATITUDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	REMEDIATION
1	NONE							



1600' 0 1600' 3200'

GRAPHIC SCALE IN FEET

NOTES:

1. THE QUAD MAP IMAGERY WAS OBTAINED FROM USGS WEB SITE IN 10,2022.
2. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE SOUTH CENTRAL ZONE, US FOOT, NAD 83/2019.
3. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.
4. NO OBSTRUCTION SURVEY WAS PROVIDED. THE HEIGHT OF ANY SIGNIFICANT OBJECT IS UNKNOWN.

KSA

DES: MM
DR: ED
CH: MM
APP: MM

ISSUE RECORD			
NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT AIRSPACE DRAWING

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

05

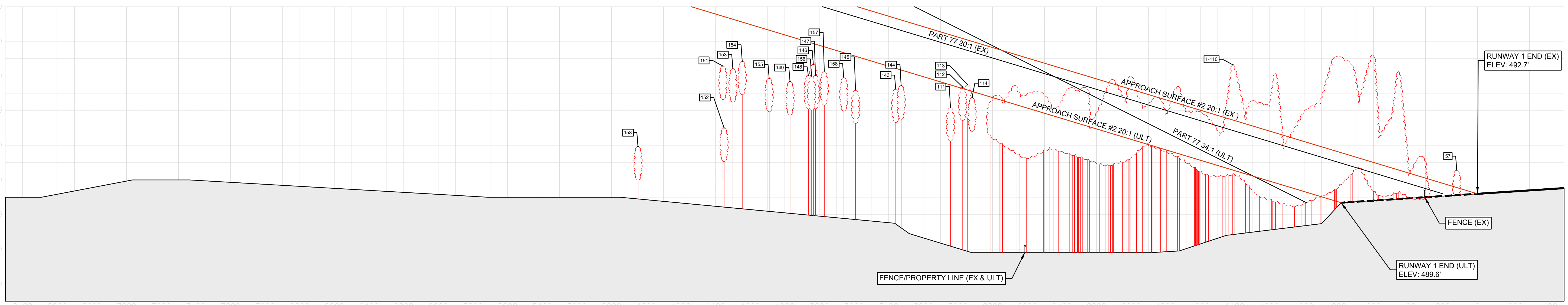
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-AAD.dwg : AIRPORT AIRSPACE DRAWING

RUNWAY 1 OBSTRUCTION TABLE								
No.	OBJECT DESCRIPTION	LATITIDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	REMEDIATION
1	SEE SHEETS 11 - 13							

1000' 0 1000' 2000'
HORIZONTAL SCALE IN FEET

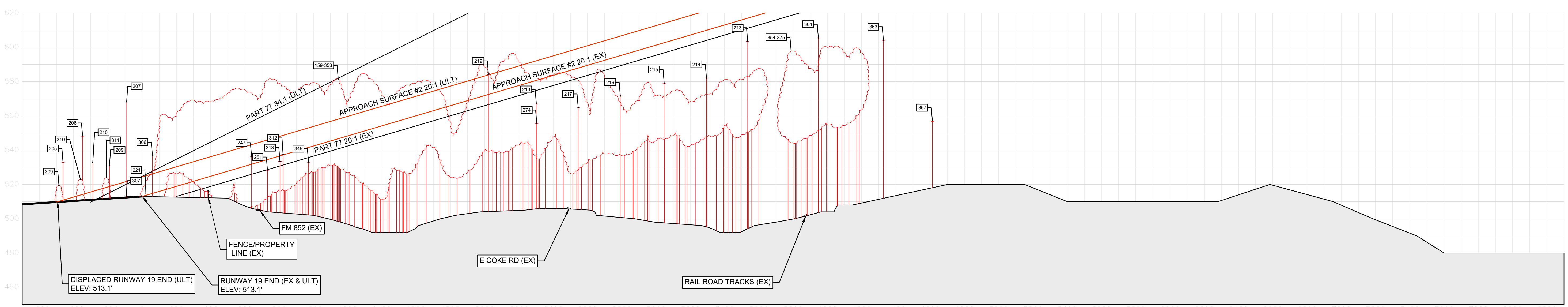
100' 0 100' 200'
VERTICAL SCALE IN FEET



NOTES:

1. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE SOUTH CENTRAL ZONE, US FOOT, NAD 83/2019.
2. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.
3. CONSTRUCTION SURVEY DATA WAS OBTAINED BY NV5 AND COMPLETED ON SEPT. 15, 2022.

RUNWAY 19 OBSTRUCTION TABLE								
No.	OBJECT DESCRIPTION	LATITIDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	REMEDIATION
1	SEE SHEETS 11 - 13							



KSA

DES: MM	ISSUE RECORD			
DR: ED	NO.	BY	DATE	REVISION
CH: MM				
APP: MM				

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT AIRSPACE PLAN - RUNWAY 17-35 EXTENDED APPROACH PROFILES

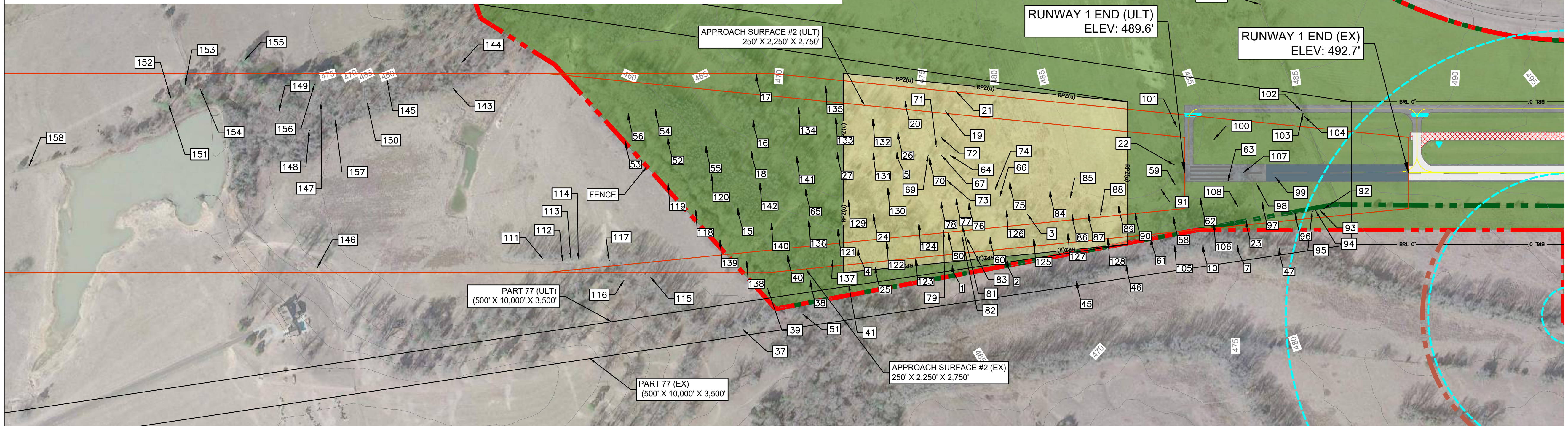
AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

06
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-AAD.dwg : AIRPORT AIRSPACE PLAN - RUNWAY 17-35 EXTENDED APPROACH PROFILES

RUNWAY 17 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LATITIDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APPROACH PENETRATION	REMEDIATION
1	SEE SHEETS 11 - 13							



01°53'6"E

TRUE
MAGNETIC

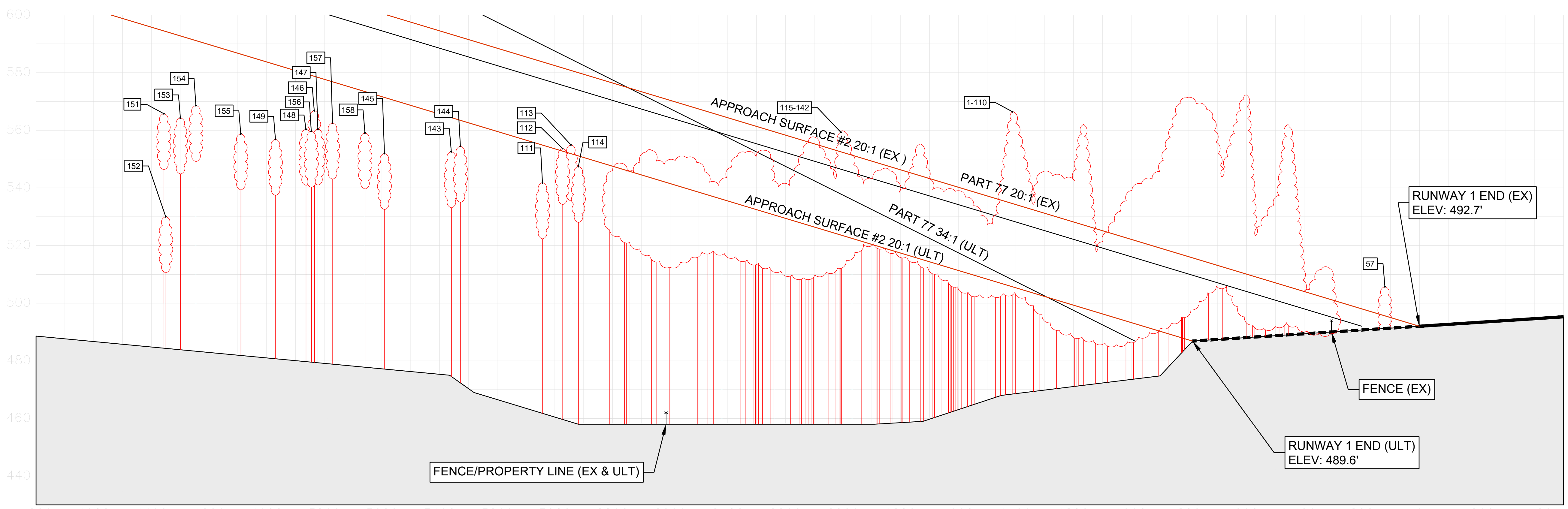
DATE: OCTOBER, 2022
ANNUAL RATE OF CHANGE: 0.66' W
SOURCE: U.S. NGDC

200' 0 200' 400'
HORIZONTAL SCALE IN FEET

20' 0 20' 40'
VERTICAL SCALE IN FEET

NOTES:

1. THE MAP IMAGERY WAS OBTAINED FROM GOOGLE EARTH IN 10,2022.
2. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE SOUTH CENTRAL ZONE, US FOOT, NAD 83/2019.
3. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.
4. CONSTRUCTION SURVEY DATA WAS OBTAINED BY NV5 AND COMPLETED ON SEPT. 15, 2022.



KSA	DES: MM	ISSUE RECORD	
	DR: ED	NO. BY DATE REVISION	
	CH: MM		
	APP: MM		

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

INNER APPROACH SURFACE DRAWING - RUNWAY 1

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

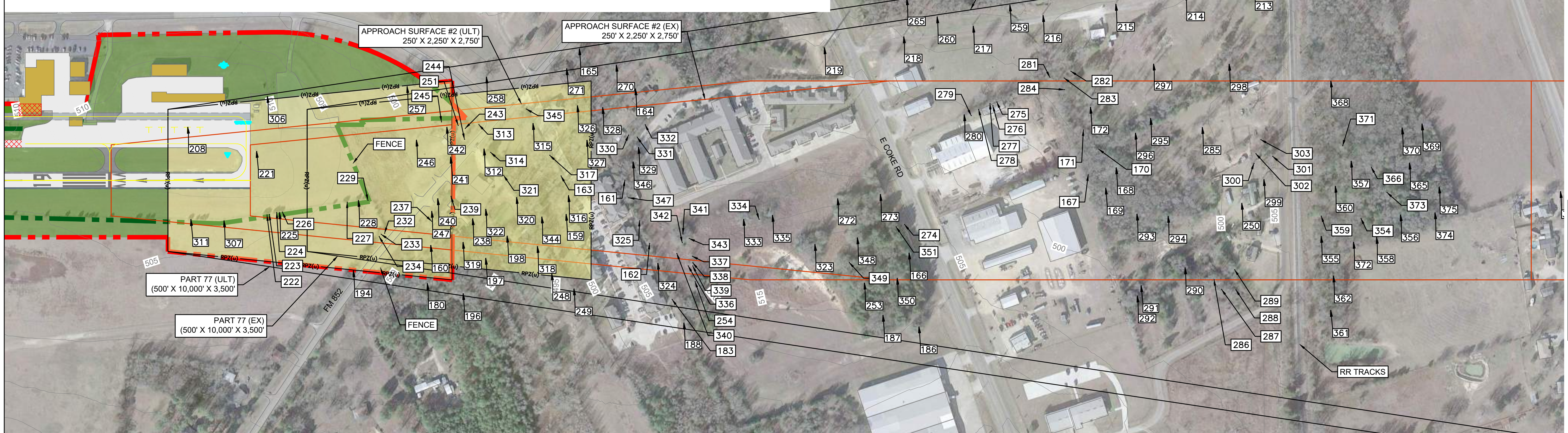
07

SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : INNER APPROACH SURFACE DRAWING - RUNWAY 1

RUNWAY 35 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LATITIDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APPROACH PENETRATION	REMEDIATION
1	SEE SHEETS 11 - 13							

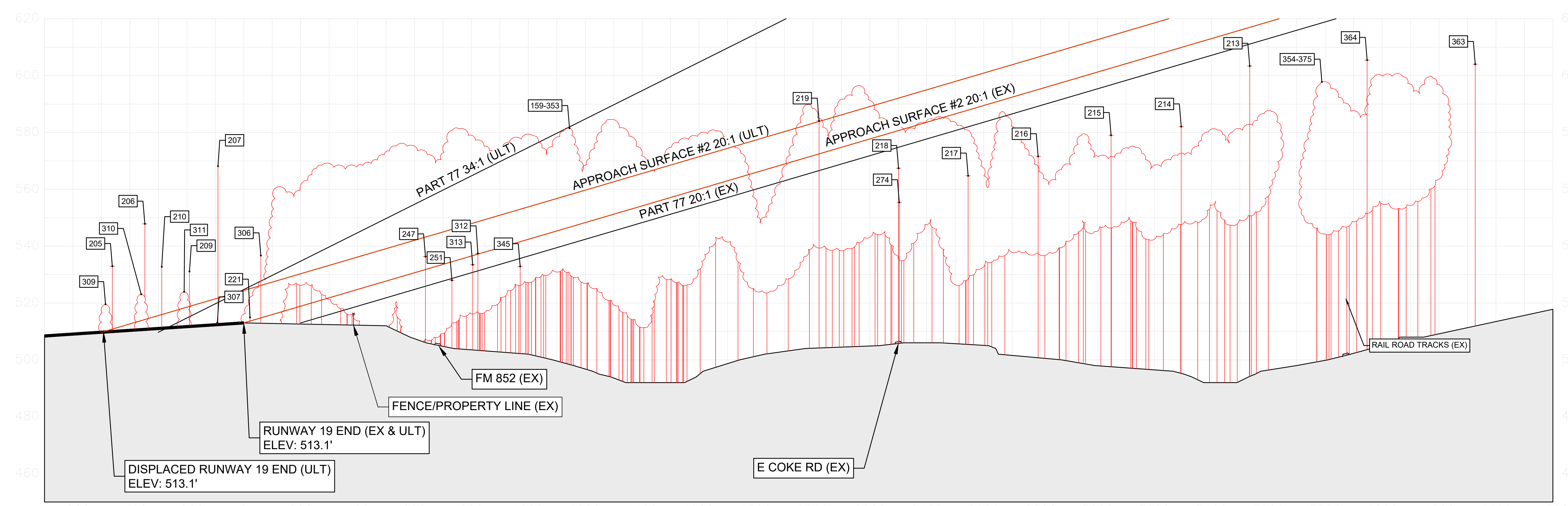


200' 0 200' 400'
HORIZONTAL SCALE IN FEET

20' 0 20' 40'
VERTICAL SCALE IN FEET

NOTES:

1. THE MAP IMAGERY WAS OBTAINED FROM GOOGLE EARTH IN 10,2022.
2. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE SOUTH CENTRAL ZONE, US FOOT, NAD 83/2019.
3. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.
4. CONSTRUCTION SURVEY DATA WAS OBTAINED BY NV5 AND COMPLETED ON SEPT. 15, 2022.



KSA

DES: MM	ISSUE RECORD		
DR: ED	NO.	BY	DATE / REVISION
CH: MM			
APP: MM			

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

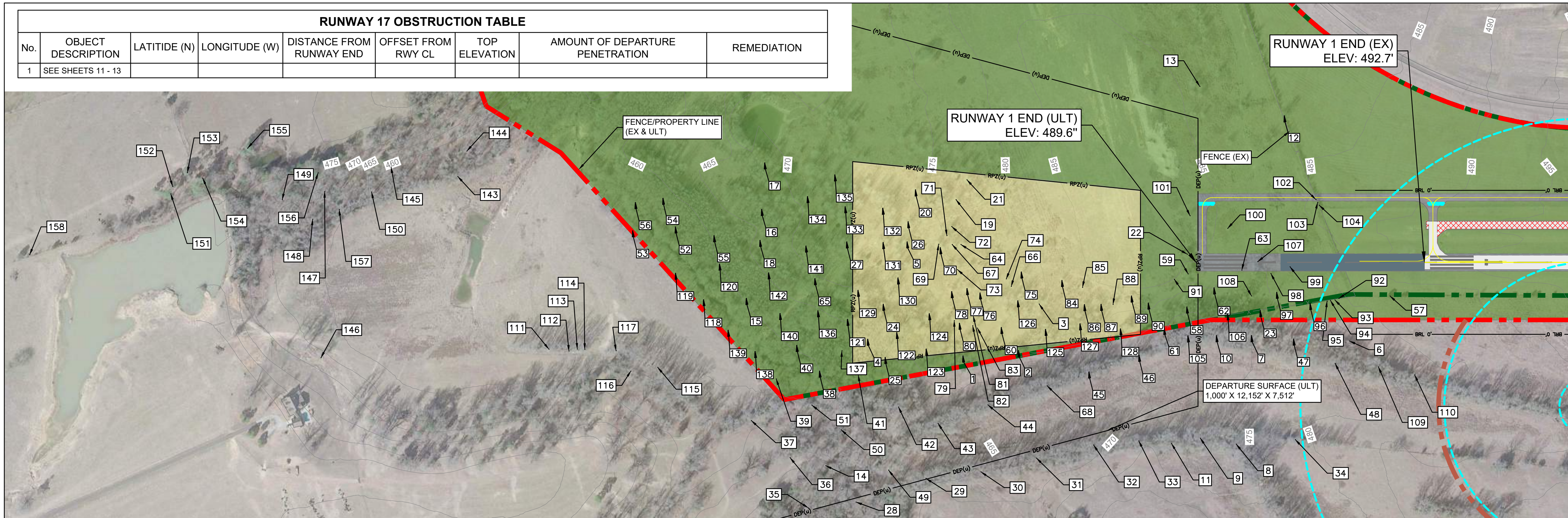
INNER APPROACH SURFACE DRAWING - RUNWAY 19

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

SHEET NO. 08

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : INNER APPROACH SURFACE DRAWING - RUNWAY 19

RUNWAY 17 OBSTRUCTION TABLE								
No.	OBJECT DESCRIPTION	LATITIDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF DEPARTURE PENETRATION	REMEDIATION
1	SEE SHEETS 11 - 13							



01°53'6"E
TRUE
MAGNETIC

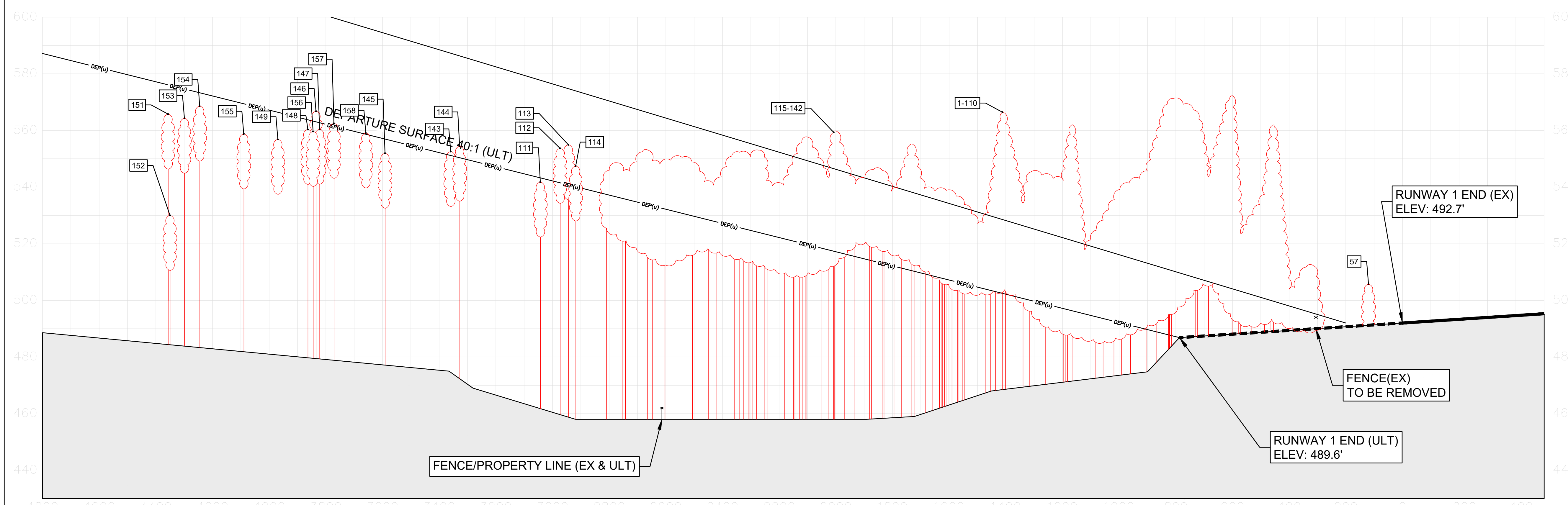
DATE: OCTOBER, 2022
ANNUAL RATE OF CHANGE: 0.66' W
SOURCE: U.S. NGDC

200' 0 200' 400'
HORIZONTAL SCALE IN FEET

20' 0 20' 40'
VERTICAL SCALE IN FEET

NOTES:

1. THE MAP IMAGERY WAS OBTAINED FROM GOOGLE EARTH IN 10,2022.
2. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE SOUTH CENTRAL ZONE, US FOOT, NAD 83/2019.
3. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.
4. CONSTRUCTION SURVEY DATA WAS OBTAINED BY NV5 AND COMPLETED ON SEPT. 15, 2022.



KSA

DES: MM	ISSUE RECORD			
DR: ED	NO.	BY	DATE	REVISION
CH: MM				
APP: MM				

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51)
WINNSBORO, TX

AIRPORT LAYOUT PLAN

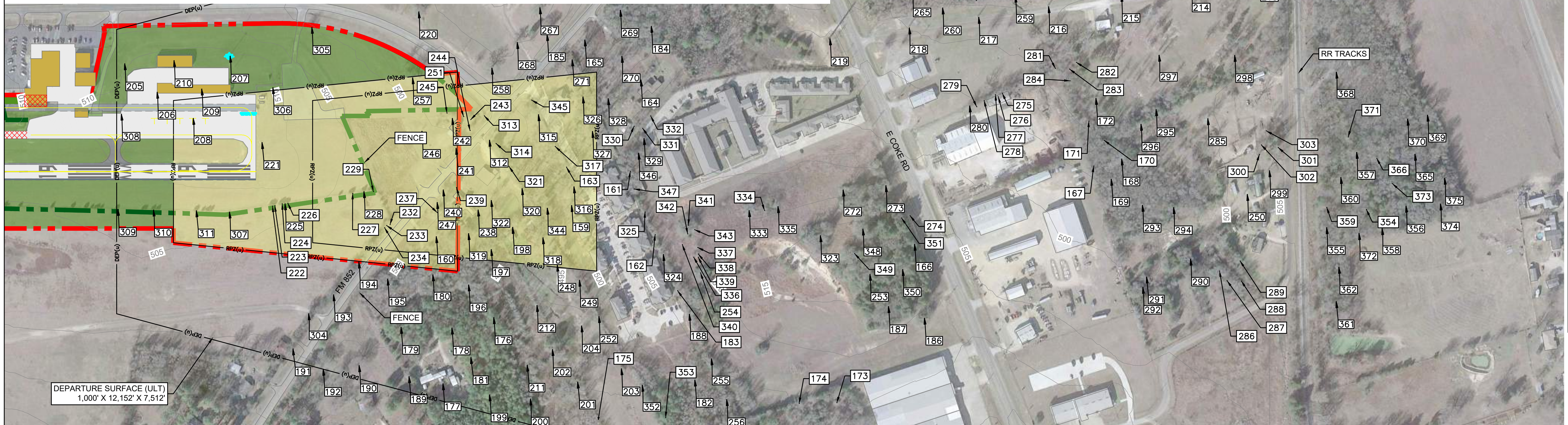
RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 1

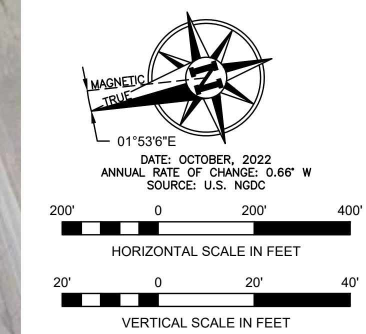
AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

09
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 1

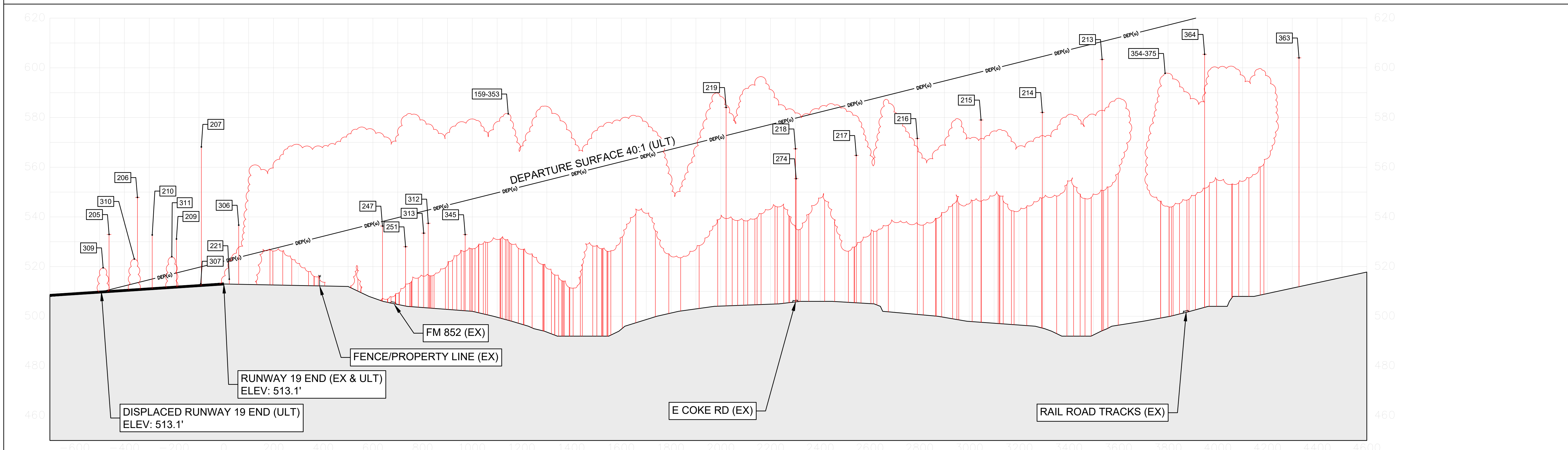
RUNWAY 35 OBSTRUCTION TABLE								
No.	OBJECT DESCRIPTION	LATITIDE (N)	LONGITUDE (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF DEPARTURE PENETRATION	REMEDIATION
1	SEE SHEETS 11 - 13							





NOTES:

1. THE MAP IMAGERY WAS OBTAINED FROM GOOGLE EARTH IN 10,2022.
2. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE SOUTH CENTRAL ZONE, US FOOT, NAD 83/2019.
3. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.
4. CONSTRUCTION SURVEY DATA WAS OBTAINED BY NV5 AND COMPLETED ON SEPT. 15, 2022.



KSA

DES: MM	ISSUE RECORD			
DR: ED	NO.	BY	DATE	REVISION
CH: MM				
APP: MM				

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 19

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

10

SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 19

RUNWAY 1/19 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LAT. (N)	LONG. (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	AMOUNT OF DEP PENETRATION	AMOUNT OF PART 77 PENETRATION	REMEDIATION
1	TREE	N32° 55' 48.56"	W95° 16' 51.92"	1604.02'	323.83' R	535.71'	-	28.44'	18.02'	TO BE REMOVED
2	TREE	N32° 55' 50.44"	W95° 16' 51.43"	1411.36'	304.74' R	548.21'	-	45.75'	40.15'	TO BE REMOVED
3	TREE	N32° 55' 51.61"	W95° 16' 52.97"	1339.32'	143.48' R	534.07'	30.57'	33.42'	29.61'	TO BE REMOVED
4	TREE	N32° 55' 45.62"	W95° 16' 53.77"	1935.30'	265.60' R	538.74'	-	23.19'	4.48'	TO BE REMOVED
5	TREE	N32° 55' 47.95"	W95° 16' 57.05"	1798.31'	72.61' L	531.04'	13.70'	18.91'	3.63'	TO BE REMOVED
6	TREE	N32° 56' 01.37"	W95° 16' 47.64"	260.62'	271.80' R	541.77'	-	48.79'	-	TO BE REMOVED
7	TREE	N32° 55' 58.22"	W95° 16' 49.08"	601.66'	252.93' R	573.57'	-	80.59'	-	TO BE REMOVED
8	TREE	N32° 55' 56.57"	W95° 16' 45.06"	654.20'	630.12' R	573.41'	-	80.43'	-	TO BE REMOVED
9	TREE	N32° 55' 55.46"	W95° 16' 45.75"	779.23'	609.18' R	565.84'	-	72.86'	-	TO BE REMOVED
10	TREE	N32° 55' 57.07"	W95° 16' 49.52"	723.27'	253.11' R	566.37'	-	73.39'	-	TO BE REMOVED
11	TREE	N32° 55' 54.46"	W95° 16' 45.91"	879.27'	627.54' R	565.09'	-	-	-	TO BE REMOVED
12	TREE	N32° 56' 01.62"	W95° 16' 57.19"	487.29'	510.29' L	536.66'	-	-	-	TO BE REMOVED
13	TREE	N32° 55' 59.17"	W95° 16' 59.39"	781.13'	612.54' L	531.07'	-	-	-	TO BE REMOVED
14	TREE	N32° 55' 42.91"	W95° 16' 49.39"	2080.72'	704.91' R	547.00'	-	27.80'	-	TO BE REMOVED
15	TREE	N32° 55' 27.95"	W95° 17' 06.54"	3969.53'	218.69' L	556.87'	2.35'	10.44'	-	TO BE REMOVED
16	TREE	N32° 55' 28.74"	W95° 17' 05.40"	3863.87'	150.89' L	560.37'	15.07'	22.88'	-	TO BE REMOVED
17	TREE	N32° 55' 29.42"	W95° 17' 06.31"	3822.42'	246.58' L	560.43'	-	16.58'	-	TO BE REMOVED
18	TREE	N32° 55' 27.55"	W95° 16' 59.93"	3834.93'	329.87' R	566.81'	7.70'	15.54'	-	TO BE REMOVED
19	TREE	N32° 55' 49.99"	W95° 16' 58.06"	1628.20'	218.93' L	540.31	-	32.43'	21.41'	TO BE REMOVED
20	TREE	N32° 55' 48.77"	W95° 16' 58.96"	1769.14'	253.14' L	531.473	-	20.07'	5.52'	TO BE REMOVED
21	TREE	N32° 55' 50.56"	W95° 16' 58.70"	1590.20'	287.93' L	536.144	-	29.22'	19.14'	TO BE REMOVED
22	TREE	N32° 55' 56.98"	W95° 16' 53.04"	824.67'	29.78' L	518.32'	30.34'	30.53'	25.34'	TO BE REMOVED
23	TREE	N32° 55' 58.77"	W95° 16' 49.94"	571.17'	165.84' R	523.20'	-	30.21'	30.21'	TO BE REMOVED
24	TREE	N32° 55' 46.50"	W95° 16' 54.93"	1881.19'	144.19' R	533.95'	14.11'	19.74'	2.39'	TO BE REMOVED
25	TREE	N32° 55' 46.00"	W95° 16' 52.84"	1874.40'	328.88' R	544.13'	-	30.10'	12.92'	TO BE REMOVED
26	TREE	N32° 55' 48.19"	W95° 16' 57.81"	1794.72'	142.41' L	533.93'	16.70'	21.89'	6.70'	TO BE REMOVED
27	TREE	N32° 55' 45.97"	W95° 16' 57.80"	2008.02'	72.35' L	536.47'	12.80'	19.09'	-	TO BE REMOVED
28	TREE	N32° 55' 43.52"	W95° 16' 47.60"	1975.49'	831.16' R	562.30'	-	-	-	TO BE REMOVED
29	TREE	N32° 55' 46.06"	W95° 16' 47.64"	1732.47'	749.06' R	569.50'	-	54.14'	-	TO BE REMOVED
30	TREE	N32° 55' 47.92"	W95° 16' 47.20"	1541.56'	726.36' R	565.96'	-	-	-	TO BE REMOVED
31	TREE	N32° 55' 49.89"	W95° 16' 47.03"	1348.19'	678.79' R	567.73'	-	-	-	TO BE REMOVED
32	TREE	N32° 55' 51.90"	W95° 16' 46.82"	1149.92'	633.09' R	566.60'	-	-	-	TO BE REMOVED
33	TREE	N32° 55' 53.42"	W95° 16' 46.41"	992.84'	618.90' R	548.16'	-	56.17'	-	TO BE REMOVED
34	TREE	N32° 55' 58.55"	W95° 16' 44.49"	448.90'	614.39' R	549.55'	-	56.57'	-	TO BE REMOVED
35	TREE	N32° 55' 41.90"	W95° 16' 47.97"	2141.30'	851.41' R	557.59'	-	36.88'	-	TO BE REMOVED
36	TREE	N32° 55' 41.83"	W95° 16' 50.15"	2204.68'	677.15' R	550.64'	-	28.35'	-	TO BE REMOVED
37	TREE	N32° 55' 40.96"	W95° 16' 52.08"	2339.35'	548.20' R	555.19'	-	29.53'	-	TO BE REMOVED
38	TREE	N32° 55' 43.71"	W95° 16' 53.14"	2102.42'	376.31' R	557.59'	-	37.85'	14.97'	TO BE REMOVED
39	TREE	N32° 55' 42.21"	W95° 16' 53.38"	2252.91'	403.75' R	556.45'	-	32.95'	6.31'	TO BE REMOVED
40	TREE	N32° 55' 43.24"	W95° 16' 54.42"	2181.80'	287.12' R	540.67'	-	18.95'	-	TO BE REMOVED
41	TREE	N32° 55' 44.94"	W95° 16' 52.49"	1967.93'	390.34' R	559.99'	-	43.61'	24.09'	TO BE REMOVED
42	TREE	N32° 55' 45.92"	W95° 16' 50.75"	1827.94'	501.15' R	561.63'	-	48.75'	-	TO BE REMOVED
43	TREE	N32° 55' 47.03"	W95° 16' 49.62"	1690.58'	558.12' R	563.14'	-	53.70'	-	TO BE REMOVED
44	TREE	N32° 55' 48.86"	W95° 16' 49.71"	1517.22'	493.82' R	558.85'	-	53.74'	-	TO BE REMOVED
45	TREE	N32° 55' 52.52"	W95° 16' 49.72"	1166.26'	379.19' R	562.38'	-	66.05'	-	TO BE REMOVED
46	TREE	N32° 55' 54.33"	W95° 16' 49.73"	992.21'	321.28' R	540.16'	-	48.19'	-	TO BE REMOVED
47	TREE	N32° 55' 59.56"	W95° 16' 48.42"	455.15'	264.92' R	563.65'	-	70.67'	-	TO BE REMOVED
48	TREE	N32° 56' 00.66"	W95° 16' 46.95"	310.61'	349.80' R	561.37'	-	68.39'	-	TO BE REMOVED
49	TREE	N32° 55' 44.92"	W95° 16' 48.43"	1862.57'	720.38' R	561.63'	-	47.89'	-	TO BE REMOVED
50	TREE	N32° 55' 43.80"	W95° 16' 50.59"	2027.48'	580.18' R	550.90'	-	33.04'	-	TO BE REMOVED
51	TREE	N32° 55' 43.10"	W95° 16' 51.91"	2129.02'	494.52' R	551.02'	-	30.62'	-	TO BE REMOVED
52	TREE	N32° 55' 40.53"	W95° 17' 00.54"	2603.30'	124.28' L	535.93'	-	3.67'	-	TO BE REMOVED
53	TREE	N32° 55' 39.09"	W95° 17' 00.93"	2751.94'	110.97' L	540.29'	-	4.32'	-	TO BE REMOVED
54	TREE	N32° 55' 40.42"	W95° 17' 01.81"	2646.65'	223.88' L	545.39'	2.47'	12.05'	-	TO BE REMOVED
55	TREE	N32° 55' 41.70"	W95° 16' 59.71"	2469.21'	93.891' L	534.28'	-	5.38'	-	TO BE REMOVED
56	TREE	N32° 55' 39.47"	W95° 17' 01.99"	2742.58'	208.96' L	542.28'	-	6.54'	-	TO BE REMOVED
57	TREE	N32° 56' 03.17"	W95° 16' 48.87"	120.00'	115.60' R	505.72'	-	12.74'	-	TO BE REMOVED
58	TREE	N32° 55' 56.41"	W95° 16' 51.00"	826.10'	153.72' R	538.34'	11.97'	12.18'	45.36'	TO BE REMOVED
59	TREE	N32° 55' 56.80"	W95° 16' 52.27"	821.85'	38.54' R	522.56'	34.67'	34.84'	29.58'	TO BE REMOVED
60	TREE	N32° 55' 50.12"	W95° 16' 52.54"	1470.87'	224.74' R	522.76'	-	18.81'	11.72'	TO BE REMOVED
61	TREE	N32° 55' 55.44"	W95° 16' 50.46"	904.93'	227.74' R	544.11'	53.71'	54.31'	51.13'	TO BE REMOVED
62	TREE	N32° 55' 57.50"	W95° 16' 51.40"	731.63'	87.29' R	507.42'	14.44'	14.44'	14.44'	TO BE REMOVED
63	TREE	N32° 55' 58.60"	W95° 16' 51.74"	635.02'	25.47' R	514.62'	21.64'	21.64'	21.64'	TO BE REMOVED
64	TREE	N32° 55' 35.09"	W95° 16' 57.39"	3043.11'	299.96' R	541.80'	19.20'	23.44'	12.84'	TO BE REMOVED
65	TREE	N32° 55' 44.54"	W95° 16' 56.78"	2118.78'	55.24' R	540.38'	13.38'	20.24'	-	TO BE REMOVED
66	TREE	N32° 55' 50.88"	W95° 16' 54.01"	1436.21'	82.05' R	527.18'	20.75'	24.10'	17.87'	TO BE REMOVED
67	POLE UTIL	N32° 55' 19.11"	W95° 17' 07.58"	4847.13'	27.67' L	519.31'	18.66'	23.06'	11.71'	ADD OBSTUCTION LIGHTING
68	TREE	N32° 55' 51.00"	W95° 16' 49.70"	1311.45'	427.51' R	578.39'	-	78.43'	-	TO BE REMOVED
69	TREE	N32° 55' 48.95"	W95° 16' 56.55"	1688.50'	63.99' L	536.70'	22.67'	27.32'	14.78'	TO BE REMOVED
70	TREE	N32° 55' 48.97"	W95° 16' 56.40"	1682.93'	52.28' L	529.81'	15.95'	20.56'	8.17'	TO BE REMOVED

RUNWAY 1/19 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LAT. (N)	LONG. (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	AMOUNT OF DEP PENETRATION	AMOUNT OF PART 77 PENETRATION	REMEDIATION
71	TREE	N32° 55' 49.31"	W95° 16' 56.79"	1660.10'	94.19' L	527.01'	13.84'	18.33'	6.51'	TO BE REMOVED
72	TREE	N32° 55' 49.57"	W95° 16' 57.08"	1643.14'	125.58' L	520.41'	7.75'	12.16'	0.76'	TO BE REMOVED
73	TREE	N32° 55' 49.30"	W95° 16' 55.34"	1623.17'	23.90' R	521.78'	9.72'	14.03'	3.13'	TO BE REMOVED
74	TREE	N32° 55' 50.80"	W95° 16' 54.36"	1453.48'	55.83' R	521.66'	14.71'	18.15'	11.49'	TO BE REMOVED
75	TREE	N32° 55' 51.36"	W95° 16' 54.44"	1401.41'	32.04' R	518.87'	13.50'	16.67'	11.31'	TO BE REMOVED
76	TREE	N32° 55' 49.79"	W95° 16' 54.15"	1545.01'	104.77' R	524.53'	14.83'	18.73'	9.78'	TO BE REMOVED
77	TREE	N32° 55' 49.41"	W95° 16' 54.48"	1590.14'	89.70' R	529.03'	17.96'	22.10'	12.03'	TO BE REMOVED
78	TREE	N32° 55' 48.88"	W95° 16' 54.55"	1643.23'	100.35' R	522.82'	10.23'	14.64'	3.24'	TO BE REMOVED
79	TREE	N32° 55' 48.65"	W95° 16' 53.40"	1634.30'	201.22' R	537.12'	24.72'	29.09'	17.91'	TO BE REMOVED
80	TREE	N32° 55' 48.80"	W95° 16' 53.23"	1616.23'	210.08' R	523.86'	-	16.29'	5.63'	TO BE REMOVED
81	TREE	N32° 55' 49.32"	W95° 16' 53.34"	1568.47'	184.57' R	537.94'	27.53'	31.56'	22.03'	TO BE REMOVED
82	TREE	N32° 55' 49.20"	W95° 16' 52.97"	1570.25'	218.70' R	524.34'	-	17.91'	8.33'	TO BE REMOVED
83	TREE	N32° 55' 49.33"	W95° 16' 52.82"	1553.79'	226.89' R	526.10'	-	20.09'	10.92'	TO BE REMOVED
84	TREE	N32° 55' 52.60"	W95° 16' 53.60"	1260.34'	61.50' R	513.79'	12.68'	15.11'	13.28'	TO BE REMOVED
85	TREE	N32° 55' 53.20"	W95° 16' 53.08"	1188.62'	85.417' R	523.10'	24.14'	26.21'	26.17'	TO BE REMOVED
86	TREE	N32° 55' 53.08"	W95° 16' 52.38"	1182.35'	145.45' R	521.14'	22.37'	34.40'	24.52'	TO BE REMOVED
87	TREE	N32° 55' 53.63"	W95° 16' 52.18"	1124.34'	144.52' R	517.43'	20.41'	51.74'	23.72'	TO BE REMOVED
88	TREE	N32° 55' 54.02"	W95° 16' 52.03"	1082.56'	144.59' R	511.44'	15.68'	17.20'	19.82'	TO BE REMOVED
89	TREE	N32° 55' 54.71"	W95° 16' 52.13"	1018.53'	115.34' R	513.95'	20.12'	21.31'	25.53'	TO BE REMOVED
90	TREE	N32° 55' 55.19"	W95° 16' 51.64"	960.03'	139.90' R	524.06'	32.00'	32.89'	31.08'	TO BE REMOVED
91	TREE	N32° 55' 56.29"	W95° 16' 52.23"	869.46'	57.58' R	514.22'	24.88'	25.31'	21.23'	TO BE REMOVED
92	TREE	N32° 56' 01.47"	W95° 16' 49.42"	297.61'	123.88' R	498.73'	5.74'	5.74'	5.74'	TO BE REMOVED
93	TREE	N32° 56' 01.33"	W95° 16' 49.41"	311.46'	129.13' R	515.77'	-	22.79'	22.79'	TO BE REMOVED
94	TREE	N32° 56' 01.17"	W95° 16' 49.45"	327.19'	130.92' R	514.38'	-	21.40'	21.40'	TO BE REMOVED
95	TREE	N32° 56' 01.06"	W95° 16' 49.46"	338.74'	133.55' R	501.79'	-	8.81'	8.81'	TO BE REMOVED
96	TREE	N32° 56' 00.48"	W95° 16' 49.59"	397.62'	141.41' R	500.34'	-	7.36'	7.36'	TO BE REMOVED
97	TREE	N32° 55' 59.50"	W95° 16' 50.44"	513.72'	102.49' R	521.77'	28.79'	28.79'	28.79'	TO BE REMOVED
98	TREE	N32° 55' 59.51"	W95° 16' 51.24"	534.01'	37.57' R	504.77'	11.79'	11.79'	11.79'	TO BE REMOVED
99	TREE	N32° 56' 00.21"	W95° 16' 51.26"	467.36'	14.23' R	506.31'	13.33'	13.33'	13.33'	TO BE REMOVED
100	TREE	N32° 55' 58.58"	W95° 16' 53.54"	684.00'	119.58' L	512.71'	19.73'	19.73'	19.73'	TO BE REMOVED
101	TREE	N32° 55' 57.48"	W95° 16' 54.50"	815.05'	163.46' L	512.55'	-	19.57'	19.57'	TO BE REMOVED
102	TREE	N32° 56' 01.77"	W95° 16' 53.54"	377.69'	219.48' L	505.73'	-	127.53'	127.53'	TO BE REMOVED
103	TREE	N32° 56' 01.79"	W95° 16' 53.41"	371.67'	209.16' L	500.96'	-	7.98'	7.98'	TO BE REMOVED
104	TREE	N32° 56' 01.82"	W95° 16' 53.28"	365.94'	199.79' L	501.64'	-	8.66'	8.66'	TO BE REMOVED
105	TREE	N32° 55' 56.14"	W95° 16' 49.87"	822.31'	253.96' R	571.93'	-	84.20'	-	TO BE REMOVED
106	TREE	N32° 55' 57.66"	W95° 16' 50.22"	684.70'	177.52' R	543.39'	-	50.41'	50.41'	TO BE REMOVED
107	TREE	N32° 55' 59.21"	W95° 16' 51.87"	579.55'	3.70' L	520.16'	27.18'	27.18'	27.18'	TO BE REMOVED
108	TREE	N32° 55' 58.64"	W95° 16' 50.62"	601.44'	115.17' R	526.60'	33.62'	33.62'	33.62'	TO BE REMOVED
109	TREE	N32° 55' 31.86"	W95° 17' 06.43"	3591.41'	332.24' L	551.96'	-	58.98'	-	TO BE REMOVED
110	TREE	N32° 55' 34.51"	W95° 17' 06.10"	3327.97'	387.76' L	554.44'	-	61.47'	-	TO BE REMOVED
111	TREE	N32° 55' 33.94"	W95° 17' 05.23"	-2803.49'	1412.73' L	552.56'	-	-	-	TO BE REMOVED
112	TREE	N32° 55' 35.73"	W95° 16' 57.07"	2973.37'	306.39' R	553.69'	0.91'	12.17'	-	TO BE REMOVED
113	TREE	N32° 55' 36.02"	W95° 16' 57.04"	2944.31'	299.54' R	554.95'	3.05'	14.17'	-	TO BE REMOVED
114	TREE	N32° 55' 36.26"	W95° 16' 56.94"	2918.39'	300.43' R	547.44'	-	7.31'	-	TO BE REMOVED
115	TREE	N32° 55' 38.46"	W95° 16' 55.31"	2664.35'	363.80' R	555.82'	-	22.04'	-	TO BE REMOVED
116	TREE	N32° 55' 37.54"	W95° 16' 55.51"	2758.27'	376.34' R	551.59'	-	15.62'	-	TO BE REMOVED
117	TREE	N32° 55' 37.27"	W95° 16' 56.49"	2809.77'	305.11' R	544.90'	-	7.49'	-	TO BE REMOVED
118	TREE	N32° 55' 40.67"	W95° 16' 57.36"	2505.79'	128.43' R	551.49'	12.81'	21.67'	-	TO BE REMOVED
119	TREE	N32° 55' 40.04"	W95° 16' 58.74"	2603.04'	36.43' R	549.85'	8.24'	17.60'	-	TO BE REMOVED
120	TREE	N32° 55' 41.58"	W95° 16' 58.55"	2450.17'	4.25' R	538.11'	1.11'	9.68'	-	TO BE REMOVED
121	TREE	N32° 55' 45.17"	W95° 16' 54.79"	2005.50'	196.60' R	561.59'	38.00'	44.28'	23.82'	TO BE REMOVED
122	TREE	N32° 55' 46.65"	W95° 16' 53.66"	1834.20'	242.24' R	551.49'	-	38.46'	22.28'	TO BE REMOVED
123	TREE	N32° 55' 47.43"	W95° 16' 52.65"	1731.95'	299.85' R	555.28'	-	44.80'	31.18'	TO BE REMOVED
124	TREE	N32° 55' 47.91"	W95° 16' 53.98"	1721.19'	177.08' R	532.80'	17.79'	22.60'	9.25'	TO BE REMOVED
125	TREE	N32° 55' 51.55"	W95° 16' 51.91"	1317.28'	231.48' R	545.46'	-	45.35'	42.10'	TO BE REMOVED
126	TREE	N32° 55' 50.94"	W95° 16' 53.37"	1413.67'	132.13' R	545.71'	39.97'	43.19'	37.53'	TO BE REMOVED
127	TREE	N32° 55' 52.73"	W95° 16' 51.69"	1197.39'	212.11' R	542.05'	-	44.94'	44.68'	TO BE REMOVED
128	TREE	N32° 55' 54.00"	W95° 16' 50.99"	1056.92'	229.57' R	528.16'	33.17'	34.56'	37.82'	TO BE REMOVED
129	TREE	N32° 55' 45.83"	W95° 16' 55.79"	1968.91'	95.743' R	540.45'	17.97'	24.06'	4.51'	TO BE REMOVED
130	TREE	N32° 55' 47.26"	W95° 16' 55.76"	1830.06'	52.79' R	524.67'	6.37'	11.75'	-	TO BE REMOVED
131	TREE	N32° 55' 47.15"	W95° 16' 57.32"	1881.64'	69.96' L	539.06'	19.21'	24.85'	7.49'	TO BE REMOVED
132	TREE	N32° 55' 47.51"	W95° 16' 58.66"	1882.88'	189.36' L	544.62'	24.73'	30.37'	12.98'	TO BE REMOVED
133	TREE	N32° 55' 46.29"	W95° 16' 59.19"	2013.61'	194.37' L	542.22'	18.39'	24.71'	4.05'	TO BE REMOVED
134	TREE	N32° 55' 45.17"	W95° 17' 00.05"	2144.51'	229.71' L	541.84'	14.06'	21.60'	-	TO BE REMOVED
135	TREE	N32° 55' 46.29"	W95° 17' 00.55"	2049.49'	305.20' L	531.49'	-	13.08'	-	TO BE REMOVED
136	TREE	N32° 55' 44.30"	W95° 16' 55.50"	2108.24'	166.81' R	558.51'	31.82'	38.63'	15.60'	TO BE REMOVED
137	TREE	N32° 55' 44.66"	W95° 16' 53.64"	2024.84'	305.92' R	543.10'	-	25.31'	4.37'	TO BE REMOVED
138	TREE	N32° 55' 41.81"	W95° 16' 54.71"	2326.60'	308.41' R	545.88'	-	20.54'	-	TO BE REMOVED
139	TREE	N32° 55' 41.15"	W95° 16' 55.87"	2420.21'	234.52' R	539.69'	0.81'	9.23'	-	TO BE REMOVED
140	TREE	N32° 55' 43.03"	W95° 16' 55.87"	2240.01'	176.42' R	529.09'	-	5.92'	-	TO BE REMOVED

DES: MM
DR: ED
CH: MM
APP: MM

ISSUE RECORD

NO.	BY	DATE	REVISION

WINNSBORO MUNICIPAL AIRPORT (F51)
WINNSBORO, TX

AIRPORT LAYOUT PLAN

RUNWAY 1-19 OBSTRUCTION TABLE I

AIP GRANT NO. 3-40-0025-017-2021
KSA JOB NO. F89002
DATE: June 21, 2023

11
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : RUNWAY 1-19 OBSTRUCTION TABLE I

RUNWAY 1/19 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LAT. (N)	LONG. (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	AMOUNT OF DEP PENETRATION	AMOUNT OF PART 77 PENETRATION	REMEDIATION
141	TREE	N32° 55' 44.59"	W95° 16' 58.16"	2149.88'	58.04' L	543.10'	15.16'	22.18'	-	TO BE REMOVED
142	TREE	N32° 55' 43.09"	W95° 16' 57.59"	2279.67'	35.08' R	539.82'	7.97'	15.66'	-	TO BE REMOVED
143	TREE	N32° 55' 42.09"	W95° 16' 56.88"	2357.12'	123.84' R	536.54'	-	1.40'	-	TO BE REMOVED
144	TREE	N32° 55' 43.53"	W95° 17' 00.13"	2303.68'	185.26' L	547.65'	-	4.07'	-	TO BE REMOVED
145	TREE	N32° 55' 44.13"	W95° 17' 01.90"	2293.18'	346.88' L	541.08'	-	-	-	TO BE REMOVED
146	TREE	N32° 55' 43.15"	W95° 16' 58.95"	2309.46'	77.68' L	540.45'	-	3.75'	-	TO BE REMOVED
147	TREE	N32° 55' 49.68"	W95° 16' 56.26"	1611.12'	63.16' L	530.89'	-	-	-	TO BE REMOVED
148	TREE	N32° 55' 49.39"	W95° 16' 56.37"	1641.44'	63.23' L	531.27'	-	-	-	TO BE REMOVED
149	TREE	N32° 56' 02.04"	W95° 16' 46.27"	160.23'	361.70' R	564.56'	-	-	-	TO BE REMOVED
150	TREE	N32° 56' 03.14"	W95° 16' 45.50"	34.28'	389.46' R	545.24'	-	.045'	-	TO BE REMOVED
151	TREE	N32° 55' 24.37"	W95° 17' 08.16"	4356.98'	239.05' L	565.77'	-	-	-	TO BE REMOVED
152	TREE	N32° 55' 24.51"	W95° 17' 08.43"	4350.34'	264.70' L	563.95'	-	-	-	TO BE REMOVED
153	TREE	N32° 55' 25.14"	W95° 17' 08.78"	4299.41'	312.64' L	564.32'	-	-	-	TO BE REMOVED
154	TREE	N32° 55' 25.58"	W95° 17' 08.37"	4245.56'	293.14' L	568.62'	-	-	-	TO BE REMOVED
155	TREE	N32° 55' 27.37"	W95° 17' 08.97"	4089.94'	397.81' L	558.77'	-	-	-	TO BE REMOVED
156	TREE	N32° 55' 29.41"	W95° 17' 07.13"	3845.24'	311.87' L	559.69'	-	-	-	TO BE REMOVED
157	TREE	N32° 55' 29.71"	W95° 17' 05.44"	3771.65'	184.54' L	562.53'	-	1.06'	-	TO BE REMOVED
158	TREE	N32° 55' 30.96"	W95° 17' 05.71"	3659.13'	245.36' L	559.11'	-	-	-	TO BE REMOVED
159	TREE	N32° 56' 45.00"	W95° 16' 32.76"	1111.63'	117.716R	569.90'	12.79'	19.90'	-	TO BE REMOVED
160	TREE	N32° 56' 40.18"	W95° 16' 33.26"	635.20'	227.025R	524.18'	-	-	-	TO BE REMOVED
161	TREE	N32° 56' 47.31"	W95° 16' 33.35"	1318.48'	2.92414L	574.00'	10.80'	18.82'	-	TO BE REMOVED
162	TREE	N32° 56' 47.45"	W95° 16' 30.55"	1405.73'	220.094R	541.56'	-	-	-	TO BE REMOVED
163	TREE	N32° 56' 45.24"	W95° 16' 34.33"	1093.59'	17.4597L	568.12'	11.54'	18.57'	-	TO BE REMOVED
164	TREE	N32° 56' 48.64"	W95° 16' 36.80"	1355.67'	323.891L	553.18'	-	-	-	TO BE REMOVED
165	TREE	N32° 56' 47.22"	W95° 16' 39.09"	1158.24'	464.764L	562.31'	-	11.14'	-	TO BE REMOVED
166	TREE	N32° 56' 55.95"	W95° 16' 26.87"	2319.27'	253.667R	563.81'	-	-	-	TO BE REMOVED
167	TREE	N32° 57' 02.73"	W95° 16' 27.65"	2950.01'	21.3157L	575.12'	-	-	-	TO BE REMOVED
168	TREE	N32° 57' 03.73"	W95° 16' 27.57"	3048.45'	46.3313L	568.19'	-	-	-	TO BE REMOVED
169	TREE	N32° 57' 03.17"	W95° 16' 26.91"	3011.65'	25.1104R	569.53'	-	-	-	TO BE REMOVED
170	TREE	N32° 57' 03.35"	W95° 16' 28.53"	2986.92'	112.045L	571.45'	-	-	-	TO BE REMOVED
171	TREE	N32° 57' 03.05"	W95° 16' 29.48"	2932.97'	179.263L	561.71'	-	-	-	TO BE REMOVED
172	TREE	N32° 57' 03.53"	W95° 16' 30.28"	2957.83'	259.377L	561.09'	-	-	-	TO BE REMOVED
173	TREE	N32° 56' 51.67"	W95° 16' 21.64"	2045.71'	810.839R	570.82'	-	-	-	TO BE REMOVED
174	TREE	N32° 56' 50.42"	W95° 16' 22.09"	1912.99'	813.448R	563.37'	-	-	-	TO BE REMOVED
175	TREE	N32° 56' 43.59"	W95° 16' 24.02"	1205.68'	870.146R	551.37'	-	-	-	TO BE REMOVED
176	TREE	N32° 56' 41.22"	W95° 16' 29.35"	837.62'	511.773R	573.22'	-	30.06'	-	TO BE REMOVED
177	TREE	N32° 56' 38.82"	W95° 16' 27.40"	658.73'	744.623R	553.65'	-	-	-	TO BE REMOVED
178	TREE	N32° 56' 39.72"	W95° 16' 29.47"	690.25'	548.473R	564.00'	-	4.76'	-	TO BE REMOVED
179	TREE	N32° 56' 38.04"	W95° 16' 30.15"	511.16'	546.118R	558.07'	-	23.07'	-	TO BE REMOVED
180	TREE	N32° 56' 39.66"	W95° 16' 31.81"	623.16'	361.26R	567.28'	-	29.79'	11.70'	TO BE REMOVED
181	TREE	N32° 56' 40.03"	W95° 16' 28.07"	757.20'	652.212R	548.47'	-	7.33'	-	TO BE REMOVED
182	TREE	N32° 56' 47.21"	W95° 16' 24.34"	1545.68'	731.262R	561.70'	-	0.85'	-	TO BE REMOVED
183	TREE	N32° 56' 47.60"	W95° 16' 28.06"	1484.83'	417.027R	561.47'	-	2.14'	-	TO BE REMOVED
184	TREE	N32° 56' 49.57"	W95° 16' 38.78"	1392.38'	512.642L	565.72'	-	8.69'	-	TO BE REMOVED
185	TREE	N32° 56' 46.02"	W95° 16' 39.79"	1025.33'	484.017L	545.68'	-	-	-	TO BE REMOVED
186	TREE	N32° 56' 55.48"	W95° 16' 23.84"	2354.09'	513.665R	578.66'	-	-	-	TO BE REMOVED
187	TREE	N32° 56' 54.42"	W95° 16' 24.75"	2227.29'	472.954R	581.67'	-	3.77'	-	TO BE REMOVED
188	TREE	N32° 56' 47.74"	W95° 16' 26.99"	1526.33'	499.904R	552.92'	-	-	-	TO BE REMOVED
189	TREE	N32° 56' 37.78"	W95° 16' 28.11"	539.34'	719.36R	557.06'	-	21.36'	-	TO BE REMOVED
190	TREE	N32° 56' 36.24"	W95° 16' 29.18"	363.71'	680.938R	565.01'	-	33.70'	-	TO BE REMOVED
191	TREE	N32° 56' 34.23"	W95° 16' 30.68"	130.77'	621.788R	557.69'	-	32.20'	-	TO BE REMOVED
192	TREE	N32° 56' 35.01"	W95° 16' 29.50"	237.08'	693.427R	558.70'	-	30.56'	-	TO BE REMOVED
193	TREE	N32° 56' 36.15"	W95° 16' 32.29"	273.50'	431.574R	566.40'	-	37.35'	-	TO BE REMOVED
194	TREE	N32° 56' 37.34"	W95° 16' 33.25"	362.68'	316.279R	559.45'	-	28.21'	16.63'	TO BE REMOVED
195	TREE	N32° 56' 38.11"	W95° 16' 32.22"	463.98'	376.186R	567.41'	-	33.59'	19.48'	TO BE REMOVED
196	TREE	N32° 56' 40.73"	W95° 16' 30.95"	749.15'	396.789R	579.28'	-	38.33'	17.09'	TO BE REMOVED
197	TREE	N32° 56' 41.86"	W95° 16' 32.06"	828.70'	272.279R	570.94'	-	28.01'	4.78'	TO BE REMOVED
198	TREE	N32° 56' 42.81"	W95° 16' 32.65"	903.97'	194.336R	559.08'	8.07'	14.26'	-	TO BE REMOVED
199	TREE	N32° 56' 40.25"	W95° 16' 26.37"	822.82'	783.49R	564.38'	-	21.59'	-	TO BE REMOVED
200	TREE	N32° 56' 41.56"	W95° 16' 25.69"	966.45'	798.111R	563.37'	-	16.99'	-	TO BE REMOVED
201	TREE	N32° 56' 43.31"	W95° 16' 25.75"	1133.16'	738.351R	578.27'	-	27.72'	-	TO BE REMOVED
202	TREE	N32° 56' 42.82"	W95° 16' 27.35"	1044.24'	624.205R	565.14'	-	16.82'	-	TO BE REMOVED
203	TREE	N32° 56' 44.90"	W95° 16' 25.71"	1287.04'	2212.67R	581.80'	-	27.41'	-	TO BE REMOVED
204	TREE	N32° 56' 44.04"	W95° 16' 27.90"	1146.73'	540.947R	551.75'	-	0.87'	-	TO BE REMOVED
205	POLE UTIL	N32° 56' 31.71"	W95° 16' 44.02"	-532.95'	380.921L	532.96'	-	22.28'	-	ADD OBSTRUCTION LIGHTING
206	FLAGPOLE	N32° 56' 32.48"	W95° 16' 42.49"	-347.57'	280.879L	547.85'	-	34.33'	-	ADD OBSTRUCTION LIGHTING
207	BEACON	N32° 56' 35.29"	W95° 16' 42.97"	-90.54'	407.759L	568.18'	-	48.22'	-	ADD OBSTRUCTION LIGHTING
208	GROUND	N32° 56' 33.40"	W95° 16' 41.00"	-220.36'	188.851L	514.06'	-	-	0.35'	ADD OBSTRUCTION LIGHTING
209	HANGAR	N32° 56' 34.84"	W95° 16' 41.56"	-190.68'	292.125L	531.11'	-	13.65'	-	ADD OBSTRUCTION LIGHTING
210	HANGAR	N32° 56' 33.38"	W95° 16' 43.52"	-288.18'	392.124L	532.75'	-	17.73'	-	ADD OBSTRUCTION LIGHTING

RUNWAY 1/19 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LAT. (N)	LONG. (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	AMOUNT OF DEP PENETRATION	AMOUNT OF PART 77 PENETRATION	REMEDIATION
211	TREE	N32° 56' 41.81"	W95° 16' 27.06"	955.29'	678.849R	564.88'	-	18.79'	-	TO BE REMOVED
212	TREE	N32° 56' 42.78"	W95° 16' 29.28"	989.80'	469.052R	549.99'	-	3.03'	-	TO BE REMOVED
213	POWER TRANSMISSION POLE	N32° 57' 10.28"	W95° 16' 33.05"	3534.64'	694.554L	603.39'	-	-	-	ADD OBSTRUCTION LIGHTING
214	POWER TRANSMISSION POLE	N32° 57' 07.91"	W95° 16' 33.52"	3293.98'	658.331L	582.06'	-	-	-	ADD OBSTRUCTION LIGHTING
215	POWER TRANSMISSION POLE	N32° 57' 05.48"	W95° 16' 34.00"	3047.41'	621.529L	579.03'	-	-	-	ADD OBSTRUCTION LIGHTING
216	POWER TRANSMISSION POLE	N32° 57' 02.94"	W95° 16' 34.48"	2791.13'	581.867L	571.58'	-	-	-	ADD OBSTRUCTION LIGHTING
217	POWER TRANSMISSION POLE	N32° 57' 00.51"	W95° 16' 34.96"	2545.21'	544.475L	564.76'	-	-	-	ADD OBSTRUCTION LIGHTING
218	POWER TRANSMISSION POLE	N32° 56' 58.10"	W95° 16' 35.43"	2300.65'	507.093L	567.41'	-	-	-	ADD OBSTRUCTION LIGHTING
219	POWER TRANSMISSION POLE	N32° 56' 55.35"	W95° 16' 36.01"	2021.39'	468.536L	584.08'	0.20'	11.32'	-	ADD OBSTRUCTION LIGHTING
220	TREE	N32° 56' 42.01"	W95° 16' 42.31"	573.46'	563.501L	547.09'	-	10.53'	-	TO BE REMOVED
221	SIGN	N32° 56' 35.42"	W95° 16' 39.17"	21.88'	103.748L	514.96'	-	-	-	ADD OBSTRUCTION LIGHTING
222	TREE	N32° 56' 35.08"	W95° 16' 36.55"	58.49'	119.851R	523.57'	-	-	-	TO BE REMOVED
223	TREE	N32° 56' 35.16"	W95° 16' 36.53"	66.72'	118.266R	522.18'	-	-	-	TO BE REMOVED
224	TREE	N32° 56' 35.43"	W95° 16' 36.52"	92.51'	111.46R	524.95'	-	0.43'	-	TO BE REMOVED
225	TREE	N32° 56' 35.52"	W95° 16' 36.48"	102.57'	111.57R	522.56'	-	-	-	TO BE REMOVED
226	TREE	N32° 56' 35.62"	W95° 16' 36.46"	112.71'	109.626R	522.05'	-	-	-	TO BE REMOVED
227	TREE	N32° 56' 37.87"	W95° 16' 36.02"	340.76'	74.9975R	520.96'	-	-	-	TO BE REMOVED
228	TREE	N32° 56' 38.27"	W95° 16' 35.95"	380.48'	68.9156R	521.75'	-	-	-	TO BE REMOVED
229	TREE	N32° 56' 38.58"	W95° 16' 35.84"	413.87'	68.1116R	533.11'	-	0.55'	-	TO BE REMOVED
230	TREE	N32° 56' 38.78"	W95° 16' 35.25"	448.35'	109.1R	532.87'	-	-	-	TO BE REMOVED
231	TREE	N32° 56' 38.81"	W95° 16' 35.13"	453.89'	118.206R	523.44'	-	-	-	TO BE REMOVED
232	TREE	N32° 56' 38.78"	W95° 16' 34.33"	472.45'	184.331R	537.63'	-	3.60'	-	TO BE REMOVED
233	TREE	N32° 56' 38.66"	W95° 16' 34.33"	460.52'	187.806R	533.64'	-	-	-	TO BE REMOVED
234	TREE	N32° 56' 38.56"	W95° 16' 34.27"	453.29'	195.632R	522.68'	-	-	-	TO BE REMOVED
235	TREE	N32° 56' 38.35"	W95° 16' 34.09"	437.47'	216.97R	521.92'	-	-	-	TO BE REMOVED
236	TREE	N32° 56' 38.34"	W95° 16' 34.03"	438.23'	222.236R	521.41'	-	-	-	TO BE REMOVED
237	TREE	N32° 56' 40.47"	W95° 16' 34.20"	638.28'	141.948R	570.27'	27.09'	32.10'	13.63'	TO BE REMOVED
238	TREE	N32° 56' 41.85"	W95° 16' 33.77"	782.55'	133.208R	534.95'	-	-	-	TO BE REMOVED
239	TREE	N32° 56' 41.38"	W95° 16' 34.93"	706.10'	54.1606R	531.85'	-	-	-	TO BE REMOVED
240	TREE	N32° 56' 40.91"	W95° 16' 35.01"	659.86'	62.742R	534.03'	-	-	-	TO BE REMOVED
241	TREE	N32° 56' 41.79"	W95° 16' 36.48"	705.05'	83.6904L	549.02'	3.87'	9.18'	-	TO BE REMOVED
242	TREE	N32° 56' 41.98"	W95° 16' 37.70"	691.80'	188.849L	532.60'	-	-	-	TO BE REMOVED
243	TREE	N32° 56' 42.58"	W95° 16' 37.42"	756.56'	184.851L	535.61'	-	-	-	TO BE REMOVED
244	TREE	N32° 56' 42.44"	W95° 16' 37.00"	753.89'	146.67L	536.13'	-	-	-	TO BE REMOVED
245	TREE	N32° 56' 41.86"	W95° 16' 37.98"	672.76'	207.788L	524.28'	-	-	-	TO BE REMOVED
246	TREE	N32° 56' 40.84"	W95° 16' 37.58"	584.68'	143.618L	527.67'	-	-	-	TO BE REMOVED
247	POLE UTIL	N32° 56' 40.58"	W95° 16' 34.59"	638.45'	106.948R	536.33'	-	-	-	ADD OBSTRUCTION LIGHTING
248	TREE	N32° 56' 43.89"	W95° 16' 30.60"	1061.25'	327.012R	568.42'	-	19.67'	-	TO BE REMOVED
249	TREE	N32° 56' 44.46"	W95° 16' 29.73"	1139.23'	380.141R	565.39'	-	14.69'	-	TO BE REMOVED
250	TREE	N32° 57' 07.51"	W95° 16' 24.58"	3490.75'	78.4556R	578.42'	-	-	-	TO BE REMOVED
251	POLE UTIL	N32° 56' 42.38"	W95° 16' 37.63"	731.49'	195.383L	528.01'	-	-	-	ADD OBSTRUCTION LIGHTING
252	TREE	N32° 56' 44.71"	W95° 16' 28.05"	1207.94'	507.917R	551.63'	-	-	-	TO BE REMOVED
253	TREE	N32° 56' 54.15"	W95° 16' 26.25"	2162.08'	359.572R	592.59'	4.59'	16.33'	-	TO BE REMOVED
254	TREE	N32° 56' 48.55"	W95° 16' 28.47"	1565.79'	354.652R	569.11'	-	7.75'	-	TO BE REMOVED
255	TREE	N32° 56' 47.99"	W95° 16' 24.95"	1603.98'	656.865R	576.81'	5.22'	14.50'	-	TO BE REMOVED
256	TREE	N32° 56' 48.06"	W95° 16' 23.16"	1657.87'	800.23R	578.33'	5.14'	14.66'	-	TO BE REMOVED
257	TREE	N32° 56' 41.10"	W95° 16' 39.80"	551.94'	331.821L	573.93'	-	37.92'	21.61'	TO BE REMOVED
258	TREE	N32° 56' 43.83"	W95° 16' 39.17"	831.06'	365.692L	566.03'	-	23.04'	-	TO BE REMOVED
259	TREE	N32° 57' 01.95"	W95° 16' 35.32"	2674.23'	618.904L	582.04'	-	-	-	TO BE REMOVED
260	TREE	N32° 56' 59.42"	W95° 16' 35.79"	2418.11'	577.505L	582.39'	-	-	-	TO BE REMOVED
261	TREE	N32° 57' 00.28"	W95° 16' 37.41"	2458.22'	736.176L	582.89'	-	-	-	TO BE REMOVED
262	TREE	N32° 56' 58.42"	W95° 16' 38.40"	2253.41'	757.925L	581.03'	-	2.48'	-	TO BE REMOVED
263	TREE	N32° 56' 56.82"	W95° 16' 38.69"	2092.34'	731.666L	576.39'	-	1.87'	-	TO BE REMOVED
264	TREE	N32° 56' 57.64"	W95° 16' 39.65"	2146.05'	834.899L	576.00'	-	-	-	TO BE REMOVED
265	TREE	N32° 56' 58.61"	W95° 16' 36.88"	2311.35'	641.072L	577.46'	-	-	-	TO BE REMOVED
266	TREE	N32° 57' 00.61"	W95° 16' 35.66"	2536.54'	604.276L	578.30'	-	-	-	TO BE REMOVED
267	TREE	N32° 56' 46.07"	W95° 16' 40.92"	1000.16'	577.844L	562.97'	-	15.75'	-	TO BE REMOVED
268	TREE	N32° 56' 44.95"	W95° 16' 39.85"	920.41'	455.6L	549.46'	-	4.24'	-	TO BE REMOVED
269	TREE	N32° 56' 48.71"	W95° 16' 39.80"	1283.24'	569.14L	572.35'	-	18.05'	-	TO BE REMOVED
270	TREE	N32° 56' 48.27"	W95° 16' 37.97"	1288.68'	407.071L	572.22'	-	17.79'	-	TO BE REMOVED
271	TREE	N32° 56' 46.58"	W95° 16' 38.47"	1113.63'	395.012L	566.16'	-	16.11'	-	TO BE REMOVED
272	TREE	N32° 56' 54.17"	W95° 16' 29.91"	2067.89'	62.8814R	571.54'	-	-	-	TO BE REMOVED
273	TREE	N32° 56' 55.63"	W95° 16' 29.53"	2218.15'	47.4989R	566.74'	-	-	-	TO BE REMOVED
274	POLE UTIL	N32° 56' 56.11"	W95° 16' 28.04"	2303.36'	153.211R	555.40'	-	-	-	ADD OBSTRUCTION LIGHTING
275	TREE	N32° 57' 00.48"	W95° 16' 31.68"	2628.26'	277.588L	556.58'	-	-	-	TO BE REMOVED
276	TREE	N32° 57' 00.31"	W95° 16' 31.59"	2614.19'	264.739L	556.73'	-	-	-	TO BE REMOVED
277	TREE	N32° 57' 00.24"	W95° 16' 31.71"	2604.04'	272.279L	556.92'	-	-	-	TO BE REMOVED
278	TREE	N32° 56' 59.80"	W95° 16' 31.62"	2564.18'	251.608L	555.16'	-	-	-	TO BE REMOVED
279	TREE	N32° 56' 59.49"	W95° 16' 31.48"	2537.85'	230.328L	559.20'	-	-	-	TO BE REMOVED
280	TREE	N32° 56' 59.26"	W95° 16' 31.59"	2513.35'	232.753L	558.25'	-	-	-	TO BE REMOVED

KSA

DES: MM
DR: ED
CH: MM
APP: MM

ISSUE RECORD			
NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

RUNWAY 1-19 OBSTRUCTION TABLE II

AIP GRANT NO. 3-40-0025-017-2021
KSA JOB NO. F89002
DATE: June 21, 2023

12
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : RUNWAY 1-19 OBSTRUCTION TABLE II

RUNWAY 1/19 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LAT. (N)	LONG. (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	AMOUNT OF DEP PENETRATION	AMOUNT OF PART 77 PENETRATION	REMEDIATION
281	TREE	N32° 57' 02.50"	W95° 16' 31.98"	2814.86'	365.22L	558.80'	-	-	-	TO BE REMOVED
282	TREE	N32° 57' 03.27"	W95° 16' 31.95"	2889.01'	386.18L	565.65'	-	-	-	TO BE REMOVED
283	TREE	N32° 57' 02.97"	W95° 16' 31.77"	2865.05'	362.613L	561.24'	-	-	-	TO BE REMOVED
284	TREE	N32° 57' 02.86"	W95° 16' 31.30"	2866.56'	321.251L	559.61'	-	-	-	TO BE REMOVED
285	TREE	N32° 57' 07.02"	W95° 16' 28.06"	3351.80'	187.921L	570.24'	-	-	-	TO BE REMOVED
286	TREE	N32° 57' 05.77"	W95° 16' 21.93"	3393.16'	347.883R	578.19'	-	-	-	TO BE REMOVED
287	TREE	N32° 57' 05.92"	W95° 16' 21.45"	3419.80'	381.778R	578.71'	-	-	-	TO BE REMOVED
288	TREE	N32° 57' 06.39"	W95° 16' 21.25"	3470.08'	383.151R	570.91'	-	-	-	TO BE REMOVED
289	TREE	N32° 57' 06.56"	W95° 16' 22.06"	3465.67'	312.564R	569.31'	-	-	-	TO BE REMOVED
290	TREE	N32° 57' 04.94"	W95° 16' 22.76"	3290.98'	305.823R	570.20'	-	-	-	TO BE REMOVED
291	TREE	N32° 57' 03.29"	W95° 16' 22.62"	3136.35'	368.806R	571.88'	-	-	-	TO BE REMOVED
292	TREE	N32° 57' 03.05"	W95° 16' 22.27"	3123.07'	404.811R	572.94'	-	-	-	TO BE REMOVED
293	TREE	N32° 57' 03.92"	W95° 16' 25.49"	3121.69'	116.703R	563.99'	-	-	-	TO BE REMOVED
294	TREE	N32° 57' 04.93"	W95° 16' 25.00"	3231.34'	124.68R	566.12'	-	-	-	TO BE REMOVED
295	TREE	N32° 57' 05.40"	W95° 16' 29.07"	3169.61'	219.884L	565.11'	-	-	-	TO BE REMOVED
296	TREE	N32° 57' 04.74"	W95° 16' 28.69"	3116.47'	168.23L	565.62'	-	-	-	TO BE REMOVED
297	TREE	N32° 57' 06.08"	W95° 16' 31.17"	3180.22'	411.25L	564.14'	-	-	-	TO BE REMOVED
298	TREE	N32° 57' 08.59"	W95° 16' 30.20"	3446.25'	410.608L	570.43'	-	-	-	TO BE REMOVED
299	TREE	N32° 57' 08.50"	W95° 16' 25.23"	3568.62'	4.92814L	576.56'	-	-	-	TO BE REMOVED
300	TREE	N32° 57' 08.34"	W95° 16' 25.99"	3533.48'	62.0796L	579.15'	-	-	-	TO BE REMOVED
301	TREE	N32° 57' 09.04"	W95° 16' 26.03"	3599.59'	86.6356L	585.23'	-	-	-	TO BE REMOVED
302	TREE	N32° 57' 08.51"	W95° 16' 26.35"	3540.39'	95.8374L	580.16'	-	-	-	TO BE REMOVED
303	TREE	N32° 57' 08.83"	W95° 16' 26.83"	3557.98'	145.18L	581.00'	-	-	-	TO BE REMOVED
304	TREE	N32° 56' 35.12"	W95° 16' 31.86"	185.78'	498.234R	554.49'	-	27.63'	-	TO BE REMOVED
305	TREE	N32° 56' 38.30"	W95° 16' 43.07"	197.10'	509.144L	544.64'	-	17.50'	-	TO BE REMOVED
306	FLAGPOLE	N32° 56' 36.37"	W95° 16' 41.19"	59.98'	297.125L	536.69'	-	12.98'	8.97'	ADD OBSTRUCTION LIGHTING
307	FENCE	N32° 56' 33.59"	W95° 16' 36.86"	-92.88'	140.493R	513.08'	-	-	-	NONE
308	GROUND	N32° 56' 31.06"	W95° 16' 42.08"	-473.48'	203.834L	512.93'	-	2.56'	-	NONE
309	TREE	N32° 56' 29.92"	W95° 16' 38.39"	-485.82'	131.294R	519.55'	-	9.47'	-	TO BE REMOVED
310	TREE	N32° 56' 31.10"	W95° 16' 37.91"	-360.34'	133.522R	523.08'	-	9.87'	-	TO BE REMOVED
311	TREE	N32° 56' 32.51"	W95° 16' 37.33"	-29.46'	136.064R	523.97'	-	6.98'	-	TO BE REMOVED
312	POLE UTIL	N32° 56' 42.98"	W95° 16' 36.37"	822.64'	112.123L	537.44'	-	-	-	ADD OBSTRUCTION LIGHTING
313	POLE UTIL	N32° 56' 43.07"	W95° 16' 37.39"	804.42'	197.982L	533.47'	-	-	-	ADD OBSTRUCTION LIGHTING
314	TREE	N32° 56' 43.16"	W95° 16' 36.16"	845.86'	100.713L	543.78'	-	0.42'	-	TO BE REMOVED
315	TREE	N32° 56' 44.88"	W95° 16' 36.75"	995.19'	201.971L	562.86'	9.17'	15.77'	-	TO BE REMOVED
316	TREE	N32° 56' 45.28"	W95° 16' 33.46"	1119.99'	51.8643R	571.70'	14.34'	21.48'	-	TO BE REMOVED
317	TREE	N32° 56' 45.09"	W95° 16' 35.29"	1053.81'	90.2802L	562.36'	6.95'	13.80'	-	TO BE REMOVED
318	TREE	N32° 56' 43.70"	W95° 16' 31.86"	1010.89'	230.903R	576.62'	22.47'	29.14'	1.35'	TO BE REMOVED
319	TREE	N32° 56' 41.28"	W95° 16' 32.97"	748.77'	216.272R	542.91'	-	19.84'	-	TO BE REMOVED
320	TREE	N32° 56' 43.54"	W95° 16' 34.05"	937.46'	58.2345R	574.60'	22.61'	28.95'	3.00'	TO BE REMOVED
321	TREE	N32° 56' 43.35"	W95° 16' 35.09"	891.61'	19.742L	568.16'	17.52'	23.66'	-	TO BE REMOVED
322	TREE	N32° 56' 42.39"	W95° 16' 33.98"	828.84'	99.8742R	536.22'	-	-	-	TO BE REMOVED
323	TREE	N32° 56' 52.92"	W95° 16' 28.40"	1987.66'	223.662R	586.00'	3.13'	14.09'	-	TO BE REMOVED
324	TREE	N32° 56' 47.51"	W95° 16' 29.67"	1434.78'	289.77R	561.38'	-	3.30'	-	TO BE REMOVED
325	TREE	N32° 56' 47.36"	W95° 16' 31.57"	1370.13'	140.237R	556.71'	-	0.25'	-	TO BE REMOVED
326	TREE	N32° 56' 46.54"	W95° 16' 36.88"	1151.59'	264.293L	572.37'	14.08'	21.36'	-	TO BE REMOVED
327	TREE	N32° 56' 46.49"	W95° 16' 35.40"	1185.18'	142.964L	560.50'	1.23'	8.66'	-	TO BE REMOVED
328	TREE	N32° 56' 47.36"	W95° 16' 36.49"	1240.55'	258.264L	571.11'	10.20'	17.88'	-	TO BE REMOVED

RUNWAY 1/19 OBSTRUCTION TABLE

No.	OBJECT DESCRIPTION	LAT. (N)	LONG. (W)	DISTANCE FROM RUNWAY END	OFFSET FROM RWY CL	TOP ELEVATION	AMOUNT OF APP PENETRATION	AMOUNT OF DEP PENETRATION	AMOUNT OF PART 77 PENETRATION	REMEDIATION
329	TREE	N32° 56' 48.12"	W95° 16' 34.47"	1366.60'	118.20' L	556.88'	-	0.50'	-	TO BE REMOVED
330	TREE	N32° 56' 47.92"	W95° 16' 35.07"	1331.53'	161.22' L	555.87'	-	0.37'	-	TO BE REMOVED
331	TREE	N32° 56' 48.18"	W95° 16' 34.89"	1361.74'	154.13' L	540.01'	-	-	-	TO BE REMOVED
332	TREE	N32° 56' 48.58"	W95° 16' 35.27"	1390.07'	197.66' L	552.00'	-	-	-	TO BE REMOVED
333	TREE	N32° 56' 50.83"	W95° 16' 30.29"	1736.68'	135.55' R	570.84'	-	5.21'	-	TO BE REMOVED
334	TREE	N32° 56' 51.34"	W95° 16' 30.11"	1790.77'	134.51' R	546.72'	-	-	-	TO BE REMOVED
335	TREE	N32° 56' 51.83"	W95° 16' 30.09"	1838.37'	121.18' R	545.33'	-	-	-	TO BE REMOVED
336	TREE	N32° 56' 48.49"	W95° 16' 29.17"	1541.55'	299.09' R	551.88'	-	-	-	TO BE REMOVED
337	TREE	N32° 56' 48.73"	W95° 16' 29.51"	1555.89'	264.74' R	554.66'	-	-	-	TO BE REMOVED
338	TREE	N32° 56' 48.68"	W95° 16' 29.24"	1557.90'	287.98' R	544.34'	-	-	-	TO BE REMOVED
339	TREE	N32° 56' 48.64"	W95° 16' 29.12"	1557.49'	299.19' R	543.61'	-	-	-	TO BE REMOVED
340	TREE	N32° 56' 48.25"	W95° 16' 29.81"	1501.40'	254.92' R	547.68'	-	-	-	TO BE REMOVED
341	TREE	N32° 56' 48.66"	W95° 16' 30.50"	1522.94'	186.73' R	574.19'	4.99'	13.91'	-	TO BE REMOVED
342	TREE	N32° 56' 48.54"	W95° 16' 30.17"	1520.50'	217.13' R	565.86'	-	5.63	-	TO BE REMOVED
343	TREE	N32° 56' 48.82"	W95° 16' 30.24"	1545.05'	202.39' R	552.47'	-	-	-	TO BE REMOVED
344	TREE	N32° 56' 44.17"	W95° 16' 32.96"	1026.21'	126.95' R	571.32'	16.72'	23.45'	-	TO BE REMOVED
345	POLE UTIL	N32° 56' 44.81"	W95° 16' 37.41"	971.26'	253.229L	532.88'	-	-	-	ADD OBSTRUCTION LIGHTING
346	TREE	N32° 56' 47.78"	W95° 16' 33.96"	1347.58'	66.6691L	576.53'	12.48'	20.63'	-	TO BE REMOVED
347	TREE	N32° 56' 47.25"	W95° 16' 32.61"	1332.08'	59.2764R	568.33'	4.73'	12.81'	-	TO BE REMOVED
348	TREE	N32° 56' 54.40"	W95° 16' 28.12"	2137.27'	200.162R	589.22'	1.93'	13.56'	-	TO BE REMOVED
349	TREE	N32° 56' 53.86"	W95° 16' 27.26"	2108.26'	286.55R	589.72'	3.30'	14.80'	-	TO BE REMOVED
350	TREE	N32° 56' 55.28"	W95° 16' 26.02"	2277.34'	342.627R	581.14'	-	1.99'	-	TO BE REMOVED
351	TREE	N32° 56' 55.80"	W95° 16' 28.06"	2273.72'	161.489R	572.05'	-	-	-	TO BE REMOVED
352	TREE	N32° 56' 45.41"	W95° 16' 24.80"	1360.60'	749.758R	571.32'	-	15.09'	-	TO BE REMOVED
353	TREE	N32° 56' 45.84"	W95° 16' 23.23"	1442.52'	863.332R	558.32'	-	0.04'	-	TO BE REMOVED
354	TREE	N32° 57' 11.30"	W95° 16' 22.47"	3910.13'	131.131R	582.54'	-	-	-	TO BE REMOVED
355	TREE	N32° 57' 09.79"	W95° 16' 22.27"	3770.12'	195.085R	576.52'	-	-	-	TO BE REMOVED
356	TREE	N32° 57' 12.65"	W95° 16' 22.10"	4049.71'	119.496R	582.43'	-	-	-	TO BE REMOVED
357	TREE	N32° 57' 11.59"	W95° 16' 24.84"	3875.84'	69.5909L	584.15'	-	-	-	TO BE REMOVED
358	TREE	N32° 57' 11.61"	W95° 16' 21.52"	3965.55'	198.484R	580.37'	-	-	-	TO BE REMOVED
359	TREE	N32° 57' 10.01"	W95° 16' 23.06"	3770.48'	123.958R	573.96'	-	-	-	TO BE REMOVED
360	TREE	N32° 57' 10.80"	W95° 16' 24.05"	3820.24'	18.6907R	575.65'	-	-	-	TO BE REMOVED
361	TREE	N32° 57' 09.31"	W95° 16' 19.24"	3804.03'	455.557R	592.58'	-	-	-	TO BE REMOVED
362	TREE	N32° 57' 09.77"	W95° 16' 20.55"	3813.40'	334.555R	578.43'	-	-	-	TO BE REMOVED
363	POWER TRANSMISSION POLE	N32° 57' 18.20"	W95° 16' 31.84"	4326.96'	843.034L	604.02'	-	-	-	ADD OBSTRUCTION LIGHTING
364	POWER TRANSMISSION POLE	N32° 57' 14.38"	W95° 16' 32.32"	3947.22'	762.98L	605.41'	-	-	-	ADD OBSTRUCTION LIGHTING
365	TREE	N32° 57' 13.50"	W95° 16' 24.02"	4081.21'	62.9742L	592.74'	-	-	-	TO BE REMOVED
366	TREE	N32° 57' 12.19"	W95° 16' 24.35"	3946.71'	48.5956L	587.00'	-	-	-	TO BE REMOVED
367	POLE UTIL	N32° 57' 18.20"	W95° 16' 20.97"	4612.99'	37.4461R	556.79'	-	-	-	ADD OBSTRUCTION LIGHTING
368	TREE	N32° 57' 11.78"	W95° 16' 28.25"	3804.40'	351.722L	574.78'	-	-	-	TO BE REMOVED
369	TREE	N32° 57' 14.34"	W95° 16' 25.40"	4125.38'	200.6L	581.03'	-	-	-	TO BE REMOVED
370	TREE	N32° 57' 13.63"	W95° 16' 25.49"	4055.24'	186.417L	579.15'	-	-	-	TO BE REMOVED
371	TREE	N32° 57' 11.47"	W95° 16' 25.55"	3846.09'	124.041L	575.81'	-	-	-	TO BE REMOVED
372	TREE	N32° 57' 10.80"	W95° 16' 21.62"	3884.34'	1921.86L	583.50'	-	-	-	TO BE REMOVED
373	TREE	N32° 57' 12.44"	W95° 16' 23.16"	4001.67'	40.2677R	596.76'	-	-	-	TO BE REMOVED
374	TREE	N32° 57' 13.81"	W95° 16' 21.74"	4171.11'	111.879R	594.57'	-	-	-	TO BE REMOVED
375	TREE	N32° 57' 14.23"	W95° 16' 22.70"	4185.68'	21.2246R	592.19'	-	-	-	TO BE REMOVED

DES: MM
DR: ED
CH: MM
APP: MM

ISSUE RECORD

NO.	BY	DATE	REVISION

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51)
WINNSBORO, TX

AIRPORT LAYOUT PLAN

RUNWAY 1-19 OBSTRUCTION TABLE III

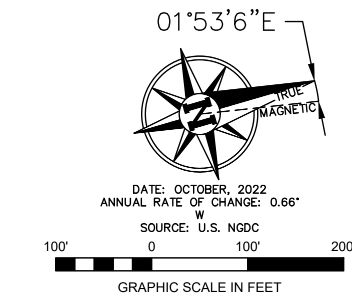
AIP GRANT NO. 3-40-0025-017-2021
KSA JOB NO. F89002
DATE: June 21, 2023

13
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-PROFILES.dwg : RUNWAY 1-19 OBSTRUCTION TABLE III

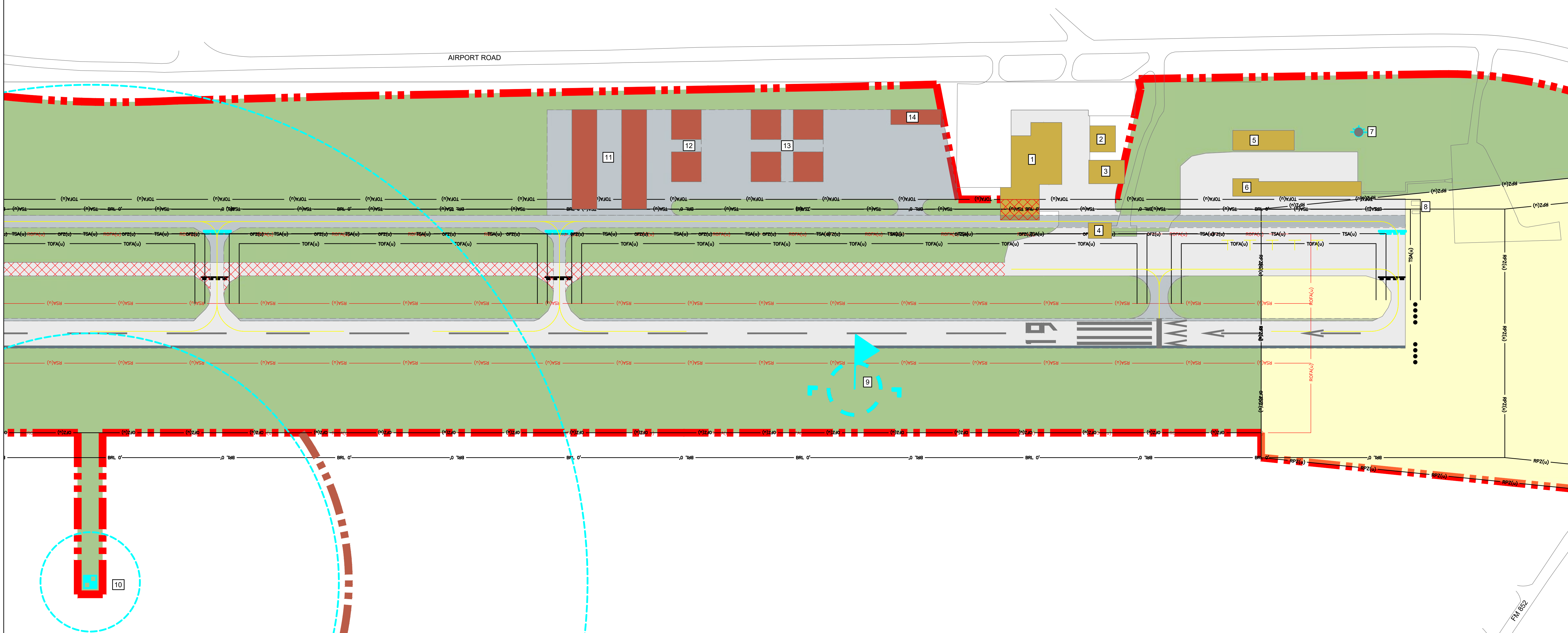
AIRPORT FACILITY LIST

BUILDING NUMBER	DESCRIPTION EXISTING	ULTIMATE	TOP ELEVATION
1	HIS HOUSE MINISTRIES	HIS HOUSE MINISTRIES	530.0'
2	BOX HANGAR	BOX HANGAR	525.9'
3	BOX HANGAR	BOX HANGAR	528.1'
4	BOX HANGAR	BOX HANGAR	-
5	SADE HANGAR	SADE HANGAR	-
6	T-HANGAR / PILOT LOUNGE	T-HANGAR / PILOT LOUNGE	531.5'
7	ROTATING BEACON	ROTATING BEACON	-
8	FUEL FARM	FUEL FARM	-
9	WINDCONE	WINDCONE	-
10	-	AWOS	-
11	-	10 UNIT T-HANGAR - 2	-
12	-	60' X 60' BOX HANGARS - 2	-
13	-	60' X 60' BOX HANGARS - 4	-
14	-	GA TERMINAL	-



NOTES:

1. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE NORTH CENTRAL ZONE, US FOOT, NAD 83/2019.
2. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.



KSA	DES: MM	ISSUE RECORD			
	DR: ED	NO.	BY	DATE	REVISION
	CH: MM				
	APP: MM				

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT TERMINAL AREA DRAWING

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

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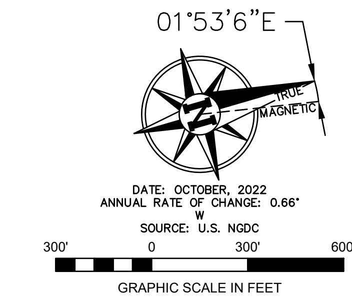
SHEET NO.

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-ATAD.dwg : AIRPORT TERMINAL AREA DRAWING

LAND USE LEGEND	
RUNWAY PROTECTION ZONE (RPZ)	
AIRPORT OPERATIONS AREA	
AVIATION RELATED DEVELOPMENT AREA	
FUTURE AVIATION RELATED DEVELOPMENT AREA	



NOTES:

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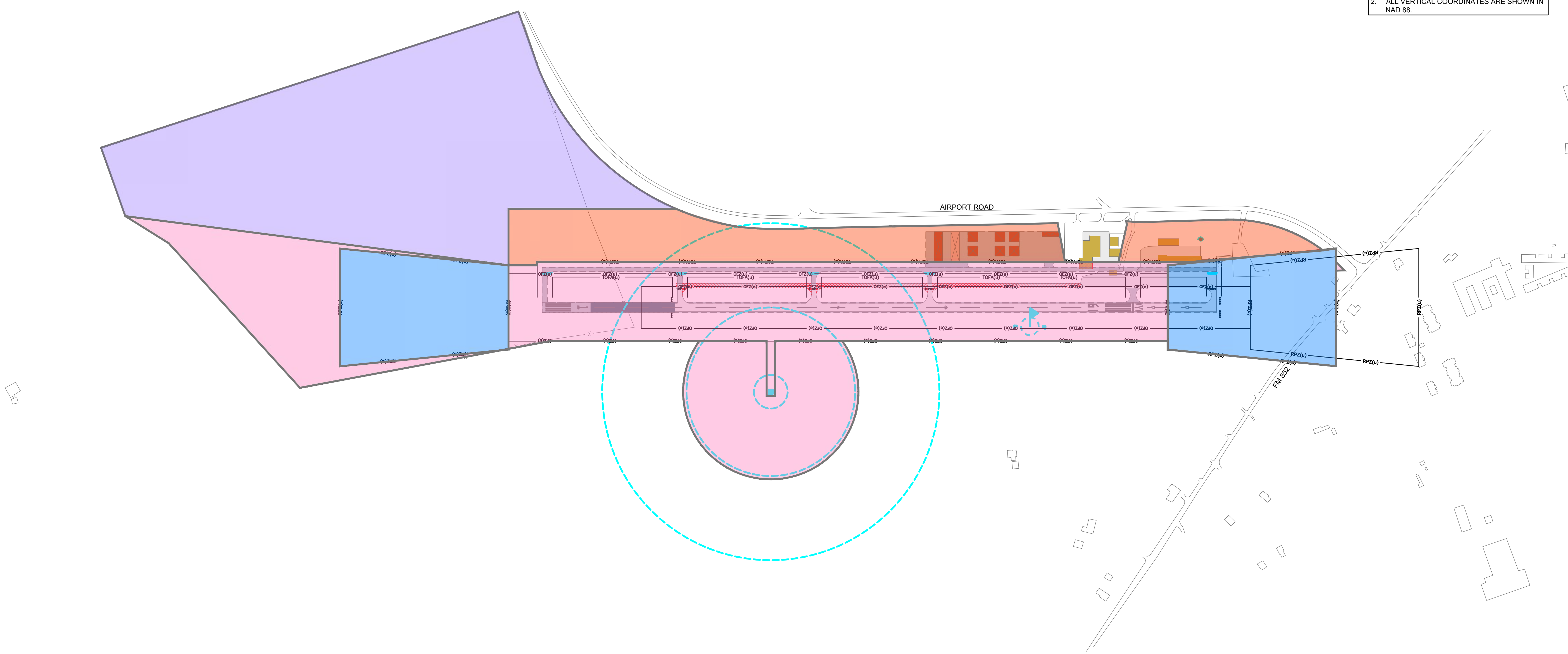
2. ALL VERTICAL COORDINATES ARE SHOWN IN NAD 88.



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DES: MM	ISSUE RECORD			
DR: ED	NO.	BY	DATE	REVISION
CH: MM				
APP: MM				

WINNSBORO Municipal Airport

WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX

AIRPORT LAYOUT PLAN

AIRPORT LAND USE PLAN

AIP GRANT NO.	KSA JOB NO.	DATE:
3-40-0025-017-2021	F89002	June 21, 2023

15

SHEET NO.

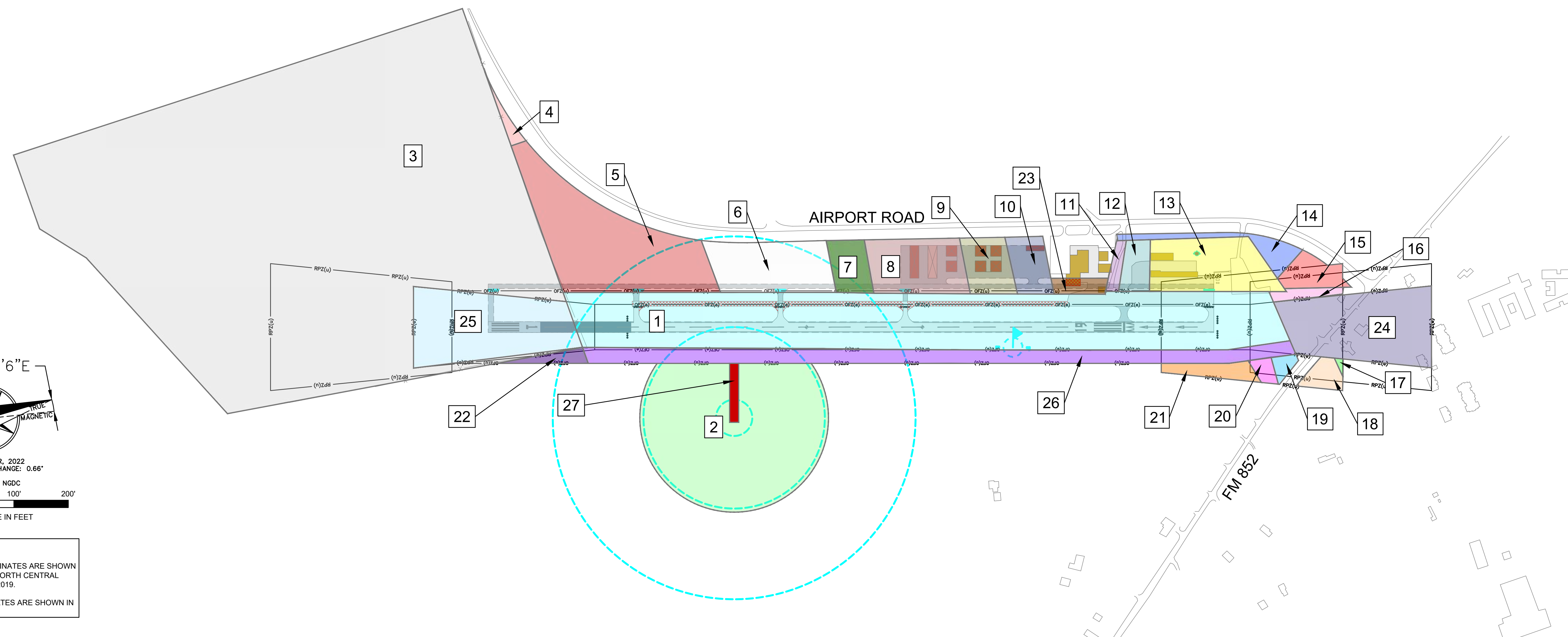
\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-ALUD.dwg : AIRPORT LAND USE PLAN

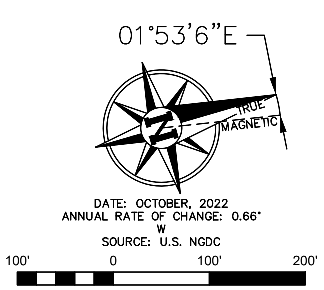
AIRPORT PROPERTY - DATA TABLE

PARCEL	GRANTEE	GRANTOR	INTEREST	ACREAGE	DATE ACQUIRED	VOLUME AND PAGE NUMBER	FEDERAL PROJECT NO.
1	WINNSBORO MUNICIPAL AIRPORT	FRANCES MULLINAX	FEE SIMPLE	27.90	7/1/1970	624\104	
2	WELLS STEPHEN S & TERRI		DEED	16.12	PROPOSED	-	
3	CITY OF WINNSBORO		DEED	99.27	05/17/1996	1490\357	
4	CITY OF WINNSBORO		DEED	0.36	09/19/2007	2282\459	
5	CITY OF WINNSBORO		DEED	10.07	09/19/2007	2282\459	
6	CITY OF WINNSBORO		DEED	4.21	09/19/2007	2282\459	
7	CITY OF WINNSBORO		DEED	1.36	09/11/2007	2282\459	
8	CITY OF WINNSBORO		DEED	3.65	09/19/2007	2282\459	
9	CITY OF WINNSBORO		DEED	1.78	09/19/2007	2282\459	
10	WOOD COUNTY		DEED	1.97	05/15/1992	1284\308	
11	KING, G B	FRANCES G. VAUGHN BOLDIN	FEE SIMPLE	0.37	OCTOBER, 1970	628\237	
12	CITY OF WINNSBORO	EMMA VAUGHN	FEE SIMPLE	1.10	JULY, 1970	624\101	
13	WINNSBORO MUNICIPAL AIRPORT	PAUL & NELLIE GORMAN	FEE SIMPLE	4.32	JULY, 1970	624\112	
14	CITY OF WINNSBORO		DEED	1.22	09/19/2007	2282\459	
15	CITY OF WINNSBORO		DEED	1.21	09/19/2007	2282\459	

AIRPORT PROPERTY - DATA TABLE

PARCEL	GRANTEE	GRANTOR	INTEREST	ACREAGE	DATE ACQUIRED	VOLUME AND PAGE NUMBER	FEDERAL PROJECT NO.
16	WELLS, STEPHEN S. & TERRI R.		-	0.48	PROPOSED	2010-00015535	
17	SHIRLEY DOLLIE MAE		-	0.06	PROPOSED	-	
18	KLIKA LINDA KAY		-	0.71	PROPOSED	-	
19	WELLS, STEPHEN S. & TERRI R.		-	0.55	PROPOSED	-	
20	MULLINAX WADE		-	0.59	PROPOSED	-	
21	MULLINAX WADE		-	0.09	PROPOSED	-	
22	WELLS STEPHEN S & TERRI		EASEMENT	0.51	PROPOSED	-	
23	HIS HOUSE MINISTRIES		-	0.61	PROPOSED	-	
24		FRANCES MULLINAX, J.T.MULLINAX, MAXINE MULLINAX, MAULINE HOOD, BILLY J. SPARKMAN, WINONA RUTH SPARKMAN	AVIGATION EASEMENT	8.04	NOVEMBER, 1970	629\136	
25		FRANCES MULLINAX, J.T.MULLINAX, MAXINE MULLINAX, MAULINE HOOD, BILLY J. SPARKMAN, WINONA RUTH SPARKMAN	AVIGATION EASEMENT	8.04	NOVEMBER, 1970	629\136	
26		FRANCES MULLINAX, MAXINE MULLINAX	EASEMENT	8.37	JULY, 1970	624\108	
27	WELLS STEPHEN S & TERRI		EASEMENT	0.37	PROPOSED		





GRAPHIC SCALE IN FEET

NOTES:

1. ALL HORIZONTAL COORDINATES ARE SHOWN IN TEXAS STATE PLANE NORTH CENTRAL ZONE, US FOOT, NAD 83/2019.
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KSA	DES: MM	ISSUE RECORD				WINNSBORO Municipal Airport	WINNSBORO MUNICIPAL AIRPORT (F51) WINNSBORO, TX	AIRPORT LAYOUT PLAN	AIRPORT PROPERTY MAP			16
	DR: ED	NO.	BY	DATE	REVISION				AIP GRANT NO.	KSA JOB NO.	DATE:	SHEET NO.
	CH: MM								3-40-0025-017-2021	F89002	June 21, 2023	
	APP: MM											

\\ksa.net\gateway\Projects\F89002\008 CAD\02 ALP\30 Sheets\F89002-C-ALP-APM.dwg : AIRPORT PROPERTY MAP

CHAPTER 6

RECOMMENDED PLAN

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

06 RECOMMENDED PLAN AND IMPLEMENTATION

6.1 OVERVIEW

With the selection of the Recommended Development Plan, the following sections present a summary of airport improvements identified for inclusion in the Capital Improvement Program (CIP), anticipated phasing, and funding sources. The analysis provides preliminary cost estimates to identify the local share of project costs and the total capital investment required from the airport sponsor over the planning period. These costs and associated funding sources should be used for planning purposes only and are subject to change at the time of project implementation based on construction costs, bidding, and project scope.

Additionally, the phasing and timing of future projects are essential and will be subject to funding availability, sponsor contributions, and operational demand/justification. Projects may be chosen from this plan and implemented based on dynamic market conditions and needs. The following analysis will serve as a guide for project implementation and will be flexible based on real-world factors and conditions.

6.2 CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program (CIP) identifies improvement projects recommended for the Airport over the various phases of the planning period, anticipates the order in which the projects might take place, and calculates preliminary project costs and funding sources. As the planning period progresses, the CIP becomes more flexible. It is recommended that the CIP be updated annually as new projects are identified, and priorities change. **Table 6.1** summarizes the projects identified for the 20-year planning period.

TABLE 6.1 – AIRPORT DEVELOPMENT SUMMARY

Runway	• Shift Runway 1/19 500' South, Extend Runway 1/19 287' South, Displace Runway 19 Threshold 500'. • Widen Runway 1/19 to 60'.
Taxiway	• Relocate Parallel Taxiway to 225' from Runway Centerline and extend to coincide with Runway Improvements. • Construct a new Connector Taxiway from Parallel Taxiway to Runway 19 Displaced Threshold.
Apron	• Construct New Terminal Area Apron
Auto Parking	• Expand Auto Parking with New Terminal Development
Miscellaneous	• Parallel Taxiway Object Free Area (TOFA) Grading • Construct a new Automated Weather Observing System (AWOS) • Construct 21,500 linear feet of 6' Wildlife/Security Fencing • Conduct Environmental Assessment (EA) for Runway/Taxiway Improvements • Construct New General Aviation Terminal • Property Acquisition of 5.98 Acres for Runway 19 RPZ control.

	• Property Acquisition of 7.72 Acres for AWOS, Runway Safety Area (RSA), and Taxiway Object Free Area (TOFA). • Property Acquisition of 0.16 Acres for Taxiway Object Free Area (TOFA).

6.3 COST ESTIMATES

Projects presented in the Recommended Development Plan may involve many variables and phases. Costs associated with these projects usually include preliminary engineering, design, construction, and administration oversight. The type and associated complexity will determine the lifecycle of each project. For instance, runway projects may involve many phases, and detailed engineering plans will be scoped and estimated during project implementation. Due to these variables, most estimates of costs are on a scale comparable to airports with similar types of projects and requirements. However, these estimates are usually conservative for planning purposes, allowing for adequate future budgeting.

In addition to raw materials, other factors are usually rolled into each project to give a total estimated cost, including the following:

- Preliminary Engineering Reports
- Design (usually estimated at 10% of construction costs)
- Construction, including mobilization costs for contractors
- Construction Administration (usually estimated at 12% of construction costs)

These estimates have been presented using the latest cost estimates at the time of recommendation (November 2022). It is assumed that actual costs will be subject to yearly inflation, and revised costs will be generated, if necessary, at the time of implementation. **Table 6.2** details estimated costs for projects included in the CIP, while **Table 6.3** summarizes projects anticipated to require private partner or third-party funding.

Traditionally, hangars are not considered high-priority projects and are often constructed with private or third-party funds; however, they are an integral component for attracting operators and businesses to the field and one of the few primary revenue sources generated at the field. While there are federally assisted funding programs in place for hangars, other priority items at an airport usually preclude these projects from being constructed in the short and intermediate planning periods. Additionally, hangars are constructed based on market conditions. Costs for hangars are provided for information purposes and are variable depending on the potential tenant's needs and lease agreement with the airport.

TABLE 6.2 – COST ESTIMATES

Project Description	Engineering	Construction	Total Project
Parallel Taxiway Object Free Area (TOFA) Grading	$44,068	$396,608	$440,676
Property Acquisition (Runway 19 RPZ) 11.86 Acres	-	-	$46,410*
Property Acquisition (AWOS/RSA/TOFA) 7.72 Acres	-	-	$60,216*
Property Acquisition (ROFA/TOFA)	-	-	$1,248
Construct New AWOS	$20,000	$180,000	$200,000
Construct 21,000 lf. of 6' Wildlife/Security Fencing	$110,110	$990,990	$1,101,100
Conduct EA for Runway Extension/Parallel Taxiway	-	-	$200,000
Shift Runway 1/19 (500' South), Extend Runway 1/19 (287' South), Displace Runway 19 Threshold (500')	$94,363	$852,000	$946,363
Widen Runway 1/19 to 60'	$104,012	$936,103	$1,040,115
Relocate and Extend Parallel Taxiway (225' from Runway Centerline)	$222,372	$2,001,351	$2,223,723
Construct New Connector Taxiway at Runway 19 Displaced Threshold	$33,308	$309,771	$343,079
Construct New Terminal Apron	$143,374	$1,290,361	$1,433,735
Construct New General Aviation Terminal	$100,000	$900,000	$1,000,000
Construct New 12,000-Gal Jet-A Tank with Self-Serve	$25,000	$225,000	$250,000
TOTAL	**$896,607**	**$8,082,184**	**$9,286,665**

*Property Acquisition costs are estimates of fair market value using information obtained from Wood County BCAD data, October 2022.

TABLE 6.3 – PRIVATE DEVELOPMENT COST ESTIMATES

Project Description	Engineering	Construction	Total Project
Construct 60' x 60' Box Hangars and Apron (6 Units)	$736,990	$6,632,907	$7,369,897
Construct 10 Unit T-Hangar (2 Units)	$281,491	$1,876,606	$2,158,097
TOTAL	**$1,018,481**	**$8,509,513**	**$9,527,994**

6.4 PROJECT SCHEDULE

As detailed in the cost estimates, the anticipated funding required to enact the Recommended Development Plan will be substantial. This is not expected to be completed in a singular time frame and is included in a schedule and phased implementation. With over $9 million in improvements, projects must be completed incrementally to remain financially feasible. Projects have been broken down into phases below to help Airport and municipal staff prioritize projects and plan accordingly. Depending on funding priority and user needs over the planning period, certain projects may be shifted into other phases.

6.4.1 SHORT-TERM (0-5 YEARS)

Projects listed in this phase are considered high priority and must be addressed soon after the plan’s adoption. As previously mentioned, this is dependent on funding levels. This planning period primarily focuses on design standards, safety, and the implementation of automated weather service at Winnsboro Municipal Airport.

The following projects are expected to occur in the short-term planning period.

1. Parallel Taxiway Object Free Area (TOFA) Grading
2. Property Acquisition (Runway 19 RPZ Control) 5.95 Acres
3. Property Acquisition (AWOS/RSA/TOFA) 7.72 Acres
4. Property Acquisition (ROFA/TOFA) 0.16 Acres
5. Construct New Automated Weather Observing System (AWOS)

6.4.2 MID-TERM (6-10 YEARS)

This phase of the plan is usually the most difficult to project. Improvements not funded as planned in the short term can fall into this timeline quite often. However, it is important to keep these in mind as development progresses on the Airport to ensure proper sequential development. In this planning period, the focus is on improving security and addressing the environmental requirements in preparation for the Runway/Taxiway improvements shown in the final phase. It is important to note that should demand dictate and justification be established, the projects shown in the long-term period could easily shift into this phase. This underscores the importance of the flexibility of the CIP.

The following projects are expected to occur in the mid-term planning period.

1. Construct 21,500 Linear Feet of Security/Wildlife Fencing
2. Conduct Environmental Assessment for Runway Extension and Parallel Taxiway Relocation

6.4.3 LONG-TERM (11-20 YEARS)

These projects are combined into ten years in the last phase of the planning horizon. These large-scale improvements focus on bringing the airport into compliance with FAA design standards while setting the foundation for future growth. These projects have been slated in this period due to the demand/justification that will need to be in place for these projects to qualify for funding assistance. Inherently, these improvements provide the most flexibility as they are far into the future of the Airport.

The following projects are expected to occur in the long-term planning period.

1. Shift Runway 1/19 (500’ South), Extend Runway 1/19 (287’ South), Displace Runway 19 Threshold 500’.
2. Widen Runway 1/19 to 60’ (Existing 50’)

3. Relocate and Extend Parallel Taxiway (225' from Runway Centerline)
4. Construct Taxiway Connector at Runway 19 Displaced Threshold
5. Construct New Terminal Apron
6. Construct New General Aviation Terminal
7. Construct New 12,000-Gal Jet-A Tank with Self-Serve Capability

6.5 ROUTINE MAINTENANCE PROJECTS

The Airport recently completed a crack-seal/seal coat on Runway 1/19, parallel taxiway, and apron. However, as airport infrastructure ages, routine maintenance will be required throughout the 20-year planning period to maintain a safe environment for aircraft operations. The Airport will need to routinely assess the pavement condition and airside operational requirements, such as markings and lighting, to ensure sound operation conditions.

6.6 FUNDING SOURCES

This section describes sources and eligibility criteria for funding programs the Airport may take advantage of to aid in funding future development projects. It is not guaranteed that all funding sources will be available and used on airport projects; however, it lists the available options and funding criteria. During the financial implementation of projects at the Airport, all funding sources should be evaluated and coordinated with the appropriate funding source for eligibility.

6.6.1 STATE FUNDING

Funding for airport projects falls under the purview of the Texas Department of Transportation (TxDOT) Aviation Division. As a Block Grant state, the State of Texas oversees the eligibility and distribution of grant funding for General Aviation and Reliever Airports. Texas is one of 10 Block Grant states that allocate funding on behalf of the FAA. Funding is eligible for cities and counties to obtain and disburse federal and state funds for these airports included in the 300-airport Texas Aviation System Plan (TASP). Continued justification and local sponsor cost share are determining factors in the timely implementation of these projects. Projects identified in the current year will go before the Texas Transportation Commission for approval before going out for proposals and funding. Most grant items funded through this program are 90/10 cost share.

This program will fund the largest share of the Airport's capital improvement needs over the duration of the development plan. Airports sponsors should consistently engage TxDOT Aviation staff of airport projects needs for consideration in the ACIP.

6.6.2 BIPARTISAN INFRASTRUCTURE LAW

At the end of 2021, the Federal Government passed the Bipartisan Infrastructure Law, which includes funding for airports over the next five years. Airports can utilize these funds for runways, taxiways, safety, terminal, airport-transit connections, and roadway projects. The funding will be provided annually, and each year, Winnsboro Municipal Airport will be entitled to $110,000. These funds will be provided at a 90/10 cost-share basis, like the state funding outlined above.

6.6.3 RAMP PROGRAM

TxDOT Aviation Division also administers the Routine Airport Maintenance Program (RAMP), which matches local government grants (50/50) up to $150,000 for basic improvements such as parking lots, fencing, and other airside and landside needs. This program is aimed at assisting airports to continue providing quality services and infrastructure through an annual maintenance basis. Projects that may not be eligible under other funding sources may be used hereafter other obligations are met. The local government match is 50% of actual costs plus any excess of $100,000 in total costs.

This program includes smaller budget airside and landside improvements such as:

- Construction of airport entrance roads
- Pavement of public airport parking lots
- Installation of security fencing
- Replacement of rotating beacon

TxDOT determines the eligibility of specific items and insists that airside improvements are secure before requesting assistance with landside maintenance and improvements.

6.6.4 HANGAR PROGRAM

This program allows an airport to utilize a four-year bank of Non-Primary Entitlement (NPE) for the construction of hangars. However, an airport's airside and safety deficiency needs must be met to qualify. Other considerations that must be met include justification for the additional hangar need, site-specific location based on an approved Airport Layout Plan (ALP), fair market hangar lease and rate structure in place, and adoption of airport minimum standards. This program assists airport sponsors with funding these structures with a local share of 10%, with the state contributing 90% up to a state maximum contribution of $600,000. It is important to note that should the Airport decide to pursue funding under this program; it would be exempt from discretionary funding for the following three (3) years.

6.6.5 TERMINAL PROGRAM

One additional program that TxDOT Aviation provides is specific to general aviation terminal buildings. Many airports across the state need upgraded or new terminal facilities for pilot lounges, FBO facilities, and airport administration staff. This program assists airport sponsors that have not previously been awarded funding for new terminal buildings at a local share of 50% up to a maximum state contribution of $500,000.

6.6.6 SPONSOR FUNDING

Airport funds are typically approved annually through the sponsor's budgeting process, and funds are allocated to the account for airport facilities operations and all activities necessary to provide services. As such, the airports' revenues, such as hangar lease income and other services, are used to match grant requirements. Maximizing revenues to continue to fund such activities with revenue generated directly from the airport is important. This fund will be critical to maintain to match future large Capital Improvement Projects.

6.6.7 ALTERNATE FUNDING SOURCES

When projects are not eligible for funding through traditional aviation funding sources, other local and alternative funding options should be considered. Innovative financial strategies can be evaluated with the support of local elected officials and the public. In addition to traditional municipal debt services such as general bond elections, other funding sources may be applicable.

Texas Enterprise Fund – The Texas Enterprise Fund (TEF) is the largest fund of its kind in the nation. The fund is a final incentive tool for projects that offer significant projected job creation and capital investment where a single Texas site competes with another viable out-of-state option. This may be useful in attracting aeronautical companies to the airport from other states, significantly impacting the local and state economy.

State Financing – Texas is committed to facilitating funding for companies and communities with expansion and relocation projects in the state. Asset-based loans for companies leverage loans to communities, and tax-exempt bond financing are just a few means of obtaining the capital necessary for a successful project.

Tax Incentives – The state also offers a variety of tax incentives and innovative solutions for businesses expanding in or relocating to Texas. Programs include Enterprise Zone sales tax refunds, manufacturing sales tax exemptions, property tax value limitations, and "freeport" inventory tax exemptions.

In addition to the possible funding courses mentioned above, federal programs assist with workforce and job creation along with research and innovation. Partnerships with area universities and junior colleges may be an exciting way to involve education in the Airport's development goals.

6.7 CAPITAL IMPROVEMENT PROGRAM SUMMARY

This program will not be solely funded by the airport sponsor. The cost estimates previously presented are broken down by phase and give an estimated cost share based on eligibility. Subject to approval and funding, the following estimates by project type are listed in **Table 6.4**.

6.8 PHASING PLAN

The cost estimates indicate the suggested phasing for projects during the short, intermediate, and long-range planning periods. The proposed improvements for each phase are illustrated graphically by period. These are suggested schedules, and variance from them will almost certainly be likely, particularly during the later periods. Attention has been given to the first five years as being the most critical, and the scheduled projects outlined in this time frame should be adhered to as much as possible. The demand for certain facilities and the economic feasibility of their development are the prime factors influencing the timing of individual project implementation. Care must be taken to provide an adequate lead time for detailed planning and construction of facilities to meet aviation demands. **Table 6.5** presents the phasing plan timeline for Winnsboro Municipal Airport. **Exhibit 6.1** provides a graphical illustration of the phasing plan.

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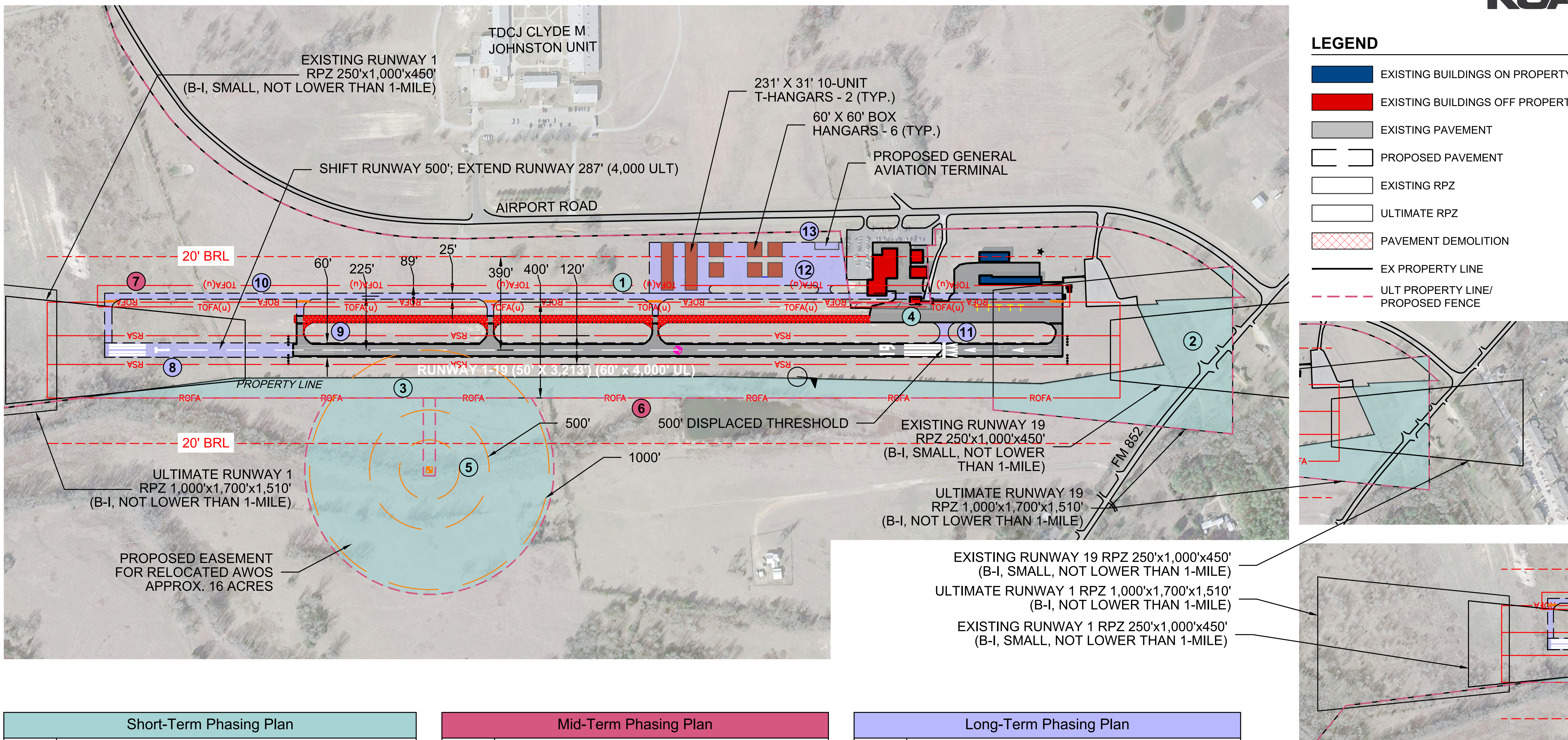
TABLE 6.4 – PROJECT COST SUMMARY

	Project Description	Total	Federal / State Share	Local / Private Share
1	Parallel Taxiway OFA Grading	$440,676	$396,608	$44,068
2	Prop. Acquisition (Rwy 19 RPZ) 5.95 Ac.	$46,410	$41,769	$4,641
3	Prop. Acquisition (AWOS/RSA/TOFA) 7.72 Ac.	$60,216	$54,194	$6,022
4	Prop. Acquisition (ROFA/TOFA) 0.16 Ac.	$1,248	$1,123	$125
5	Construct New AWOS	$200,000	$180,000	$20,000
	Short-term Subtotal	$748,550	$673,695	$74,855
6	Construct 21,500 lf. Of 6' Wildlife Fencing	$1,101,100	$990,990	$110,110
7	Conduct EA for Runway/Taxiway Improvements	$200,000	$180,000	$20,000
	Mid-term Subtotal	$1,301,100	$1,170,990	$130,110
8	Shift, Extend, Displace Runway 1/19	$946,363	$851,727	$94,636
9	Widen Runway 1/19 to 60'	$1,040,115	$936,104	$104,012
10	Relocate, Extend Parallel Taxiway	$2,223,723	$2,001,351	$222,372
11	Construct Connector at Rwy 19 Displacement	$343,079	$308,771	$34,308
12	Construct New Terminal Apron	$1,433,735	$1,290,362	$143,374
13	Construct New General Aviation Terminal	$1,000,000	$900,000	$100,000
14	Construct New 12,000-Gal Jet-A Tank	$250,000	$225,000	$25,000
	Long-term Subtotal	$7,237,015	$6,513,314	$723,702
	TOTALS	$9,286,665	$8,357,999	$928,667

TABLE 6.5 – PROJECT COST SUMMARY

Project Description	Justification	Total Cost
Short-Term (0-5 Years)		
Parallel Taxiway OFA Grading	Safety	$440,676
Property Acquisition (Runway 19 RPZ) 5.95 Acres	Safety	$46,410
Property Acquisition (AWOS/RSA/TOFA)7.72 Acres	Safety	$60,216
Property Acquisition (ROFA/TOFA) 0.16 Acres	Safety	$1,248
Construct New Automated Weather Observing System (AWOS)	Safety/Capacity	$200,000
Mid-Term (6-10 Years)		
Construct 21,500 lf. of 6' Wildlife Fencing	Safety/Security	$1,101,100
Conduct EA for Runway/Taxiway Improvements	Safety/Capacity	$200,000
Long-Term (11-20 Years)		
Shift, Extend, Displace Runway 1/19	Safety/Capacity	$946,363

Widen Runway 1/19 to 60’	Safety/Capacity	$1,040,115
Relocate, Extend Parallel Taxiway	Safety/Capacity	$2,223,723
Construct Connector at Runway 19 Displacement	Safety/Capacity	$343,079
Construct New Terminal Apron	Capacity	$1,433,735
Construct New General Aviation Terminal	Capacity	$1,000,000
Construct New 12,000-Gal Jet-A Tank with Self-Serve	Capacity	$250,000
TOTAL		$9,286,668



Short-Term Phasing Plan	
1	Parallel Taxiway OFA Grading
2	Prop. Acquisition (Rwy 19 RPZ) 11.86 Ac.
3	Prop. Acquisition (AWOS/RSA/TOFA) 7.72 Ac.
4	Prop. Acquisition (ROFA/TOFA) 0.16 Ac.
5	Construct New AWOS

Mid-Term Phasing Plan	
6	Construction 21,500 lf. Of 6' Wildlife Fencing
7	Conduct EA for Runway/Taxiway Improvements

Long-Term Phasing Plan	
8	Shift, Extend, Dispalce Runway 1/19
9	Widen Runway 1/19 to 60'
10	Relocate, Extend Parallel Taxiway
11	Construct Connector at 19 Displacement
12	Construct New Terminal Apron
13	Construct New General Aviation Termanal

0' 200' 400'

WINNSBORO Municipal Airport
Frank M. White Memorial Airport

Exhibit F.1 PHASING PLAN

APPENDIX A

SWOT ANALYSIS

WINNSBORO
Municipal Airport
Frank M. White Memorial Airport

A SWOT SUMMARY

A.1 INTRODUCTION

A key component of the beginning of the planning exercise was a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, completed during the Kickoff Meeting on March 31, 2022. The SWOT analysis is to be performed to determine the internal and external influences on the operation and management of the Airport. This exercise helps determine facility requirements and identify the vision for Winnsboro Municipal Airport, forming the framework for the planning process.

The primary objective of the SWOT is to produce tangible, identifiable focus areas for the business objectives. In this case, it applies to improving the Airport's services, development areas, and key market drivers. As previously mentioned, SWOT stands for strengths, weaknesses, opportunities, and threats. To accurately determine how to apply factors in each category, we must first understand each factor.

Internal Factors: These factors are the most easily understood in most SWOT analyses because they are internal to the business/entity. The Airport can (even if indirectly) control most of these factors and are directly related to the Airport. When determining initial action items related to a SWOT, these internal factors can be prioritized and easily influenced by direct action. For example, if an airport has identified that airport staffing levels are a weakness, they may be able to directly change the factor by adding staff.

- **Strengths**: The characteristics of the Airport that give it an advantage over others or are perceived by customers as a positive asset. We must first understand what gives the Airport an advantage.
- **Weaknesses**: These are the characteristics that may be limiting the success of the Airport. These may be perceived as negative aspects or areas of needed improvement compared to others. These may be one of the most important aspects of creating a successful SWOT analysis and are usually the basis for improvement moving forward.

External Factors: It is important to note that these external factors present the environment within which the Airport is operating. Therefore, many of these factors can't be directly changed by the Airport but influence how the objectives of the Airport may be impacted.

- **Opportunities**: After clearly identifying what the Airport's strengths and weaknesses are, the sponsor must identify opportunities that can help grow the success of the Airport. These factors serve as a catalyst to improve upon the Airport and help realize future goals.
- **Threats**: The last element in the analysis is the potential pitfalls or competitive disadvantages that may arise during the implementation of previously identified opportunities. This will ensure a reality-based business approach for achieving the goals set forth in the analysis.

Identifying SWOT factors is important and can be applied to airports, just as with any business enterprise. In fact, most municipally owned and operated airports greatly benefit if the management of the Airport is influenced by business approaches. Often, new revenue streams, market opportunities, and partnerships are realized by the results of a SWOT exercise. When combined with an airport planning effort, the results of a SWOT can expedite implementation.

A.2 EFFECTIVE SWOT ANALYSIS

There is no right or wrong way to conduct a SWOT analysis. The goal is to be engaging, diverse, and thorough. Brainstorming issues in each key area is a positive way to get thoughts and ideas down on paper that can be put in perspective. In this exercise, participants are encouraged to come up with as many ideas as possible even though they may apply in multiple areas in the SWOT.

Once ideas are documented, a SWOT diagram can be made in various shapes and sizes to help articulate the thoughts of the exercise. This diagram is helpful in organizing thoughts and visualizing the strengths, weaknesses, opportunities, and threats. Only after quantifying these and putting them into the diagram can focus and priority be given to improvement and capitalizing on these. When adding strengths and weaknesses, one must always keep in mind that they are internal factors that are generally easy to identify. Factors can vary significantly depending on the purpose of the business venture and SWOT analysis.

A.3 STRENGTHS

- Runway & Taxiway Condition
- Community Support
- Self-Service Fuel Availability
- Location (Proximity to Pilot Training)
- Art Festivals
- MOGAS Availability
- Uncongested Airspace
- Courtesy Car
- Funding
- National Plan of Integrated Airport Systems (NPIAS)
- Available Land for Development

A.4 WEAKNESSES

- Hangar Availability
- Overall Facility Conditions
- Wildlife/Security Fencing
- Lack of Automated Weather Observing System (AWOS)
- Approaches (Currently circling only)
- Lack of Jet-A
- Runway Length
- TECQ Tank Spill Prevention
- Brand/Awareness

A.5 OPPORTUNITIES

- Funding (BIL)
- Branding/Outreach – City Website
- Ground Transportation
- Destination/Food/$100 Hamburger
- Community Involvement/Schools
- Fuel (Jet-A)
- Aircraft/Avionics Maintenance

A.6 THREATS

- Airport Competitors
- Lack of Community Awareness
- Time/Priorities
- Low Based Aircraft (10)
- Airport Category

WINNSBORO AIRPORT BOARD
December 12, 2023

Item No. 7

Discussion/Action: Review of Airport Board Recommendations to the City Council Regarding the Approved Airport Master Plan