ABILENE MUNICIPAL AIRPORT

AIRPORT MASTER PLAN

ABILENE, KANSAS |
July 15, 2020

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EXECUTIVE SUMMARY

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STUDY OBJECTIVES AND APPROACH

The primary objective of a Master Plan is to produce a long-term development program that will yields a safe, efficient, economical and environmentally acceptable air transportation facility with opportunities for local revenue generation.

This Master Plan for the Abilene Municipal Airport is a comprehensive study providing an analysis of the needs, defining Abilene's role within the regional airport system and evaluating alternatives to provide direction for future airport development.

This plan will replace the previous Master Plan that was completed by Bucher & Willis, Consulting Engineers, contracted in 1978. It is typical for communities to periodically update their airport's Master Plan so they can provide adequate aviation facilities to meet demands placed upon them, and to coordinate project approvals, design, financing and construction to avoid experiencing detrimental effects due to inadequate facilities.

The commitment to formulate this Master Plan is evidence that the City of Abilene recognizes the challenges inherent in providing for future aviation needs as well as the importance of the airport to Abilene, Dickinson County, and the region. The cost of maintaining a viable airport is an investment that can yield impressive community benefits. By maintaining a Master Plan, the Abilene Municipal Airport will continue to be an economic asset to the residents of Abilene and the surrounding region.

This Master Plan is Abilene's strategy for the development of the airport. The accomplishment of this objective requires an evaluation of the existing airport operations and facilities in order to determine which recommendations are needed for the future. Finalized documents in Chapter Five and related Appendixes will contain a complete Airport Layout Plan (ALP) that depicts all of the proposed developments at the Abilene Municipal Airport over the next 20 years.

A key element of the Master Plan is to provide a continuous planning process, which is a step-by-step or phased outline of the proposed improvements required to meet the community's ultimate aviation needs. This continuous planning process benefits the responsible officials by giving them advanced notice of future airport funding needs so that appropriate steps can be taken to secure adequate funding.

To assist with the implementation of this Master Plan for individuals who may not have very much aviation knowledge, a quick comprehensive reference of aeronautical acronyms and definitions is included as part of this Master Plan. The quick reference guide is attached as *Appendix A: Acronyms and Glossary of Aviation Terms*.

This executive summary will briefly touch on each study objective and highlight the main results that were obtained as part of this Master Plan.

Chapter one | Existing Conditions

Objective

Assemble and organize relevant information and data for the Abilene Municipal Airport, the City of Abilene, and Dickinson County.

Results

Prior to being able to forecast the future needs of the airport, the existing airport facilities need to be documented and compiled. Data collection and related analysis/study was completed for the airport, and Chapter One of this Master Plan presented the findings. Inventory was taken on all airside (such as runways, taxiways, lighting, marking and navigational aids) as well as the landside (such as terminal buildings, hangars, based aircraft, aprons, automobile access and parking, utilities and fuel storage) facilities currently present at the airport. In addition to this inventory of the airport, historical and socioeconomic conditions for Dickinson County and Abilene were acquired. The airport system role is examined from a regional, state and national perspective, and the economic impact of the airport is discussed.

It is found that the airport, City, and County all offer many needed and attractive facilities for the aviation industry. The existence and necessity of many of these facilities will help to sustain and increase the demand on the airport in the coming years. The economic impact of the Airport has an overall positive influence for the City of Abilene and the surrounding communities.

Chapter two | Aviation Demand Forecasts

Objective

Develop detailed projections of future aviation activity by quantity and type. Determine the critical design aircraft for the Airport.

Results

Two main aviation elements, based aircraft and aircraft operations, were evaluated to formulate the aviation demand forecasts for the Airport throughout the planning horizon. Many forecast methodologies were used in conjunction with looking at the National aviation trends and the local historical trends of the Airport to produce the final forecast projections. The findings of this forecast analysis are presented in Chapter Two.

Based aircraft are anticipated to increase from the current nineteen based aircraft to twenty-three based aircraft by 2038. General Aviation Operations are anticipated to increase from the 3,550 operations in 2017 to 5,968 operations toward the end of the planning horizon in 2038. The forecasts also concluded that the fleet mix of predominantly single-engine aircraft would likely stay similar; however, if additional runway length was provided, growth in the multi-engine aircraft and small to medium turbine-powered aircraft could be expected.

Analysis of the existing fleet mix and based aircraft yielded an Airport Reference Code (ARC) of B-I and the Piper 31T Cheyenne II turboprop as the most critical aircraft.

Projected increases in based aircraft and general aviation operations confirm that the Airport will likely require some facility upgrades in order to keep up with the expanding demand on the Airport. The next step of the Master Plan will examine whether the existing facilities are capable of handling the forecasted demands and the critical design aircraft.

Chapter three | Facility Requirements

Objective

Estimate the current and future levels of airfield capacity. Identify the facility requirements needed to meet projected demand for existing, short, intermediate, and long-term time frames.

Results

Several important facility requirements were studied (such as runway orientation and wind coverage, runway length, runway pavement strength and condition, the taxiway system, etc.) to determine what facility upgrades would be required in the planning horizon to ensure the airport will meet the forecasted demands. The findings of this chapter are summarized as follows:

- The orientation of existing Runway 17/35 is adequate for the ARC B-I critical design aircraft.
- A crosswind runway is not required for small ARC A-1 and B-1 aircraft at the airport. However, a crosswind runway is desired by the Airport and, thus, will be shown on the Airport Layout Plan.
- Based on current data, the primary runway needs to be 3,800-foot-long by 60 foot wide. The existing runway is adequate; however, the Airport desires a 5,000-foot-long by 75-foot runway and, thus, the longer runway is shown as the ultimate on the Airport Layout Plan sheets.
- Runway 17/35 has pavement strength of 13,000 pounds Single Wheel Gear (SWG). This is adequate for the critical design aircraft.
- The existing parallel taxiway is 35 feet wide and is required to be 25 feet wide and, thus, exceeds needs. The parallel taxiway should be maintained.
- The current aircraft parking apron is sufficiently sized, and four tie downs are adequate for the planning horizon. The Airport should maintain the current size and tie-downs during the planning period.
- Additional hangars space will likely be needed over the planning horizon. It is recommended to build an additional 10-unit T-Hangar to accommodate aircraft.
- Lighting and Navigational Aids are adequate for the Airport and should be maintained.
- The existing Terminal Building should be upgraded/expanded to accommodate Airport needs.

With these facility requirements defined, the next step will examine feasible and economically sensible design alternatives that will achieve the required upgrades.

Chapter four | Alternative Development & Evaluation

Objective

Evaluate concepts of the various alternatives for airport development as determined by current and future facility requirements.

Results

Four runway and four landside alternatives were developed to study the feasibility to construct the needed and desired improvements at the airport. Each concept can be found in Appendix J of this Master Plan. When discussing and selecting the preferred alternative, some of the major issues evaluated were:

- Property needed to be acquired to construct the alternatives.
- New pavement needed versus utilizing existing pavement.
- Availability of airport Land for landside development.
- Total Cost

The original selected alternatives were the Airside Primary Runway Alternative R-1 and Landside Alternative L-4. However, after further discussions with the City, the ultimate ALP drawings will reflect a combination of the Airside Primary Runway Alternatives and Landside Alternatives. These concepts will be utilized in the creation of the Airport Layout Plan in Chapter Five.

Chapter five | Airport Layout Plan

Objective

Refine the recommended airport development concept(s) into the airport's final plan for development.

Results

Upon acceptance of the overall design concept for the airport, the Airport Layout Plan (ALP) could be created. The ALP is a graphical representation of the existing, interim, and future long-term developments of the airport. The ALP involves a much more detailed analysis and design of future improvements in regards to ensuring all future improvements will meet the FAA's design criteria as well as the Federal Aviation Regulation (FAR) *Part 77 Obstructions Affecting Navigable Airspace*. Information regarding all of the various plan sheets that make up the ALP can be found in Chapter Six. The ALP drawings are located in Appendix M.

With the approval of the ALP as part of this Master Plan Report, it is important the City of Abilene, as the airport sponsor, understands that keeping the ALP current is a legal requirement for all airports that receive Federal funding assistance. Should the City construct any future airport improvements or need to adapt/change the ALP due to changes in the aviation demand at the airport, the City will need to update the ALP and obtain ALP approval from the FAA.

Chapter six | Capital Improvement Plan

Objective

Prepare a Capital Improvement Plan (CIP) to assist in the implementation of the recommended facilities implementation plan for Abilene Municipal Airport. Establish development priorities and schedule proposed development items and estimate development costs.

Results

The final step of the Master Plan process is to develop a CIP. The CIP in Chapter Six addresses the proposed developments in regard to estimating the project cost and realistic scheduling for putting the developments in place. The final CIP is a tool that the City can use to strategically plan for future airport development and ensure that proper local funding is allocated and available when it comes time to design and build the planned airport improvements. The CIP includes cost estimates that are broken down into three phases: short term (0-5 years), intermediate term (5-10 year), and long term (10-20 years) timeframes. The 20-year CIP requires $3,820,000 of Federal Aviation Improvement Program (FAIP) funding and $382,000 of local matching funds.

Chapter seven | Financial Feasibility Analysis

Objective

All airport facilities are significant financial investments for any community. Therefore, as the Abilene Municipal Airport is developed and changes, it is important for the City to be able to continue to fund the Capital Improvement Program (CIP) and finance airport operations. This Chapter discusses the funding and financial feasibility of completing the short-term projects of the Airport's CIP.

Results

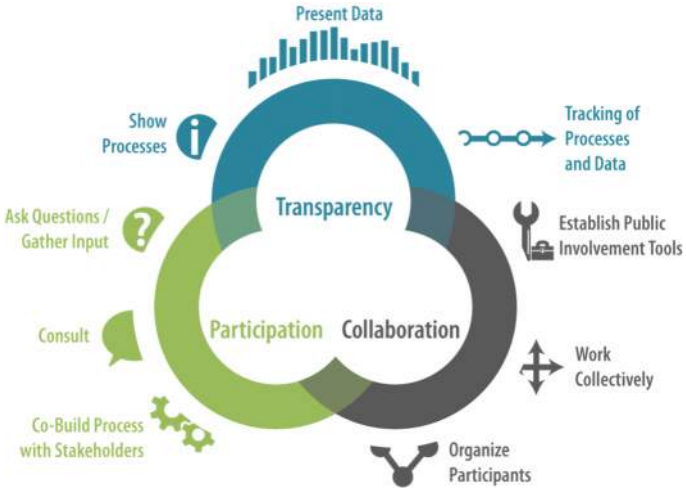
Several funding sources including Federal, State and Local are discussed in depth and the availability of those funds. Also reviewed is the Airport's financial structure, budgeting process, and opportunities to better the Airport's financial position.

The City of Abilene has been able to match federal dollars in the past and has several avenues available to allow the City to match Federal funds. The budgeting process has allowed the City to maintain and fund Airport projects and operations sufficiently. Two recommendations for potentially increasing the Airport revenues are provided and include: Fuel Service and Rental/Lease Rates. These two opportunities are discussed in more detail in Chapter 7, Revenue Discussion.

Overall, the financial review reveals that the City's entitlement funding along with local match will be adequate to fund the CIP included in Chapter 6 over the 20-year planning horizon. The recommendation of this Master Plan is for the City of Abilene to continue to budget appropriately for the local share amount to match the Federal Entitlement dollars allotted to the Abilene Municipal Airport every year. This financial planning will allow the City to continue to maintain and develop the Airport in a financially prudent manner without placing a large financial burden on the City in any given year.

PUBLIC INVOLVEMENT

One of the most important elements throughout this planning process is the direct involvement of those parties which are most affected by the Master Plan results. This was accomplished through multiple public meetings, public presentations and public involvement.



Working drafts of the Master Plan during its preparation were coordinated with key City of Abilene officials, including the City Administrator, City Finance Director, City Airport Advisory Board (AAB), and City Commission for review and comment. Draft chapters were presented to the City for review and amendments of the Master Plan at three different milestones. Chapters 1 & 2 were reviewed with the City prior to original submittal to the FAA on March 28th, 2018 and the revised submittal to the FAA on April 30th, 2018. Chapters 3 & 4 were then reviewed with the City prior to submittal to the FAA on July 25th, 2018. Information in Chapters 5, 6, & 7 were discussed with the City in a meeting held on January 9th, 2020. These remaining Chapters were then finalized and submitted to the City for review on January 27, 2020.

CONCLUSION

The City of Abilene Airport Advisory Board and City Commission took a proactive, involved role in the preparation of the Master Plan report. The ultimate destiny of the Airport will be a direct reflection on the City's commitment to ensuring that the visions of this Master Plan are made a reality.

The validity of any planning document is only as good as the groups and personnel working hard behind the scenes to advance future developments forward. With dedicated involvement and continuous open lines of communication between the FAA, KDOT Aviation, Alfred Benesch & Company, Inc. and local organizations, the airport can finance, plan and construct all future developments which are prudently and strategically planned out as part of this Master Plan report.

This Airport Master Plan is a comprehensive study providing analysis of the needs at the airport, defining the airport's role within the regional airport system, and evaluating design alternatives to provide direction for future airport developments. The primary objective of a Master Plan is to produce a long-term development program that will yield a safe, efficient, economical, and environmentally acceptable air transportation facility.

CHAPTER 1

EXISTING CONDITIONS

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EXISTING CONDITIONS

INFORMATION COLLECTION AND ANALYSIS

The initial step in preparing an airport Master Plan for the Abilene Municipal Airport (K78) is the collection and analysis of information that pertains specifically to the Airport and the area it serves. The evaluation and inventory of the existing conditions and facilities serves as an overview of the Airport and the role it serves in local, state and national aviation systems. The inventory also serves as a tool for determining future development of the Airport and the surrounding areas. The information outlined in this chapter provides a foundation for all subsequent chapters.

The basis of a Master Plan requires the collection of existing Airport information and information about the surrounding area. Examples of information obtained include:

- Physical inventories, facility descriptions and services currently provided by the Airport.
- Background information pertaining to the Abilene area, including airport history, growth, on-airport businesses and recent developments at and around the Airport.
- Reviewing existing regional plans and studies affecting transportation and Airport related services to determine their impact on the Airport.
- Population and economic factors which influence the market and future Airport development.

An accurate and complete inventory is essential to a Master Plan's success for the reason that the findings and assumptions made are dependent on the collected information. This information was obtained from site visits and interviews with representatives of the Abilene City staff, the Abilene Airport Advisory Board, businesses with employees at the Airport, the Abilene City Commission, Kansas Department of Transportation (KDOT) Division of Aviation, and the Federal Aviation Administration (FAA).

Information was also obtained from available documents and studies concerning the Airport and the Abilene area, including the current approved Abilene Municipal Airport Layout Plan (ALP) and Narrative Report from 1978, the Kansas Airport System Plan 2016 (KASP), and the Kansas Aviation Economic Impact Study 2010 (KAEIS).

AIRPORT SETTING

Serving as the county seat of Dickinson County, Abilene, Kansas is situated on either side of Mud Creek, a tributary to the Smoky Hill River which flows to the south of the city. Abilene, with an estimated population of 6469, is located south of the junction of KS-15 and I-70.

Abilene Municipal Airport is situated on a 207-acre site located approximately one mile south-southwest of Abilene's downtown business district. Exhibit 1A below depicts the Abilene study area vicinity and its regional and national setting. Abilene is approximately 90 miles (in driving distance) west of Topeka, 94 miles North of Wichita, 26 miles East of Salina, and 160 miles South of Lincoln, Nebraska.

Exhibit 1A
Abilene Vicinity Map

Founded in 1857, the City of Abilene was founded as "Mud Creek" as a stagecoach stop. It wasn't until 1860 that it was renamed "Abilene" which means "city of the plains"

In 1867, the Kansas Pacific Railway (Union Pacific) put in a switch at Abilene that enabled cattle to be loaded onto rail cars and sent east. Joseph McCoy utilized the railroad to transport cattle from all over the Great Plains making Abilene the very first "cow town" of the west and inspiring the phrase "the real McCoy".

Abilene became home to President Dwight D. Eisenhower when his family moved to Abilene in 1892. The Dwight D. Eisenhower Presidential Library and Museum as well his boyhood home is located in Abilene.

Abilene's two major employers are Russell Stover Candies Inc. and Orscheln Farm & Home, both of whom have distribution centers in the city.

As the largest town in Dickinson County, Abilene is the county seat. Dickinson County, named after U.S. Senator Daniel S. Dickinson, in addition to the Union Pacific Rail line running east-west through town, there is also a BNSF rail line runs north-south through Abilene. Both rail lines contribute to the county's strong agricultural economy and manufacturing businesses.

The Abilene Municipal Airport is a public-use facility, owned and operated by the City of Abilene. The City is responsible for maintaining and operating the Airport according to FAA grant assurance agreements.

AIRPORT HISTORY

1944	Abilene City Commission passed a motion to create an ordinance authorizing a bond election ($50,000) for funds to purchase land for an airport. The bond election was approved the following month and action was taken to acquire the quarter-section of land in Township 13, Range 2, necessary for the Airport. An additional $25,000 in temporary notes was sold by the City late in the year.
1945	The Airport Committee of the Chamber of Commerce submitted their recommendations for airport development to the City Commission. An additional $30,000 in Airport Bonds was authorized for sale.
1948	The City of Abilene received a grant of $23,053 from FAA covering 25% of land acquisition costs and 50% of development costs for acquisition of a drainage easement, grading and drainage for the N-S, NW-SE, and NE-SW landing strips, taxiways and adjacent areas, paving of the N-S runway (50' x 2100') and taxiway apron paving, seeding of disturbed areas, furnishing and installation of electrical ducts, and relocation of utilities.
1953	Conventional hangar building erected.
1956	Existing hangar building expanded and improved by raising its roof 32 inches and installing new hangar doors.
1959	0.7 acre of land purchased for the Airport. The City of Abilene applied to the FAA for a grant for a 900' x 50' runway extension, a 900' x 40' taxiway extension, and an additional 11 acres of land.
1960	The City received a $25,000 grant from the FAA. The City Commission's offer of $10,815 in payment for land, damaged and clear zone rights to the individual owner was rejected by the owner, and the City moved toward acquisition of the land by condemnation. Planning Committee for Airport Zoning is created with the responsibility of regulating land uses adjacent to the Airport.
1961	FAA Project Grant (increased to $33,000) was formally accepted by the City of Abilene, and shortly afterward bids were received for the Airport improvements. Extension of the paved runway (17-35) and one partial taxiway was undertaken and completed. Utility lines north of the airfield were also lowered, underground electrical ducts installed, and drainage, grading and seeding completed. The Commission instructed the City Manager to install runway lighting as per FAA recommendations.
1962	Installation of 28 low intensity runway lights and 12 low intensity threshold lights (R/W 17-35), taxiway lights, and an airport beacon. A bituminous seal coat was applied to R/W 17-35 and displaced threshold markings added on the south end of R/W 17-35. FAA evaluated Abilene Municipal Airport and recommended immediate construction of a parallel taxiway to the south end of Runway 17-35. FAA also noted ultimate airport needs including paving the main runway to 3200', enlarging the apron, widening the runway to 75', relocation of the county road on the south end of the site, and acquisitions of land and necessary clear zones.
1963	Construction of the large conventional-type hangar.
1965	Abilene Municipal Airport Layout Plan approved by FAA.

1976	Discussion by the City Commission concerning the closure of the road south of the Airport was tabled indefinitely due to considerable opposition by area property owners.
1977	City Commission requested Bucher & Willis, Consulting Engineers, to provide cost information on the planning and construction of airport improvements at Abilene under the current FAA funding guidelines. Bucher & Willis described both programs and recommended the City contact the FAA for their opinions on improving existing facilities at the existing airport.
1978	Airport Master Plan Grant approved by the Ozarks Regional Planning Commission to pay 80% of the $25,000 cost, subject to FAA concurrence. A five-member Airport Advisory Committee was created. The City of Abilene contracted with Bucher & Willis, Consulting Engineers, to prepare the Abilene Municipal Airport Master Plan.
1987	A new 3" asphalt concrete Parallel Taxiway was constructed north of the connecting taxiway.
2000	Runway 17-35 was rehabilitated with a 3" asphalt concrete overlay.
2010	An AWOS III was installed on the southern portion of the airport property.
2011	A new 6" PCC parallel taxiway was constructed south of the main connecting taxiway. Connecting taxiways were constructed along the runway. This provided a full parallel taxiway to Runway 17-35.
2015	Runway 17-35 was reconstructed with concrete. New runway and taxiway lights were constructed. The northern parallel taxiway was reconstructed with concrete.

AIRPORT SYSTEM ROLE

Airport planning exists on many levels such as local, regional, state and national. Each level has a different emphasis and purpose. This Airport Master Plan is the primary local planning document for the Abilene Municipal Airport. When formulating a Master Plan it is essential that the City of Abilene, the local community, Dickinson County, and Airport Consultant thoroughly understand the system role of the Airport in the North-Central Kansas Region, the State of Kansas and the United States, and integrate that system role into the local Master Plan.

Regional System Role

As previously stated, the Abilene Municipal Airport is located approximately 1 mile southwest of the Abilene downtown business district in a rural region of North-Central Kansas. The Interstate 70 (I-70) and Kansas Highway 15 (KS-15) interchange is located approximately 2 miles north of the Airport. Interstate 70 (I-70) provides access eastward to Maryland and westward to Utah. KS-15 runs north to Nebraska where it becomes Nebraska State Highway 15 (NE-15) and south to Oklahoma where it becomes Oklahoma State Highway 18 (OK-18). The intersecting system of highways provides excellent ground transport connectivity of the Central Kansas Region, and beyond, to the Airport.

Abilene Municipal Airport serves as an aviation gateway for Abilene to the State of Kansas and nationally. The Airport serves an important role in the local economy, primarily serving smaller business, recreational, and personal flying. In addition, the Airport serves a valuable role in the medical response time for patients in need of critical care by accommodating air ambulance services. The Airport does more than serve the business and recreational needs of the Central Kansas Region. The Airport provides access to the Nation's air transportation network, provides community benefits, and generates economic activity.

State System Role

In 2008, the Kansas Department of Transportation Division of Aviation (KDOT Aviation) commissioned and worked to develop a comprehensive plan for the Kansas system of 142 public airports. That planning process updated the previous Airport System Plan for Kansas completed in 1995. The resultant Kansas Airport System Plan 2008 (KASP) was updated in 2014. This update focused on the 80 airports in Kansas that are part of the National Plan of Integrated Airport System (NPIAS) discussed below. The purpose of the resulting Kansas Airport System Plan 2016 (KASP) is to make sure that the State has an adequate and efficient system of airports to serve the aviation needs of Kansas well into the 21st Century. This is to be accomplished by defining each Kansas airport's role in the State's aviation system; assessing the infrastructure needs of Kansas airports; establishing related funding needs; helping justify funding for airport improvements; and providing information for governmental and other entities concerning the value, use, and needs of the public use airports in Kansas.

Kansas AVIATION
Kansas Airport System Plan

The KASP is intended to provide KDOT Aviation with a useful decision-making tool. With annual requests from Kansas airports for grants that far exceed available financial resources, the KASP provides KDOT Aviation with information to:

- Help determine which Kansas system airports are most essential to Kansas transportation needs and economic objectives.
- Identify projects which have the greatest potential to improve the performance of the Kansas airport system.
- Demonstrate how investment improves the performance of the Kansas airport system relative to established measures and benchmarks.

At the onset of the airport initial role analysis, all Kansas airports were equally evaluated in terms of their propensity to serve aviation demand, regardless of the size of the airport, annual enplanements, or type of existing aviation services. Demand factors were applied to each airport and its associated city or county in order to measure demand for aviation and aviation-related services.

To add to the process of sorting Kansas airports based on their current function, a Geographic Information System (GIS) mapping analysis was used. To conduct the GIS analysis and to compare Kansas system airports by the various evaluation factors, a 30-minute drive time was established for all NPIAS airports. This drive time correlates to the FAA's National Plan of Integrated Airport Systems (NPIAS) criteria of a 30-minute service area for General Aviation (GA) airports.

To develop an initial role for each Kansas airport, based on the results of the analysis, the airport scores were reviewed. Airports were separated into five roles based on the number of standard deviations above or below their respective scores relative to the average score. The initial roles serve as the baseline, with possible refinement as the evaluation of the Kansas airport system is conducted in later tasks of the KASP planning process.

The five roles for airports in the Kansas airport system are defined as follows:

- **Commercial Service Airports** accommodate scheduled major/national or regional/commuter commercial air carrier service.
- **Regional Airports** accommodate regional economic activities, connect the state and national economies, and serve all types of General Aviation aircraft.
- **Business Airports** accommodate local business activities and General Aviation users.
- **Community Airports** serve a supplemental role in local economies, primarily serving smaller business, recreational, and personal flying.
- **Basic Airports** serve a limited role in the local economy, primarily serving recreational and personal flying.

The Kansas Airport System Plan (KASP) determined that the initial and future airport role of the Abilene Municipal Airport within the Kansas and United States system of airports is that of a **Business Airport**.

A copy of the KASP Executive Summary is located in Appendix B of this Master Plan. A copy of the Abilene Municipal Airport KASP Report Summary is located in Appendix C of this Master Plan. The entire KASP publication is located on the Internet at the KDOT Division of Aviation website: www.ksdot.org/divAviation/default.asp.

Air Ambulance Services Utilizing Fixed Wing Aircraft

Due to the geography of Kansas and rural distribution of the state population, the speedy access to emergency medical care is paramount to the State of Kansas and its citizens. Airports that serve communities with hospitals or clinics promote the quality of life while enhancing medical support throughout the state. The KASP analysis of the airport system indicates that 85.4% of all Kansas hospitals are currently within 30 minutes of a Kansas NPIAS airport. The KASP target established for this Kansas airport system benchmark is to obtain 100% for this coverage.

The KASP analysis of Kansas airports determined that 28.6% of Kansas' geographical area and 81.3% of the Kansas population is currently within a 30-minute drive time of a Kansas NPIAS airport capable of supporting air ambulance services utilizing fixed wing aircraft. In order to provide service to fixed wing air ambulance service, there is a minimum level of service required to be present at the airport. These requirements include a 4,200' x 75' runway, on site weather reporting, and a precision or near-precision AVP approach. Airports that can accommodate these types of emergency transport services provide lifesaving aid to residents of Kansas. Because of that, the current coverage percentages are deemed a deficiency in the Kansas system of airports.

The Kansas target established by the KASP for the air ambulance service benchmark is to have 70% of the area and 90% of the population within a 30-minute drive time access of an NPIAS airport capable of supporting air ambulance services utilizing fixed wing aircraft. Using those criteria, Exhibit 1B below identifies areas of Kansas appropriately served by airports capable of supporting air ambulance services utilizing fixed wing aircraft. As shown in this figure, Abilene Municipal Airport is on the fringe of the 30-minute drive time to a commercial service airport that can support air ambulance services.

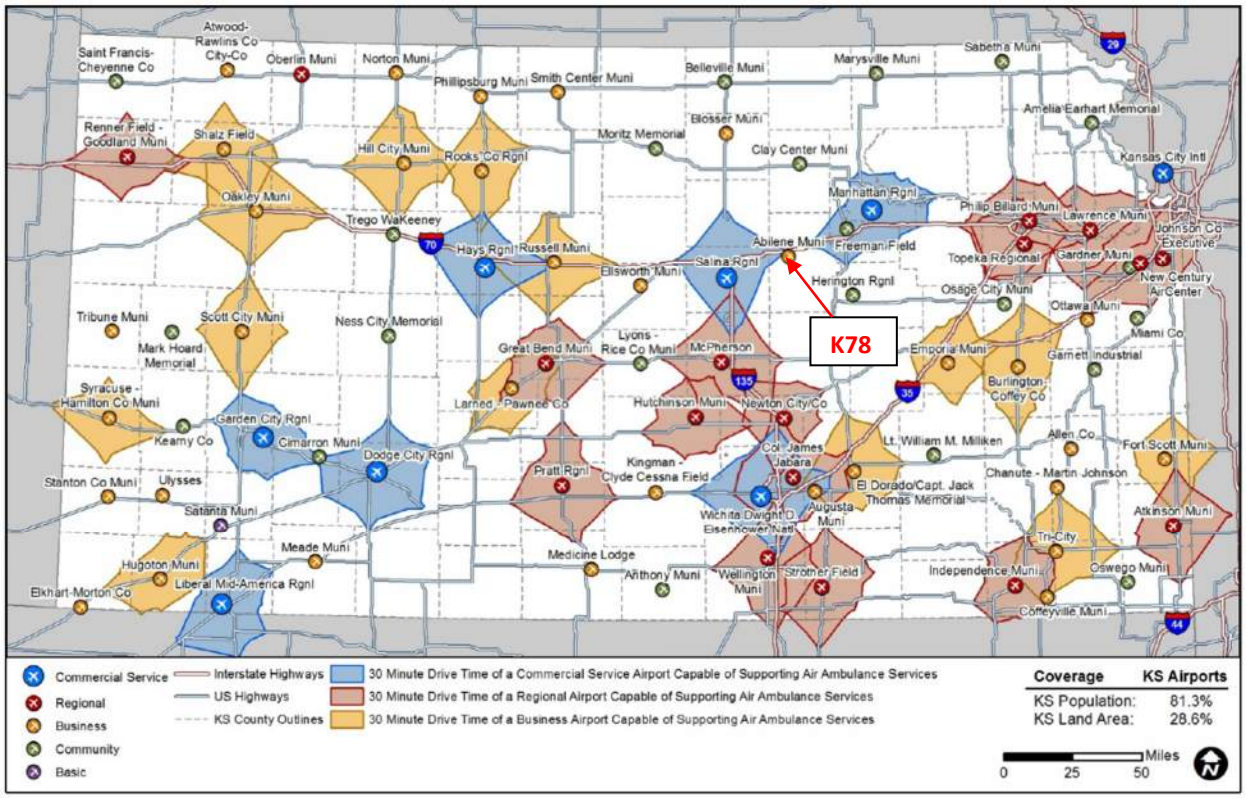


Exhibit 1B
Kansas Population and Area Within 30 Minutes of an Airport Capable of Supporting Air Ambulance Services Utilizing Fixed Wing Aircraft
Source: KDOT Division of Aviation

National System Role

The Abilene Municipal Airport is included in the FAA National Plan of Integrated Airport Systems (NPIAS). The NPIAS was established in 1951 and currently includes a total of 3,332 existing airports and 8 proposed airports for a total of 3,340 airports located in the United States. There are currently 80 airports in Kansas included in the NPIAS.

The NPIAS identifies airports and the airport developments necessary to anticipate and meet present and future requirements in support of civil needs. The FAA primarily categorizes airports as Commercial Service (Primary and Non-Primary), Reliever, or General Aviation. A map showing the Kansas NPIAS Airports and their designation is shown on Exhibit 1C on page 1-10.

- **Commercial Service Airports** – Defined as airports which enplane over 2,500 or more passengers annually and receive scheduled passenger service. These airports are further subdivided into primary or non-primary categories:

    - *Primary Commercial Service Airports* – These airports enplane at least 10,000 passengers per year and are grouped into 4 subcategories: large, medium, small-hub, and non-hub airports. Currently, 4 airports in Kansas are classified as a Primary Commercial Service Airport: Garden City Regional Airport (GCK), Topeka Regional Airport (FOE), Manhattan Regional Airport (MHK) & Wichita Mid-Continent (ICT).

    - *Non-Primary Commercial Service Airports* – These airports enplane at least 2,500 but less than 10,000 passengers annually. Currently, Kansas has 3 airports classified as Non-Primary Commercial Service Airport: Dodge City Regional Airport (DDC), Hays Regional Airport (HYS), and Liberal Mid-America Regional Airport (LBL).

- **Reliever Airports** – Defined as specialized airports that provide pilots with attractive alternates to using congested hub airports, they also provide general aviation access to the surrounding area. The airport must be open to the public and either have a minimum of 100 based aircraft or over 25,000 annual itinerant operations. Currently, Kansas has 4 airports classified as Reliever Airports: Colonel James Jabara (AAO) in Wichita, Johnson County Executive Airport (OJC) in Olathe, New Century Air Center (IXD) in Olathe, and Newton City/County Airport (EWK). These airports serve as a reliever to either Wichita Mid-Continent Airport (ICT) or Kansas City International Airport (MCI).

- **General Aviation (GA) Airports** – Communities with an airport that do not receive scheduled commercial service or that do not meet the criteria for classification as a Commercial Service or Reliever Airport may be included in the NPIAS as a General Aviation Airport if the airport accounts for enough aviation activity (having usually at least 10 locally based aircraft) and is at least 20 miles from the nearest NPIAS airport. There are a total of 2,564 General Aviation airports in the United States that accounts for 47% of the Nation's GA fleet. Currently, Kansas has 69 airports classified as General Aviation Airports. The NPIAS classifies Abilene Municipal Airport (K78) as a General Aviation Airport.

    General Aviation includes all aviation except scheduled passenger or air cargo operations. GA includes personal transportation, business and corporate flights, air taxi and helicopter operations. In Kansas, GA aircraft are flown for a wide variety of uses in addition to those listed above, including agricultural spraying, aerial utility patrol, flight instruction, military training and exercises, emergency medical evacuation and firefighting.

The general principles guiding Federal involvement have remained unchanged since a National airport system was envisioned in the Federal Airport Act of 1946. According to the NPIAS, the airport system should have the following attributes to meet the demand for air transportation in the United States:

- Airports should be safe and efficient, located at optimum sites, and developed and maintained to appropriate standards.
- Airports should be affordable to both users and government, relying primarily on user fees and placing minimal burden on the general revenues of local, state, and Federal Governments.

- Airports should be flexible and expandable, able to meet increased demand and to accommodate new aircraft types.
- Airports should be permanent, with assurance that they will remain open for aeronautical use over the long term.
- Airports should be compatible with surrounding communities, maintaining a balance between the needs of aviation and the requirements of residents of neighboring areas.
- Airports should be developed in concert with improvements to the air traffic control system.
- The airport system should support national objectives for defense, emergency readiness, and postal delivery.
- The airport system should be extensive, providing as many people as possible with convenient access to air transportation, typically not more than 20 miles travel to the nearest NPIAS airport.

The FAA further defines non-primary facilities by the role which they serve in the national airport system based on current activity measures (e.g. number and type of based aircraft and volume and type of flights). There are four categories: National, Regional, Local, and Basic. Airports that could not be placed into one of the four categories are referred to as "Unclassified." If the next NPIAS review shows levels that meet the criteria for one of the classifications, that airport will be reclassified in the next published NPIAS.

National	Regional	Local	Basic
Supports the national airport system by providing communities with access to national and global markets. These airports have very high levels of activity with many jets and multi-engine propeller aircraft. These airports average about 250 total based aircraft, including 30 jets.	Supports regional economies by connecting communities to regional and national markets. These airports have high levels of activity with some jets and multi-engine propeller aircraft. These airports average about 100 total based aircraft, including 3 jets.	Supplements local communities by providing access to local and regional markets. Most of the flying is by piston aircraft in support of business and personal needs. These airports average about 34 based propeller-driven aircraft and no jets.	Supports general aviation activities within the local community such as emergency response and access to remote communities. Most of the flying is self-piloted for business and personal reasons. These airports have an average of 10 propeller-driven aircraft and no jets.

Abilene Municipal Airport has been categorized as a Local GA airport. These airports supplement local communities by providing access to markets within a State or immediate region. Local airports are most often located near larger population centers, but not necessarily in metropolitan or micropolitan areas. Most of the flying at local airports is by piston aircraft in support of business and personal needs. These airports typically accommodate flight training, emergency services, and charter passenger service. This designation is important as an airport must be included in the NPIAS to be eligible for Federal funding assistance through the Federal Airport Improvement Program (FAIP) (See Chapter 6 – Capital Improvement Plan).

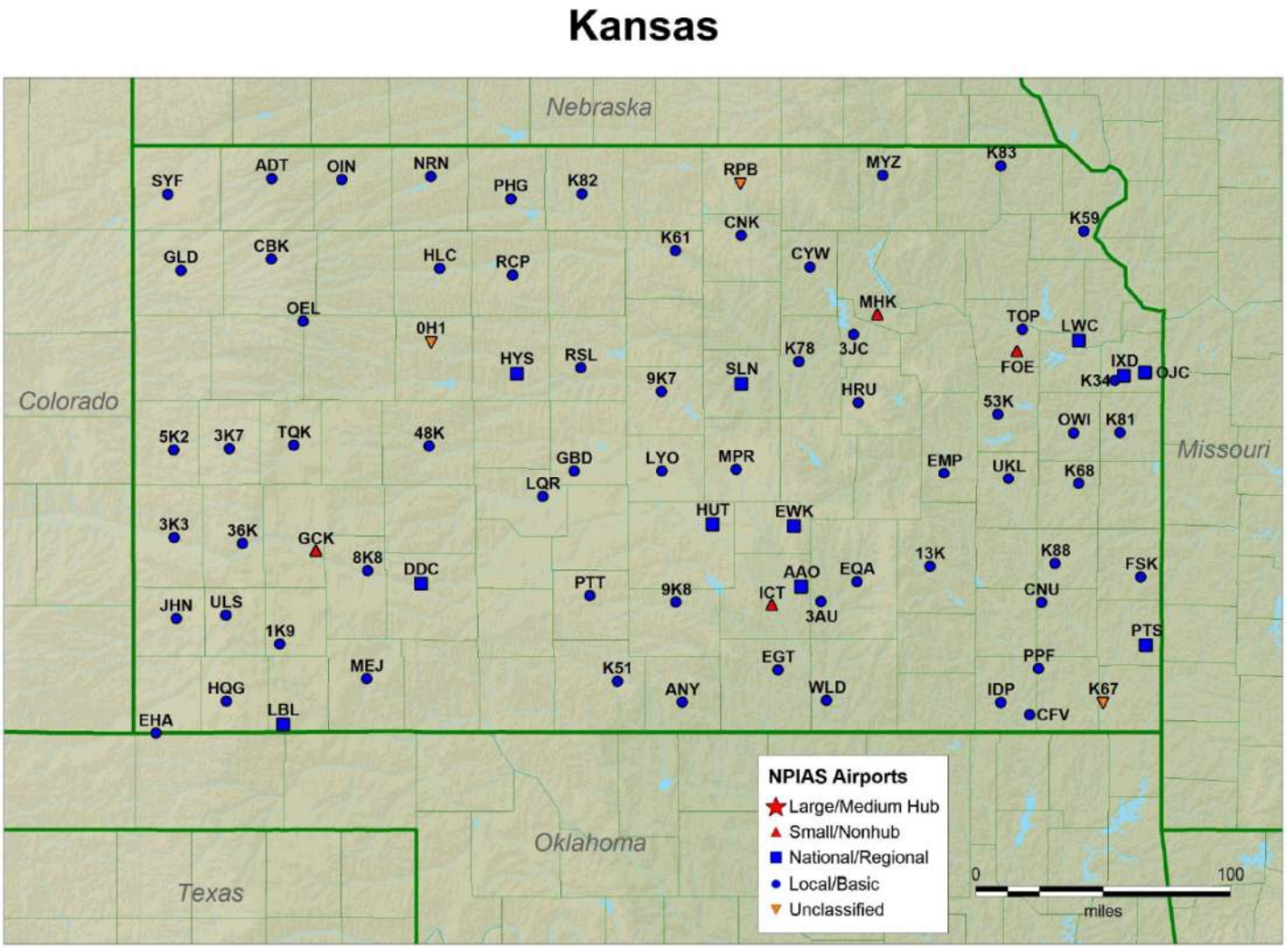


Exhibit 1C
NPIAS Airports in the State of Kansas

AIRSPACE

To promote a safe and efficient airspace environment in the United States for all aspects of aviation, the FAA established an air traffic control airspace structure that regulates and establishes procedures for aircraft using the National Airspace System (NAS). The NAS includes both controlled and uncontrolled airspace. A pictorial representation of Airspace Classification is shown in Exhibit 1D below.

Controlled Airspace

- **Class A Airspace** is generally the airspace from 18,000 feet Mean Sea Level (MSL) up to and including Fight Level (FL) 600, including the airspace overlying the waters within 12 Nautical Miles (NM) of the coast of the 48 contiguous states and Alaska. Unless otherwise authorized, all operation in Class A airspace is conducted under Instrument Fight Rules (IFR).

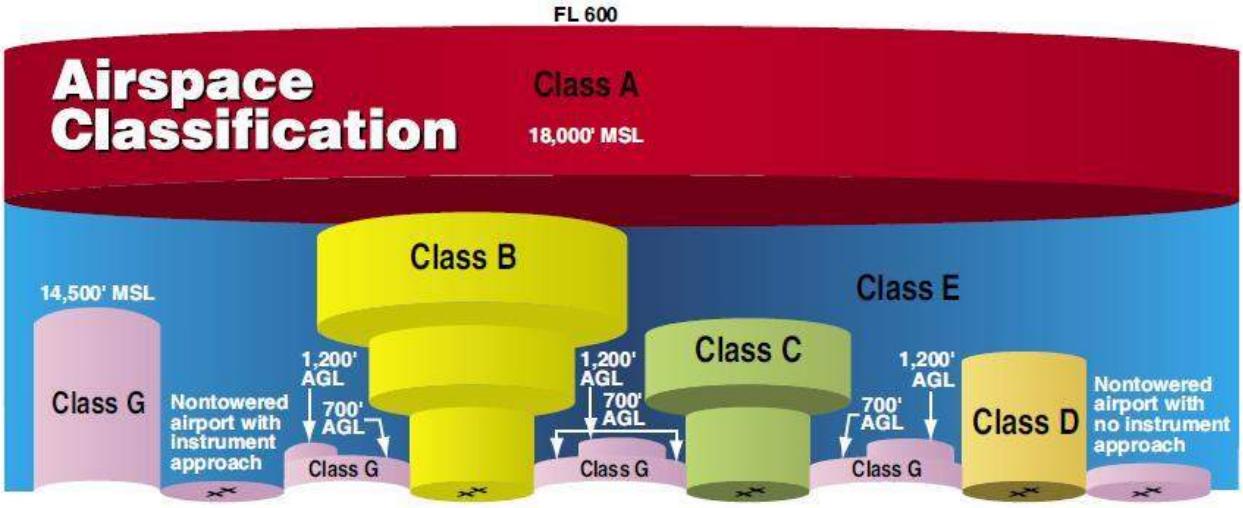


Exhibit 1D
Airspace Classification
Source: FAA

- **Class B Airspace** is generally airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored, consists of a surface area and 2 or more layers (some Class B airspace areas resemble upside-down wedding cakes). It is designed to contain all published instrument procedures once an aircraft enters the airspace. An Air Traffic Control (ATC) clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace.

- **Class C Airspace** is generally airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational ATC tower, are serviced by a radar approach control, and have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, an outer circle with a 10 NM radius that extends from 1,200 feet to 4,000 feet above the airport elevation, and an outer area. Each aircraft must establish two-way radio communications with the ATC facility providing air traffic

services prior to entering the airspace and thereafter maintain those communications while within the airspace.

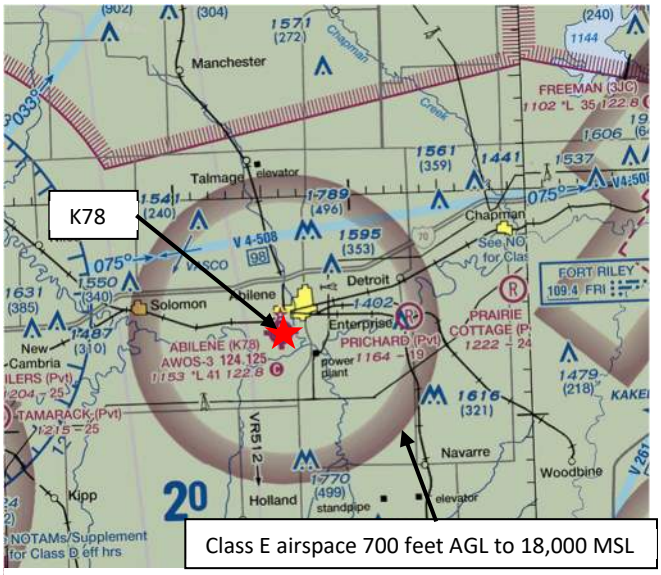
- **Class D Airspace** is generally airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational ATC tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace is normally designed to contain the procedures. Arrival extensions for Instrument Approach Procedures (IAPs) may be Class D or Class E airspace. Unless otherwise authorized, each aircraft must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace.

- **Class E Airspace** is the airspace that is not Class A, B, C, or D but is controlled airspace. Most airspace in the United States is Class E airspace. It usually extends upward from 1,200 feet Above Ground Level (AGL) to the overlying or adjacent controlled airspace. When designated in conjunction with an airport, it is configured to start at the surface to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at 700 feet AGL used to transition to and from the terminal or enroute environment, enroute domestic and offshore airspace areas designated below 18,000 feet MSL, and the airspace above FL 600.

Uncontrolled Airspace

- **Class G Airspace** includes all airspace below 14,500 AGL not otherwise classified as controlled. There are no entry or clearance requirements for Class G airspace, even for IFR operations. Class G airspace is typically the airspace very near the ground (1,200 feet or less), beneath Class E airspace. Radio communication is not required in Class G airspace, even for IFR operations. Class G is completely uncontrolled.

At the Abilene Municipal Airport, there is an 8-mile radius Class E airspace transition area extending from 700 feet AGL up to 18,000 feet MSL. This airspace is designated to contain instrument flight rule (IFR) operations in controlled airspace (above 700 feet AGL).



Airspace adjacent to K78

Special Use Airspace

Special Use Airspace or Special Area of Operation (SAO) is the designation for airspace in which certain activities must be confined, or where limitations may be imposed on aircraft operations that are not part of those activities. Certain special use airspace areas can create limitations on the mixed use of airspace. The special use airspace depicted on instrument charts includes the area name or number, effective altitude, time and weather conditions of operation, the controlling agency, and the chart panel location. On National Aeronautical Charting Group (NACG) En Route Charts, this information is available on one of the end panels. Special use airspace usually consists of:

- **Prohibited Areas** contain airspace of defined dimensions within which the flight of aircraft is prohibited. Such areas are established for security or other reasons associated with the National welfare. These areas are published in the Federal Register and are depicted on aeronautical charts. The area is charted as a "P" followed by a number (for example, P-49). Examples of Prohibited Areas include Camp David and the National Mall in Washington, D.C., where the White House and the Congressional buildings are located.

Typical depiction of a Prohibited Area on a Sectional Aeronautical Chart

There are no Prohibited Areas located in the vicinity of Abilene Municipal Airport airspace.

- **Restricted Areas** are areas where airborne and/or ground based operations are hazardous to non-participating aircraft and contain airspace within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature, or limitations may be imposed upon aircraft operations that are not a part of those activities, or both. Restricted Areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, high energy laser or guided missiles. Instrument Flight Rules (IFR) flights may be authorized to transit the airspace and are routed accordingly. Aircraft penetration of Restricted Areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Air Traffic Control (ATC) facilities apply the following procedures when aircraft are operating on an IFR clearance, including those cleared by ATC to maintain Visual Flight Rules (VFR) on top, via a route which lies within joint-use restricted airspace:

Typical depiction of a Restricted Area on a Sectional Aeronautical Chart

- If the Restricted Area is not active and has been released to the Federal Aviation Administration (FAA), the ATC facility allows the aircraft to operate in the restricted airspace without issuing specific clearance for it to do so.

- If the Restricted Area is active and has not been released to the FAA, the ATC facility issues a clearance which ensures the aircraft avoids the restricted airspace.

Restricted Areas are depicted on an aeronautical chart with an "R" followed by a number (for example, R-4401) and are depicted on the en route chart appropriate for use at the altitude or Flight Level (FL) being flown. Restricted Area information can be obtained on the back of the chart.

- **Warning Areas** are similar in nature to Restricted Areas; however, the United States government does not have sole jurisdiction over the airspace. A warning area is airspace of defined dimensions, extending from 12 Nautical Miles (NM) outward from the coast of the United States, containing activity that may be hazardous to non-participating aircraft. The purpose of such areas is to warn nonparticipating pilots of the potential danger. A Warning Area may be located over domestic or international waters or both. The airspace is designated with a "W" followed by a number (for example, W-237).

  There are no Warning Areas located in the vicinity of Abilene Municipal Airport airspace.

- **Military Operation Areas (MOAs)** consist of airspace with defined vertical and lateral limits established for the purpose of separating certain non-hazardous military training activities from IFR traffic. Whenever an MOA is being used, non-participating Instrument Flight Rules (IFR) traffic may be cleared through an MOA if IFR separation can be provided by ATC. Otherwise, ATC reroutes or restricts nonparticipating IFR traffic. MOAs are depicted on sectional, Visual Flight Rules (VFR) terminal area, and en route low altitude charts and are not numbered but named (for example, Camden Ridge MOA). However, the MOA is also further defined on the back of the sectional charts with times of operation, altitudes affected, and the controlling agency.

  There is a MOA located 8 nm N of Abilene Municipal Airport adjacent to Fort Riley. The MOA extends from 7000 MSL to 17,999 above MSL and is active from sunrise to sunset Monday through Friday and occasionally on Saturday/Sunday. The controlling agency for this MOA is the Kansas City ARTCC on 134.9/363.2.

Military Operation Area in vicinity of Abilene Municipal Airport

- **Alert Areas** are depicted on aeronautical charts with an "A" followed by a number (for example, A-211) to inform non-participating pilots of areas that may contain a high volume of pilot training

or an unusual type of aerial activity. Pilots should exercise caution in alert areas. All activity within an alert area shall be conducted in accordance with regulations, without waiver, and pilots of participating aircraft, as well as pilots traveling through the area, shall be equally responsible for collision avoidance.

There are no Alert Areas located in the vicinity of Abilene Municipal Airport airspace.

- **Controlled Firing Areas** (CFAs) contain activities, which, if not conducted in a controlled environment, could be hazardous to nonparticipating aircraft. The difference between CFAs and other special use airspace is that activities must be suspended when a spotter aircraft, radar, or ground lookout position indicates an aircraft might be approaching the area. There is no need to chart CFAs since they do not cause a nonparticipating aircraft to change its flight path.

  There are no Controlled Firing Areas located in the vicinity of Abilene Municipal Airport airspace.

Other Airspace Areas

Other Airspace Areas is a Federal Aviation Administration (FAA) general term referring to the majority of the remaining airspace. It includes:

- **Local Airport Advisory** (LAA) is a service provided by facilities, which are located on the landing airport, that have a discrete Ground-To-Air (GTA) radio communication frequency or the Air Traffic Control (ATC) tower radio frequency when the tower is closed; automated weather reporting with voice broadcasting and/or a continuous Automated Surface Observing Station (ASOS) or Automated Weather Observing System (AWOS) data display; other continuous direct reading instruments; or manual observations available to the Flight Service Station (FSS) Specialist and/or aircraft pilot.

  Abilene Municipal Airport does not have an ATC tower to provide LAAs but does have a limited Universal Communication (UNICOM) GTA radio communication station operating at a frequency of 122.800 megahertz (MHz). On pilot request, the Airport UNICOM may provide pilots with information concerning the Airport. It is important to note that UNICOM operators are not required to communicate with pilots, and if they do, there are no Federal Aviation Administration (FAA) standards for the information conveyed.

  The Airport has an AWOS located at the Airport to provide information concerning current weather conditions of the Airport.

- **Military Training Routes** (MTRs) are routes used by military aircraft to maintain proficiency in tactical flying. MTRs are usually established below 10,000 feet Mean Sea Level (MSL) for aircraft operations at speeds in excess of 250 knots. Some MTR segments may be defined at higher altitudes for purposes of route continuity. MTRs that are defined using Instrument Flight Rules (IFR) are identified as IR routes while those defined by Visual Flight Rules (VFR) are identified as VR routes, with both MTR type followed by a number for further identification. MTRs with no segment above 1,500 feet Above Ground Level (AGL) are identified by four (4) number characters such as IR1206 or VR1207. MTRs that include one or more segments above 1,500 feet AGL are identified by three (3) number characters such as IR206 or VR207. IFR low altitude en route charts depict all IR routes and all VR routes that accommodate operations above 1,500 feet AGL. IR

routes are conducted in accordance with IFR regardless of weather conditions. VFR sectional charts depict military training activities such as IR, VR, Military Operation Area (MOA), Restricted Area, Warning Area, and Alert Area information.

There are multiple MTRs in the west of Abilene Municipal Airport (VR-531, VR-511, & VR-512). These routes run north to south and extend from 100 feet AGL up to 10,000 feet AGL.

- **Temporary Flight Restrictions** (TFR) are designated and issued by the Federal Aviation Administration (FAA) via a Notice to Airmen (NOTAM). The NOTAM for a TFR begins with the phrase, "FLIGHT RESTRICTIONS" followed by the location of the temporary restriction, effective time period, area defined in statute miles, and altitudes affected. The NOTAM also contains the FAA coordination facility and telephone number, the reason for the restriction, and any other information deemed appropriate. Pilots regularly check for NOTAMs as part of flight planning.

Some of the purposes for establishing a TFR are:

1. Protect persons and property in the air or on the surface from an existing or imminent hazard.
2. Provide a safe environment for the operation of disaster relief aircraft.
3. Prevent an unsafe congestion of sightseeing aircraft above an incident or event, which may generate a high degree of public interest.
4. Protect declared national disasters for humanitarian reasons in the State of Hawaii.
5. Protect the President, Vice President, or other public figures.
6. Provide a safe environment for space agency operations.

Since the terrorist events of September 11, 2001, the use of TFRs has become much more common. There have been a number of incidents of aircraft incursions into TFRs, which have resulted in pilots undergoing security investigations and certificate suspensions. It is a pilot's responsibility to be aware of TFRs in their proposed area of flight.

There currently is not a Temporary Flight Restriction (TFR) issued at Abilene Municipal Airport (Airport). Aircraft pilots can visit the Federal Aviation Administration (FAA) website at www.tfr.faa.gov or call the Flight Service Station (FSS) at 1-800-992-7433 to determine the current TFR issuance status in the area of the Airport.

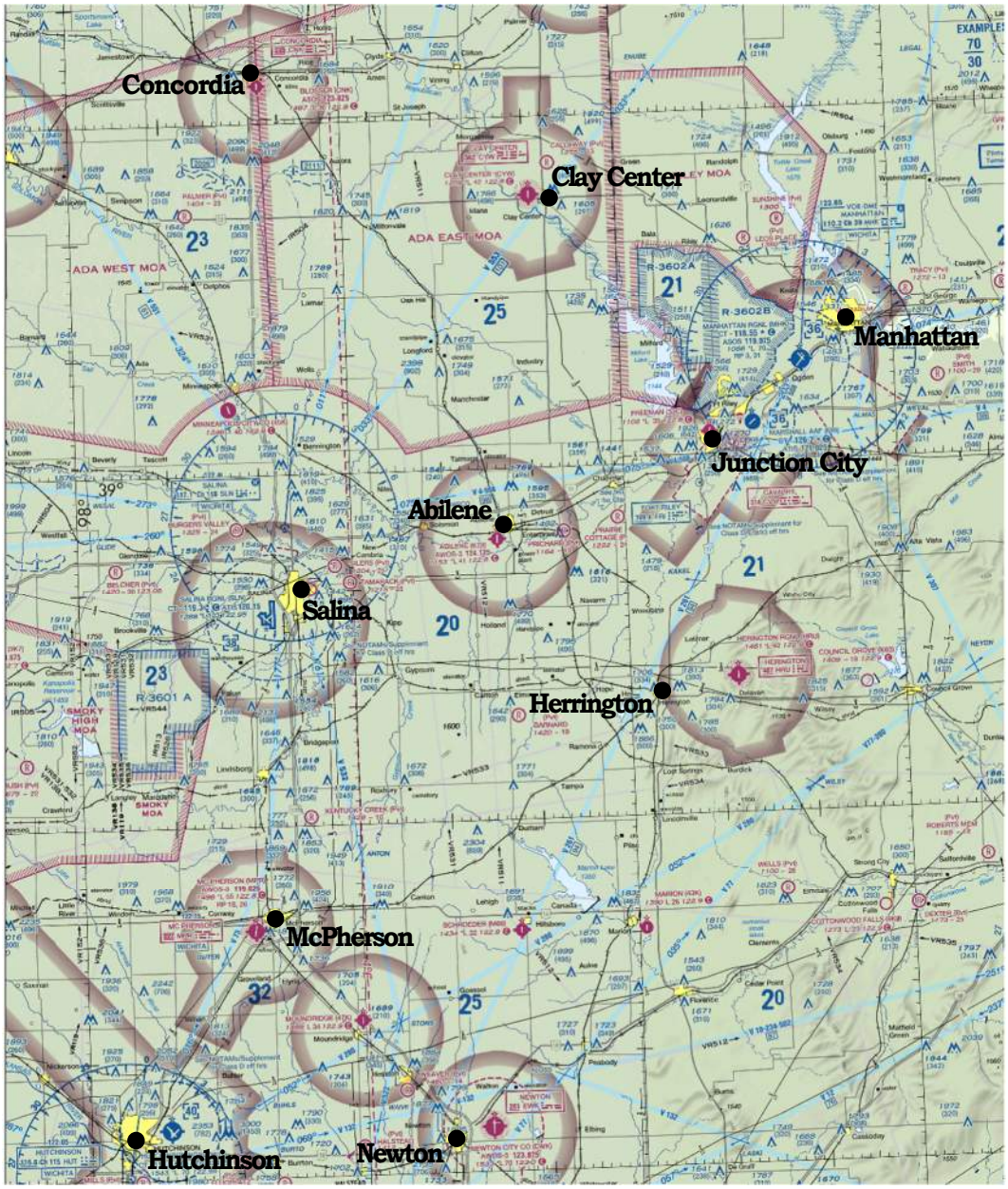


Exhibit 1E
Excerpt of Wichita/Kansas City Sectional Aeronautical Chart

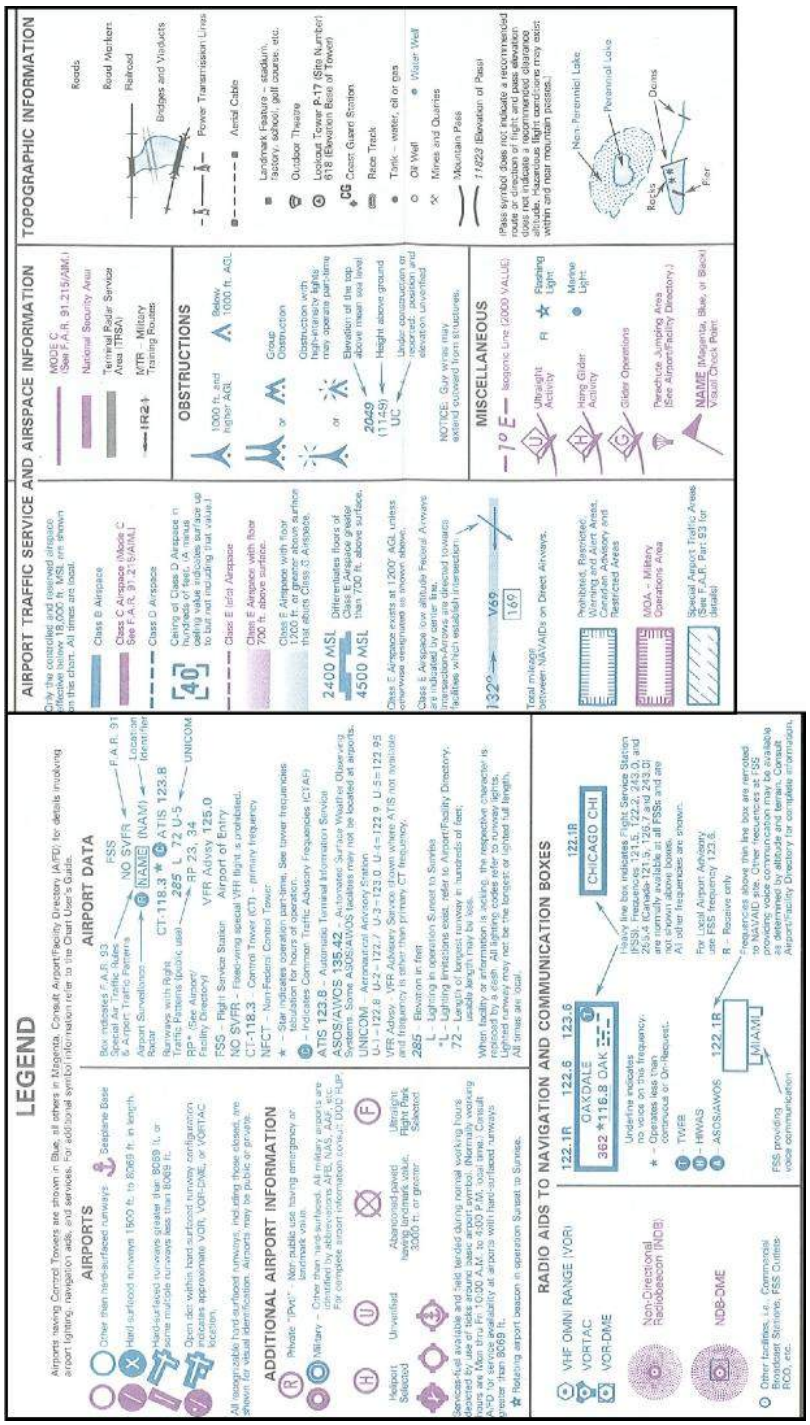


Exhibit 1E (Continued)
Excerpt of Wichita/Kansas City Sectional Aeronautical Chart

- **Parachute Jumping Areas** (PJAs) are published by the Federal Aviation Administration FAA in the Airport/Facility Directory (A/FD). Sites that are used frequently by individuals parachuting are also depicted on Sectional Aeronautical Charts. For a PJA to qualify for inclusion in FAA publications and be depicted on the appropriate aeronautical charts, the PJA must meet certain FAA criteria such as:

    1. Have been in operation for at least one (1) year;
    2. Operate year-round (at least on weekends); and
    3. Log 4,000 or more parachute jumps each year.

    The FAA Regional Office may also nominate a PJA for publication and depiction on aeronautical charts if the PJA does not meet the said criteria.

    Title 14 Code of Federal Regulations (14 CFR) Aeronautics and Space, Part 105 Parachute Operations (14 CFR Part 105) contains FAA regulations concerning parachuting from aircraft. There is no restriction concerning aircraft flying through a Parachute Jumping Area (PJA). It is always the responsibility of the pilot flying through a PJA to listen for aircraft radio communication on the Common Traffic Advisory Frequency (CTAF) for information concerning, among other things, possible parachute operations; and carefully looking to see and avoid parachutists. Individuals desiring to execute parachute operations must notify the FAA between 1 and 24 hours prior to the parachute operations begin. Individuals operating over or onto airports must obtain prior approval from airport management and the airport Air Traffic Control (ATC) tower, if applicable. Also, the pilot of the jump aircraft is required by FAA to broadcast over the local CTAF a parachute operation notice five (5) minutes prior to an individual jumping, the aircraft altitude that the parachute jump is initiated from, when an individual actually jumps, and when the last parachutist or object leaves the aircraft. An airport sponsor such as the City of Junction City who accepts Federal funding is obligated to make the airport facility available to all aeronautical activities, including parachuting or skydiving.

    There are no Parachute Jumping Areas in vicinity of Abilene Municipal Airport.

- **Published Visual Flight Rules** (VFR) Routes are for transitioning around, under, or through some complex airspace. Terms such as VFR flyway, VFR corridor, Class B airspace VFR transition route, and Terminal Area VFR route have been applied to such routes. These routes are generally found on VFR Terminal Area planning charts.

    There are no published VFR routes in vicinity of Abilene Municipal Airport.

- **Terminal Radar Service Areas** (TRSAs) are areas where participating pilots can receive additional radar services for navigation. The purpose of the service is to provide separation between all Instrument Flight Rules (IFR) operations and participating Visual Flight Rules (VFR) aircraft. The primary airport(s) within the TRSA become(s) Class D airspace. The remaining portion of the TRSA

overlies other controlled airspace, which is normally Class E airspace beginning at 700 or 1,200 feet Above Ground Level (AGL) and established to transition to/from the en route/terminal environment. TRSAs are depicted on VFR Sectional Charts and Terminal Area Charts with a solid black line and altitudes for each segment. The Class D portion is depicted on the charts with a blue segmented line. Pilot participation in TRSA services is voluntary; however, pilots operating under VFR are encouraged to contact the radar approach control and take advantage of TRSA service.

There are no Terminal Radar Service Areas (TRSAs) in the vicinity of Abilene Municipal Airport.

- **National Security Areas** (NSAs) consist of airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security and safety of ground facilities. Flight in NSAs may be temporarily prohibited by regulation under the provisions of Title 14 of the Code of Federal Regulations (14 CFR) Aeronautics and Space, Part 99, Security Control of Air Traffic (14 CFR Part 99) and prohibitions are disseminated via Notice to Airmen (NOTAM). Pilots are requested to voluntarily avoid flying through these depicted areas.

  There are no National Security Areas (NSAs) located in the vicinity of Abilene Municipal Airport.

Victor Airways are a special kind of Class E airspace defined by pre-determined routes flown by pilots under Instrument Flight Rules (IFR) and are like highways in the sky. These Federal airway routes are eight (8) miles wide with course defined by the connection of radio navigation beacons called Very High Frequency Omni-Directional Range (VOR) radials in which aircraft may be flown. VOR stations radiate a radio signal in all directions, and these stations are usually located at or near an airport. Victor Airways are, by definition, surrounded by Class E airspace from 1,200 feet Above Ground Level (AGL) up to, but not including 18,000 feet Above Mean Sea Level (AMSL). Victor Airways are depicted as black solid lines on Instrument Flight Rules (IFR) Low-Altitude Enroute charts and as thick faded blue lines on Visual Flight Rules (VFR) Terminal Charts and Aeronautical Sectional Charts. Because these virtual airways are defined by VOR radials, they are identified by the letter "V" (which is named Victor in the phonetic alphabet) then a number, for example V551. North-south Victor Airways have odd numbers while east-west airways have even numbers.

For aircraft arriving or departing Abilene Municipal Airport, Victor Airway V 4-508 is 3 NM north of the Airport. V4-508 is electronically defined by Very High Frequency Omni-Directional Range Tactile Air Navigation (VORTAC) station sites found at Salina 20 NM west, and Topeka 90 NM east. Victor Airway V4-508 is depicted on the Kansas City and Wichita, Kansas Sectional Aeronautical Chart published in Exhibit 1E located on page 1-17.

When it comes to operating aircraft in the National Airspace System (NAS), airspace permissions and restrictions do change. The United States President and other important people who require high security show up most everywhere from time to time, air shows open and close, natural disasters like forest fires suddenly command attention, runways close for repairs, etc. Airports and pilots must be aware of current events that might change normal airspace classifications with temporary flight restrictions.

AIR TRAFFIC CONTROL

The primary purpose of the Air Traffic Control (ATC) system is to prevent a collision between aircraft operating in the National Airspace System (NAS) and to organize and expedite the flow of aircraft traffic. In addition to its primary function, the ATC system has the capability to provide (with certain limitations) additional services to pilots such as Notice to Airmen (NOTAM), weather, and navigation information. The ability to provide additional services is limited by many factors, such as the volume of aircraft traffic, frequency congestion, quality of radar, controller workload, higher priority duties, and the pure physical inability to scan and detect those situations that fall within this category.

When operating at an airport where ATC is being exercised by a control tower, pilots are required to maintain two-way radio communication with the ATC tower while operating within the Class B, Class C, and Class D airspace unless the ATC tower authorizes otherwise. Initial radio communication should be made about 15 miles from an airport with an ATC tower. However, if the aircraft radio fails in flight, the pilot in command may operate that aircraft and land if weather conditions are at or above basic Visual Flight Rules (VFR) weather minimums, visual contact with the ATC tower is maintained, and a clearance to land is received.

The Abilene Municipal Airport does not have an ATC tower thus no formal terminal ATC services are available. Flights in and out of Abilene Municipal Airport are normally conducted using Visual Flight Rules (VFR). VFR conditions exist at the Airport when the visibility is 1 statute mile during the day or 3 statute miles during the night. Additionally, the minimum cloud distance requirements (below 700 feet above ground level) must be 500 feet below, 1,000 feet above and 2,000 feet horizontal. For an aircraft at an altitude of 700 feet above the surface, but less than 10,000 feet MSL, visibility must be 3 statute miles day or night but distance from clouds remain the same.

Typically, small GA airports have no on-site means or personnel to accurately measure and keep track of the number of aircraft operations. However, FAA's Traffic Flow Management System tracks and counts all Instrument Flight Rules (IFR) data. This information has been retrieved from FAA for calendar year 2017 and will be used in subsequent chapters for forecasting.

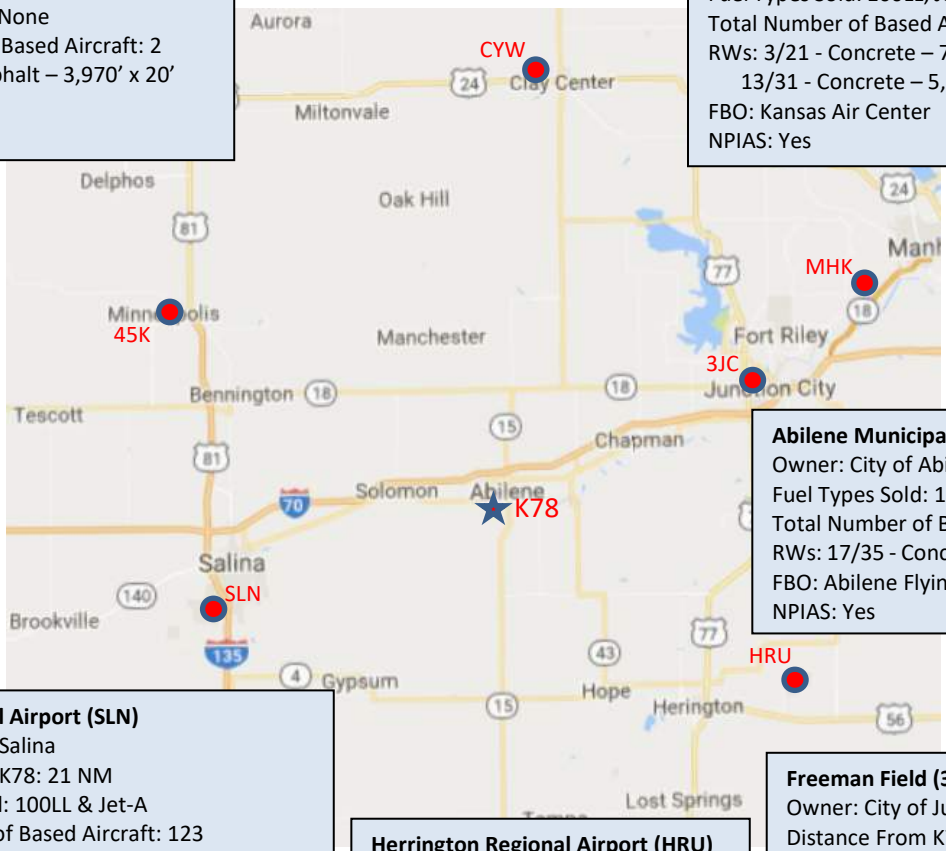
AREA AIRPORTS

A review of the airports located within approximately a 30 Nautical Mile (NM) radius of Abilene Municipal Airport was completed to identify and distinguish the type of aviation services provided in the North Central Kansas Region surrounding the Airport. Those public use airports within 30 NM of the Airport are illustrated in Exhibit 1F located on page 1-22. Information pertaining to each airport was obtained from www.airnav.com.

Clay Center Municipal Airport (CYW)
Owner: City of Clay Center
Distance From K76: 30 NM
Fuel Types Sold: 100LL & Mogas
Total Number of Based Aircraft: 14
RWs: 17/35 - Asphalt – 4,197' x 75'
FBO: Heinen Brothers Ag.
NPIAS: Yes

Minneapolis City County Airport (45K)
Owner: City of Minneapolis
Distance From K76: 25 NM
Fuel Types Sold: None
Total Number of Based Aircraft: 2
RWs: 18/36 - Asphalt – 3,970' x 20'
FBO: Ag by Air
NPIAS: No

Manhattan Regional Airport (MHK)
Owner: City of Manhattan
Distance From K76: 30 NM
Fuel Types Sold: 100LL, Jet-A, & Mogas
Total Number of Based Aircraft: 46
RWs: 3/21 - Concrete – 7,000' x 150'
13/31 - Concrete – 5,000' x 75'
FBO: Kansas Air Center
NPIAS: Yes



Abilene Municipal Airport (K78)
Owner: City of Abilene
Fuel Types Sold: 100LL & Jet-A
Total Number of Based Aircraft: 19
RWs: 17/35 - Concrete – 4,100' x 75'
FBO: Abilene Flying Service
NPIAS: Yes

Salina Regional Airport (SLN)
Owner: City of Salina
Distance From K78: 21 NM
Fuel Types Sold: 100LL & Jet-A
Total Number of Based Aircraft: 123
RWs: 17/35 – Asphalt/Concrete – 12,301' x 150'
12/30 – Asphalt – 6,510' x 100'
18/36 – Asphalt – 4,301'x 75'
4/22 – Asphalt – 3,648' x 75'
FBO: AvFlight
NPIAS: Yes

Herrington Regional Airport (HRU)
Owner: City of Herrington
Distance From K78: 24 NM
Fuel Types Sold: 100LL
Total Number of Based Aircraft: 10
RWs: 17/35 - Concrete – 4,184' x 75'
FBO: City of Herrington
NPIAS: Yes

Freeman Field (3JC)
Owner: City of Junction City
Distance From K78: 20 NM
Fuel Types Sold: 100LL & Jet-A
Total Number of Based Aircraft: 27
RWs: 18/36 - Asphalt – 3,498' x 75'
13/31 - Turf – 1,903' x 140'
5/23 – Turf – 1,834' x 200'
FBO: Kansas Jet Center
NPIAS: Yes

Exhibit 1F
Area Airports Surrounding Abilene Municipal Airport

CLIMATE

Weather is the day-to-day state of the atmosphere in a region and based on short-term variation (minutes to weeks), whereas climate is defined as statistical weather information that describes the variation of weather at a given place for a specified long interval (months to years). Climate conditions are important in the planning and future development of an airport. Temperature is a critical factor in determining runway length requirements. Wind direction and wind speeds are used to determine optimum runway orientation. The determining factor for the requirement of Navigation Aids (NAVAIDs) and airport lighting is dependent upon the amount of time the visibility is impaired by sunset, cloud cover or other visibility disabling conditions.

Abilene lies in the transition zone between the *Humid Subtropical Climate* (hot, humid summers and generally mild to cool winters) and *Humid Continental Climate* (large seasonal temperature differences, with warm to hot, and often humid summers with cold, sometimes severely cold winters) in North America. Between that mix of climates, on average, Abilene experiences hot, humid summers and cold, dry winters. The average annual temperature in Abilene is 56.9 °F. January is the coolest month with an average low temperature of 21° F while July is the warmest month with an average high temperature of 93° F. On average, the community receives 33 inches of precipitation per year, with a snowfall average of 12 inches per year. May and June are the wettest months with a respective average of 4.9 and 4.5 inches of precipitation. The hottest temperature recorded in Abilene was 113° F in September 1947; the coldest temperature recorded was -29° F in February 1899.

The average annual wind speed is 10.8 Miles Per Hour (MPH) with the windiest months being March and April with respective average wind speeds of 12.2 and 12.4 MPH. Each winter, on average the risk of frost is from October 14th through April 16th, but frost can occur sooner or later than those dates. The frost-free growing season in the Abilene area is approximately 181 days.

REGISTERED AIRCRAFT

Table 1A
Number of Registered Aircraft Per County

County	Number of Registered Aircraft
Geary	22
Clay	21
Ottawa	17
Saline	163
McPherson	86
Marion	29
Morris	2
TOTAL	**340**

Aside from looking at surrounding airports and the services and facilities they provide, it is also important to look at the number of total FAA registered aircraft in the surrounding counties. As the Abilene Municipal Airport expands, prospers, and offers more attractive aviation facilities, the Airport can expect to see some of the registered aircraft located in surrounding areas possibly relocate to the Airport.

As of July 2017, according to the FAA database at http://registry.faa.gov/aircraftinquiry, the entire State of Kansas (State) has 5,625 total registered aircraft. The 7 counties that surround Franklin County account for 340 of these registered aircraft. Table 1A lists the 7 surrounding counties and the number of registered aircraft. There are 44 aircraft registered to residents of Dickinson County.

AIR TRAFFIC ACTIVITY

The number of based aircraft and the total annual operations (takeoffs and landings) are the primary indicators of aeronautical activity at airports serving General Aviation. These indicators will be used in the aviation forecasts analysis in this Master Plan to project future facility needs.

Based Aircraft and Aircraft Operations

Exhibit 1G below illustrates the historical based aircraft at the Abilene Municipal Airport from 1946 (when the Airport was activated) to 2017. Levels have remained at about 20 since the mid-1980s. Currently, there are 19 aircraft based at Abilene Municipal Airport.

A list of the current based aircraft is shown in Table 1B on page 1-25. General Aviation operations include a wide range of aircraft use, from personal to business and corporate. Aircraft operations at an airport are classified as local or itinerant. Local operations consist mostly of aircraft training operations conducted within an airport traffic pattern and touch-and-go and stop-and-go operations or operations from the locally based agricultural spray operators. Itinerant operations are originating or departing aircraft that are not conducting operations within an airport traffic pattern. It is estimated that local operations comprise approximately 60% of the total annual operations.

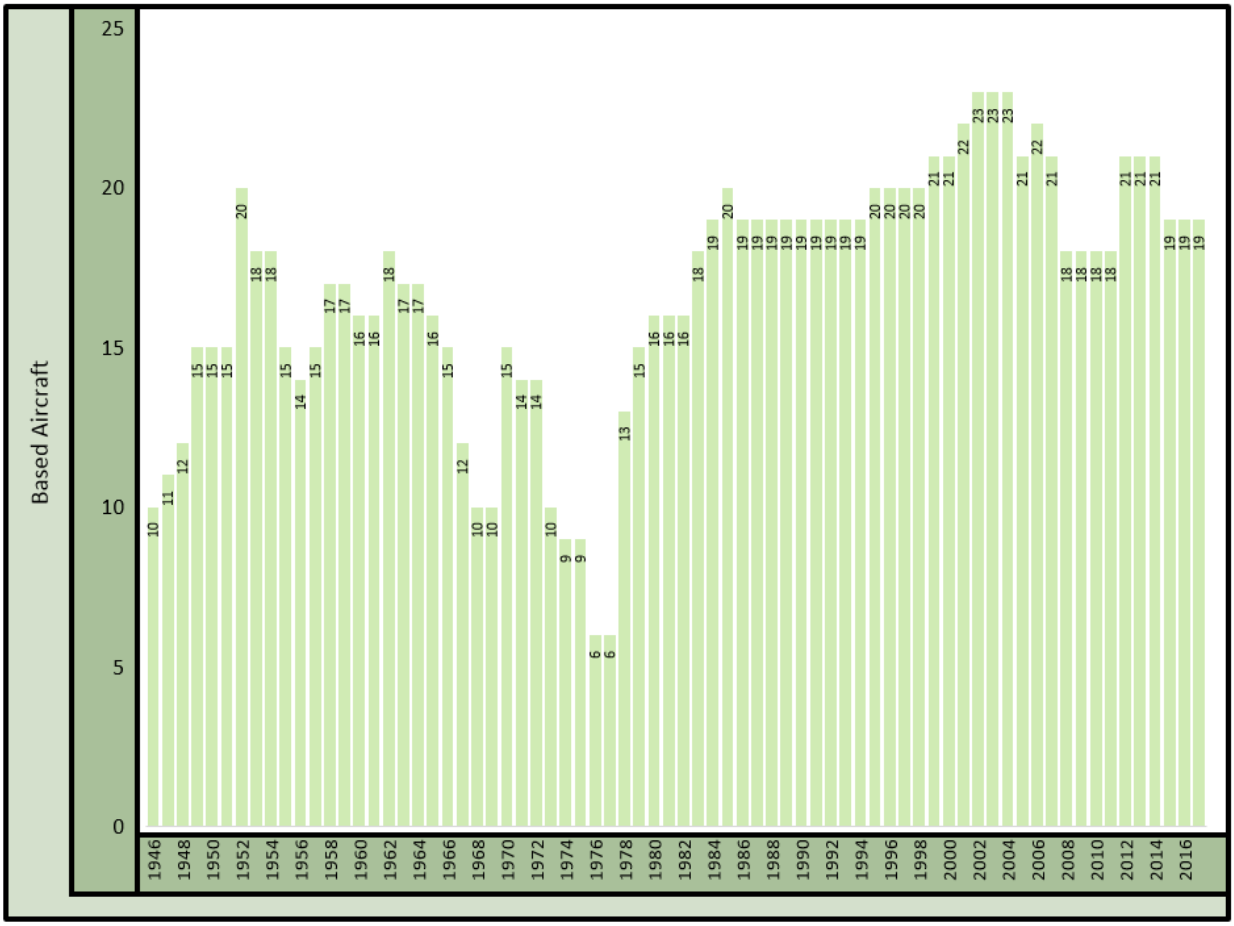


Exhibit 1G
Historical Based Aircraft

Table 1B
Current Based Aircraft

Number	Make	Model	Aircraft Type	Registration #	ARC
1	Beech	D35	Single Engine - Fixed Wing	N2995B	A-I
2	Beech	35	Single Engine - Fixed Wing	N3361V	A-I
3	Piper	PA-34-200	Multi Engine - Fixed Wing	N33724	A-I
4	Cessna	172	Single Engine - Fixed Wing	N3791R	A-I
5	Vans	172	Single Engine - Fixed Wing	N420LP	A-I
6	Mooney	M20F	Single Engine - Fixed Wing	N441WS	A-I
7	Piper	PA-32-300	Single Engine - Fixed Wing	N44JY	A-I
8	Piper	P-17	Single Engine - Fixed Wing	N4692H	A-I
9	Taylorcraft	DCO-65	Single Engine - Fixed Wing	N49119	A-I
10	Cessna	182M	Single Engine - Fixed Wing	N71560	A-I
11	Piper	PA-28-151	Single Engine - Fixed Wing	N75315	A-I
12	Piper	PA-20	Single Engine - Fixed Wing	N7711K	A-I
13	Piper	P-12	Single Engine - Fixed Wing	N7802H	A-I
14	Cessna	150C	Single Engine - Fixed Wing	N7829Z	A-I
15	Piper	PA-28-180	Single Engine - Fixed Wing	N7967W	A-I
16	Piper	PA-28-180	Single Engine - Fixed Wing	N8041W	A-I
17	Moondey	M20A	Single Engine - Fixed Wing	N8345E	A-I
18	Cessna	188	Single Engine - Fixed Wing	N9877V	A-I
19	Eng. & Research	415-C	Single Engine - Fixed Wing	N99224	A-I

Current Operational Fleet Mix

A detailed report of General Aviation (GA) activity is available from the FAA Traffic Management System Counts (TFMSC) site. From January 1, 2017 to January 1, 2018, a compilation of the itinerant operations data from this report is shown in Table 1C. Itinerant operations is defined as aircraft operations at the Airport that are not local operations from the based aircraft. The data combines GA aircraft ownership databases to provide an active view of which GA aircraft are operating at the Airport. The data is obtained from FAA's records of filed flight plans of aircraft flying under Instrument Flight Rules (IFR). All IFR operating aircraft will have filed Flight Plans, but most aircraft operating under Visual Flight Rules (VFR) do not file flight plans. Therefore, while this data is representative of the aircraft utilizing the Airport, it is not inclusive of every single aircraft that uses the Airport.

Table 1C
Itinerant Operations January 1, 2017 - January 1, 2018

Total ARC A-I Operations:	96
Total ARC A-II Operations	2
Total ARC B-I Operations:	15
Total ARC B-II Operations	3
Unknown Operations:	7
Total Operations:	**123**

IFR traffic at the Airport consists of aircraft in the Airport Reference Code (ARC) B-II, B-I, and A-I categories. The most frequent B-II aircraft to utilize the Airport in the last year is the Beechcraft Super King Air 300 which has a 57 foot wingspan, tail height of 14 feet, and a 15,000 pound maximum takeoff weight (ARC B-II). The Super King Air is flown by Green Flash Aviation LLC. Based out of Audubon, IA. The majority of the aircraft utilizing the Airport consist of twin engine and single engine aircraft that primarily fit into the ARC A-I category.

VFR traffic at Abilene Municipal Airport was estimated using fuel sale records from 2017. The airport has averaged 11,215 gallons of Jet A fuel per year, and 14,568 gallons of 100 LL Aviation Gasoline (AVGAS) per year.

Jet A fuel is used by turboprop and Very Light Jet (VLJ) aircraft primarily in the small B-I category. The average turbine aircraft utilizing the airport consumes fuel at a rate of about 50 gallons per hour. The average itinerant flight into the airport is about 1.5 hrs. Each flight will produce 2 operations (landing and

takeoff). This results in an average of 37.5 gallons per operation resulting in an estimated 300 annual operations by small B-I aircraft.

AVGAS is used by piston engine aircraft in the small A-I and small B-I category. Itinerant flights in piston engine aircraft average about 1.3 hr and burn fuel at a rate of approximately 8 gallons per hour. This yields a rate of 5.2 gallons per operation. Local operations are small A-I aircraft and are primarily training flights, agricultural spraying, and touch and go operations. The average flight time for these operations is about 1 hrs with a fuel rate of about 8 gallons per hour. This yields a rate of 4 gallons per operation. Assuming about 60% local and 40% itinerant flights, the total rate of AVGAS consumption is about 4.5 gallons per operation resulting in an estimated additional 500 annual operations by B-I aircraft and 2,750 annual operations by A-I aircraft.

The Critical Design Aircraft, in accordance with FAA design criteria, is the largest and most critical aircraft category that performs 500 or more operations at an airport with operations defined as either landing or a takeoff. The Design Aircraft family as identified above is the small B-I category. The most demanding aircraft in this family utilizing the Abilene Municipal Airport is the Piper 31T Cheyenne II. The Piper Cheyenne II has a wingspan of 43 feet, tail height of 13 feet, a maximum takeoff weight of 9,000 pounds, and an approach speed of 98 knots.

AIRPORT LAND

The City of Abilene has worked since 1945 to obtain ample land for development of a municipal airport for Abilene and Dickinson County. The City acquired land using both fee-for-easement and fee-for-title. Following is a summary of land tracts gathered by the City for the continued development of the Airport. Appendix D of this Master Plan contains the legal Property Map dated Fall 2017.

- **TRACT 1: 160.0 Acres – Fee Title:** Acquired from E.A. Ward and filed for record on August 11, 1945 in Book No. 118, page 232 with the Dickinson County Register of Deeds conveying parcel to the City of Abilene, Kansas. **40.3 Acres transferred to Deanna Whitehair with sale of parcels A & B.**

- **TRACT 1.1: 10.7 Acres – Fee Title:** Acquired from William Hough and filed for record on October 8, 1960 in book No. 150, page 102 with the Dickinson County Register of Deeds conveying parcel to the City of Abilene, Kansas.

- **TRACT 2: 25.0 Acres – Fee Title:** Acquired from Deanna Whitehair and filed for record on November 14, 2006 in book No. 238, page 41 with the Dickinson County Register of Deeds conveying parcel to the City of Abilene, Kansas.

- **TRACT 2.1: 26.4 Acres – Avigation (Clear Zone) Easement:** Acquired from William Hough and filed for record on October 8, 1960 in Misc. Book No. 142, page 674 conveying parcel to the City of Abilene, Kansas. **This easement was extinguished with the purchase of Tract 2.**

- **TRACT 3: 6.0 Acres – Avigation (Clear Zone) Easement:** Acquired from Lena Benson and filed for record on June 11, 1987 in Misc. Book No. 206, page 405 conveying parcel to the City of Abilene, Kansas. **This easement was extinguished with the purchase of Tract 8.**

- **TRACT A: 25.8 Acres – Avigation Easement:** Acquired from Deanna Whitehair and filed for record on October 1, 1983 in Book No. 199, page 157 conveying parcel to the City of Abilene, Kansas. **3.9 Acres of this easement was extinguished with the purchase of Tract A.1.**

- **TRACT A.1: 3.9 Acres – Fee Title:** Acquired from Deanna Whitehair and filed for record on November 14, 2006 in book No. 238, page 41 with the Dickinson County Register of Deeds conveying parcel to the City of Abilene, Kansas.

- **TRACT B: 14.5 Acres – Avigation Easement:** Acquired from Deanna Whitehair and filed for record on October 1, 1983 in Book No. 199, page 157 conveying parcel to the City of Abilene, Kansas.

- **TRACT C: 50.4 Acres – Fee Title:** Acquired from Deanna Whitehair and filed for record on October 6, 1983 in book No. 199, page 217 with the Dickinson County Register of Deeds conveying parcel to the City of Abilene, Kansas.

- **TRACT D: 6.7 Avigation Easement:** Acquired from Deanna Whitehair and filed for record on October 6, 1983 in book No. 199, page 217 with the Dickinson County Register of Deeds conveying parcel to the City of Abilene, Kansas.

- **TRACT F.1: 6.5 Acres – Avigation (Clear Zone) Easement:** Acquired from Walter Whitehair and filed for record on September 22, 1961 in Misc. Book No. 142, page 643 conveying parcel to the City of Abilene, Kansas. **This easement was extinguished with the purchase of Tract C.**

- **TRACT F.2: 7.4 Acres - Avigation (Clear Zone) Easement:** Acquired from Walter Whitehair and filed for record on September 22, 1961 in Misc. Book No. 142, page 643 conveying parcel to the City of Abilene, Kansas. **This easement was extinguished with the purchase of Tract C.**

AIRPORT FACILITIES

Airport facilities can be functionally classified into two broad categories, airside and landside.

Airside

The airside category includes those facilities directly associated with aircraft operations.

Landside

The landside category includes primary and support facilities necessary to provide a safe transition from different means (surface or air) of transportation

AIRSIDE FACILITIES

Airside facilities include runways, taxiways, airport lighting and Navigation Aids (NAVAIDS). Table 1D below summarizes airside facilities data for the Abilene Municipal Airport.

Runway

Primary Runway 17/35 is aligned in a north-south direction and is 4,100-feet long and 75-feet wide constructed with concrete pavement. The FAR Part 77 approach slopes for both the primary Runway 17 and 35 approaches are set at 34:1 according to the most current Airport Layout Plan (ALP) completed in 2000. Runway 35 has a vertically guided surface for LPV minimums which is a slope of 30:1. The Threshold Siting Surface (TSS) for both non-precision approaches on Runway 17/35 is set at a slope of 20:1.

Runway 17/35 at K78

The current effective runway gradient of primary Runway 17/35 is 0.06%. (Effective Runway Gradient is the ratio of the elevation difference to the total runway length.)

Runway 17/35 is supplied with threshold lights and Medium Intensity Runway Lights (MIRL's) for lighted guidance. The pavement is delineated with non-precision markings. The runway ends consist of runway numeral designators and threshold bars. Runway 17/35 is constructed of concrete pavement and has a Single Wheel Gear (SWG) bearing strength of 13,000 pounds and a Double Wheel Gear (DWG) bearing strength of 16,000 pounds. The Airport has published GPS approaches to both the Runway 17 and Runway 35 approaches and a VOR/DME circling approach.

Taxiway

The taxiway system at the Airport consists of a parallel taxiway with connections at the north and south ends of Runway 17/35, along with two intermediate connections at approximately 1,000' from each end of the runway. The taxiway connects to the main apron at the northern portion of Runway 17/35. The parallel taxiway and apron connectors are constructed of concrete pavement. The main taxiway is approximately 4,100-feet long by 35-feet wide.

Runway 17/35 parallel taxiway at K78

A concrete connector taxiway provides access to the primary apron from the parallel taxiway. An additional concrete connector taxiway connects the south part of the general aviation ramp to the parallel taxiway. The north connector is 35' wide and in fair condition, the southern one is 25' wide and in good condition. A 25' wide concrete taxilane connects the main apron to the Hangars south of the terminal building.

Table 1D
Airside Facilities Data

	Runway 17/35	Condition
Runway Length (Feet)	4,100	Good
Runway Width (Feet)	75	
Runway Surface	Concrete	
Runway Load Bearing Strength (Pounds.)	13,000 SWG[1]/16,000 DWG[4]	
Runway Lighting	MIRL[2]	Good
Taxiway Lighting	MITL[5]	Good
Pavement Markings		
Runway	Non Precision	Good
Taxiway	Basic	Good
Visual Approach Aid and Lighting	Threshold Lighting	Good
Navigational Aids	Wind Sock and Rotating Beacon	Good
Instrument Approach Procedures	GPS[3] (17 & 35) VOR[6]/DME[7] (Circling)	N/A

[1]SWG - Single Wheel Gear
[2]MIRL - Medium Intensity Runway Lights
[3]GPS - Global Positioning System
[4]DWG - Double Wheel Gear
[5]MITL - Medium Intensity Taxiway Lights
[6]Very High Frequency (VHF) Omni-directional Range
[7]DME - Distance Mesuring Equipment

Airfield Lighting

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. There are three types of installed lighting systems: Identification Lighting, Runway Lighting, and Approach Lighting.

- **Identification Lighting** is used to identify the location of the Airport at night. This is universally done by a rotating light beacon which projects two beams of light, one white and one green, 180 degrees apart. Also known as an Airport Beacon, the rotating light beacon is located on the Terminal Building on the east part of the Airport.

- **Runway Lighting** utilizes light fixtures placed near the pavement edge to define the lateral limits of the pavement at night. This lighting is essential for safe operations during night and/or times of low visibility in order to maintain safe and efficient access to and from the runway and aircraft parking areas.

  Runway 17/35 is equipped with Medium Intensity Runway Lights (MIRLs) and Runway threshold lighting that are in good condition. The runway lighting can be controlled (turned on and off) by pilots utilizing radio transmitters, in an aircraft, on frequency 122.9 megahertz (MHz).

- **Approach Lighting Systems (ALSs)** are used in the runway approaches as additional Navigation Aids (NAVAIDs) for the final portion of Instrument Flight Rule (IFR) approaches and as visual guides for nighttime approaches under Visual Flight Rules (VFR) conditions. The approach lighting system provides the pilot with visual cues concerning aircraft alignment, roll, height and position relative to the threshold.

Pavement Markings

Runway 17/35 is marked in accordance with non-precision marking requirements and the markings are in good condition. Non-precision runways are runways having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance or GPS guidance with a final approach course width as small as 700 feet. The non-precision markings in place identify the runway centerline, runway designators (runway numerals), runway threshold, runway aiming points, and aircraft holding positions. Taxiway and apron taxiway centerlines are provided to assist aircraft moving between the apron, terminal and hangar area and primary Runway 17/35.

Lighted Wind Cone at K78

Navigational Aids

A Navigation Aid (NAVAID) is broken down into two types: Visual and Electronic. A visual NAVAID is a device located on an airport that emits visual cues that assist pilots during final approach to safely land an aircraft and clear obstructions or other navigational hazards. An electronic NAVAID can be located on or off the Airport that transmits radio frequencies that properly equipped aircraft and pilots translate into point-to-point horizontal and/or vertical guidance.

Visual NAVAID Devices located at the Abilene Municipal Airport are:

- **Lighted Wind Cone:** A lighted wind cone provides visual information to aircraft pilots concerning wind direction and wind strength. A wind cone is a long, hollow tube-like device made of fabric mounted on a free-wheeling pivot atop a pole or tower. It turns in the direction from which the wind is blowing and indicates the approximate wind direction and strength. The wind cone is also called a wind sock or a wind sleeve. The wind cone is mounted

atop a pole located near the parallel taxiway/Apron intersection at the Airport and is in good condition.

Rotating Light Beacon at Abilene Municipal Airport

- **Airport Rotating Light Beacon and Tower:** An aeronautical rotating light beacon is used to aid aircraft pilots in locating the Airport from the air at night and in bad weather conditions. The Airport rotating light beacon displays flashes of white and green light according to uniform standards of the International Civil Aviation Organization (ICAO). These flashes indicate the location and type of airport. The airport currently has a rotating light beacon installed on top of the main hangar/terminal building and is in good condition.

- **Precision Approach Path Indicator (PAPI)**: A PAPI is a light array positioned beside the runway. It normally consists of four equally spaced light units color-coded to provide a visual indication of an aircraft's position relative to the designated GS for the runway. An abbreviated system consisting of two light units can be used for some categories of aircraft operations. The specific location depends on a number of factors including: obstruction clearance, Threshold Crossing Height (TCH), presence of a GS, and type of aircraft using the runway.

The Abilene Municipal Airport has abbreviated Precision Approach Path Indicator (PAPI) lights for both ends of Runway 17/35 that are in operable condition.

PAPIs to Runway 17/35 at Abilene Municipal Airport

- **Runway End Identifier Lights (REILs):** A REIL consists of a flashing white, high-intensity light installed at each approach end corner of a runway. The lights are directed toward the approach zone, enabling the pilot to identify the runway threshold. These lights consist of two synchronized flashing unidirectional or omnidirectional (360 degree) lights, one on each side of the runway threshold. The function of the REIL is to provide rapid and positive identification of the end of the runway. REIL systems are effective for identification of a runway surrounded by a preponderance of other lighting or lacking contrast with surrounding terrain. This system is usually installed at non-towered airports and can be activated by a specified radio frequency known to the pilot.

REILs to Runway 17/35 at Abilene Municipal Airport

The Abilene Municipal Airport has unidirectional REILs installed at both approaches of Runway 17/35. The REILs are in fair to poor condition and have been found to be misaligned and inoperable. The airport is currently working to correct this issue.

Electronic NAVAID Devices available to pilots for flying aircraft to or from the Airport include:

- **Global Positioning System (GPS):** is a space based NAVAID for aircraft pilots en route to an airport. The Global Positioning System (GPS) is a radio navigation system consisting of a constellation of satellites and a network of ground stations used for monitoring and control. A minimum of 24 GPS satellites orbit the Earth at an altitude of approximately 11,000 miles and transmit electronic signals which properly equipped aircraft use to accurately determine position, altitude, velocity, time and other navigational information anywhere in the world and in all weather conditions. GPS was initially developed by the United States Department of Defense for military navigation around the world. Increasingly over the last few years, GPS has been utilized more in civilian aircraft. GPS is similar to LORAN-C as pilots can directly navigate to any airport in the United States and are not required to navigate using a specific navigational facility.

  The original GPS system had a horizontal accuracy of approximately 328 feet. GPS now has a horizontal accuracy of approximately 7.5 feet. Since the early 2000s, with the introduction of the latest Global Positioning System Wide Area Augmentation System (WAAS), airports have acquired published approach procedures with better visibility minimums than would otherwise be possible without the installation of new ground based, instrument approach equipment at the airport. Since the new GPS technology is satellite based, it does not require a lot of expensive ground-based equipment to be installed at the airport.

  Approach Procedures at the Abilene Municipal Airport are designed and published by the FAA. K78 has published GPS approach procedures for Runway 17 and Runway 35. The approach procedures are included in this report in Appendix E.

Weather Observation

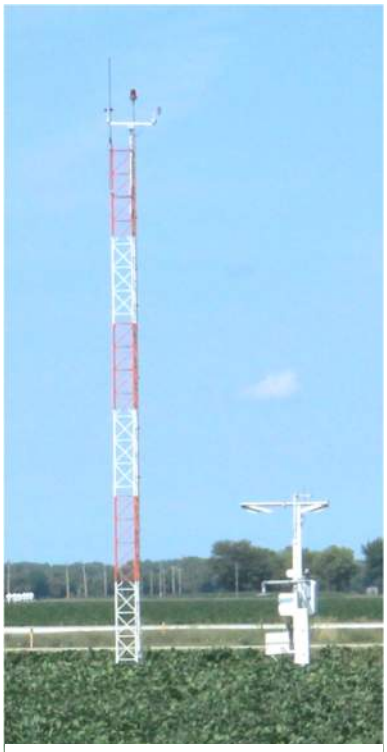
The primary concern of the aviation community is safety, and weather conditions often threaten that safety. Automated Weather Observing System (AWOS) units are automated sensor suites which are designed to serve aviation and meteorological observation needs for safe and efficient aviation operations, weather forecasting, and climatology. A basic strength of automated observing systems for local weather reports is that critical aviation weather parameters are measured where they are needed most, at airport runway Touchdown Zones (TDZs). The data gathered from surface and upper altitude observations form the basis of all-weather forecasts, advisories, and briefings.

An AWOS system measures the following parameters:

- Barometric pressure and altimeter setting (in inches of Mercury).
- Wind speed and wind gusts (in knots)
- Wind direction and variable wind direction (in degrees of the compass)
- Temperature and dew point (in degrees Celsius)
- Altimeter setting and density altitude
- Visibility and variable visibility (in miles)
- Cloud ceiling height (in feet)
- Precipitation accumulation (in inches) and type (rain, snow and sometimes drizzle)
- Thunderstorm detection (via a cloud-to-ground lightning detector).

AWOS systems disseminate weather data in a variety of ways:

- A computer-generated voice message which is broadcast via radio frequency to pilots in the vicinity of an airport. The message is updated at least once per minute, and this is the only mandatory form of weather reporting for an AWOS.
- Optionally (but frequently done), a computer-generated voice message can be made available over a telephone dial-up modem service. The message is updated at least once per minute.
- Optionally (but frequently done), AWOS messages may be transmitted to the FAA for national dissemination via computer. These messages are currently in METAR format, and typical reporting frequencies are once every 20 minutes.
- Optionally (but frequently done), the AWOS can be connected to internet access. This connection not only allows pilots from all over the world access to up-to-date weather conditions at K78, but also the local Abilene Community including citizens, businesses, and local farmers.



AWOS III at
Abilene Municipal Airport

Abilene Municipal Airport has an AWOS III that is in good condition located at the Airport. It broadcasts weather information on frequency 124.125. Information is also available via phone number 785-263-3096, and online at http://online.saiawos.com/K78/ios/display.html.

LANDSIDE FACILITIES

Landside facilities include the aircraft parking aprons, fueling facility, Terminal Building, aircraft storage hangars, aircraft maintenance hangars, and lease facilities for business and industry. Landside facilities are depicted in Exhibit 1H located on page 1-36.

Terminal Building and Storage Hangar

The Abilene Municipal Airport Terminal Building and Storage Hangar is located on the east edge of the primary apron and is used to accommodate Airport visitors, pilots and the Fixed Base Operator (FBO). The building is a 3,200 square foot facility and is connected to most utilities, including water, sewer, electricity, natural gas, and telephone. The building address is 801 S Washington St, Abilene, KS 67410. The building does not have a security alert system or security cameras but seems well-secured and lit.

The Storage Hangar area of the building is a single-story hangar measuring 50 feet long by 52 feet wide and is attached to the terminal. The Storage Hangar has a bi-fold door located in the west end of the building that provides direct access to the apron. The door is 40 feet wide by 15 feet high to accommodate aircraft and automobile access. The size of the Maintenance Hangar doors will accommodate entry of Airplane Design Group (ADG) I aircraft.

The Terminal Building area is single story and measures 52 feet long by 13 feet wide and is located on the north part of the building. The Terminal Building provides heated and air-conditioned space as a welcome area for pilots and guests to the Airport and operational space for the FBO. The Terminal Building is

complete with lobby, office area, telephone, restrooms, and lounge. Community and aviation information is available in the lobby area.

The Abilene Municipal Airport Terminal Building and Storage Hangar

Aircraft Hangars

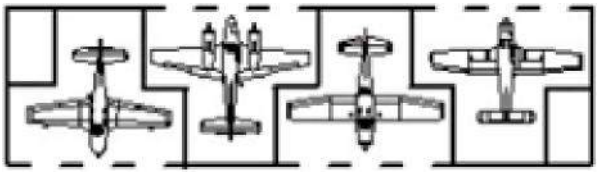
Many pilots and/or businesses who own or plan to own an aircraft want a hangar to protect their valuable investment in personal transportation from the elements. Airport hangars provide various uses, including individual aircraft storage, transient aircraft storage, commercial repair/maintenance buildings, and space for lease to businesses and industry with the need to be located on the airport for easy access to aviation support services. In fact, a well-executed and successful hangar portfolio can be the key to a financially secure general aviation airport. Abilene Municipal Airport currently has a significant waitlist for aircraft hangars making it difficult to attract more business or generate additional revenue for the airport.

Hangars vary a great deal in planning and design. The type of hangar used depends on the type and number of aircraft to be serviced and on the nature of the maintenance equipment. The most common hangars have a rectangular profile and are of arch or frame construction; they are often 80 feet to 100 feet wide at a general aviation airport. At a commercial airport, hangars can be 200 feet to 300 feet wide. Depending on their function, the following types of hangars are distinguished:

- **Conventional Hangars** are normally a rectangular building designed to function just as an aircraft storage facility. This type of hangar normally just has electricity for minimal lights and electrical outlets and has one aircraft door and one walk-in door. Conventional hangars normally are not insulated, heated or air conditioned. Aircraft pilots and/or owners can perform very minor maintenance and cleaning of their aircraft in a Conventional Hangar.
- **Executive Hangars** are normally a rectangular building designed to function as an aircraft storage and maintenance facility and have amenities that support operating a business in the hangar. Executive Hangars normally have all utilities including Internet access. Offices, restrooms, conference rooms, storage areas, shop areas, etc. can be integrated into this type of hangar. Executive hangars are insulated and have heating, mechanical air ventilating and air-conditioning systems.
- **Shade Hangars** are an open sided structure that provides aircraft with shade from the sun and temporary protection from rain, hail, etc. The roof can be made of steel or of various fabrics and

synthetic materials. A shade hangar is mainly used to accommodate aircraft visiting an airport for a short period of time.

- **T-Hangars** function just as a conventional hangar, however instead of being rectangular they are T-shaped just as their name indicates. These are built to save space as these fit the shape of aircraft better, resulting is less wasted space than a conventional hangar. This type of hangar normally just has electricity for minimal lights and electrical outlets and has one aircraft door and no walk-in door. T-hangars normally are not insulated, heated or air conditioned. Aircraft pilots and/or owners can perform very minor maintenance and cleaning of their aircraft in a T-hangar.
- **Nested T-Hangars**, because of their unique "T" shape, offers the ability to nest the aircraft into the hangar by facing the aircraft in opposite directions. This configuration allows for more aircraft storage in less space. The two options for a nested T-hangar allow flexibility for a wider, shorter length building or a narrower, longer building. This ability means nested T-hangars can be designed to best accommodate and facilitate growth at the Airport.



The hangars located at the Airport consist of conventional hangars, T-hangars, and nested T-hangars. The City of Abilene owns all aircraft hangars located near the terminal at the Abilene Municipal Airport and leases those hangars to private individuals and businesses. Table 1E on Page 1-36 summarizes the aircraft hangars located at the Airport, while Exhibit 1H on Page 1-36 shows a picture of each of the hangars. Exhibit 1I located on page 1-37 depicts the building layout for the hangar area at the Airport.

Table 1E

Aircraft Hangar Summary

Hangar Type	Hangar Number	Aircraft Stalls	Stalls Leased	Dimensions (Square Feet)	Door Size Door Type	Condition
Terminal/ Conventional Hangar	#T1	2	2	50' x 52' 2,600 sf	40' x 15' Bi- Fold	Good
Conventional Hangar	#C1	1	1	40' x 40' 1,600 sf	40' x 12' Bi- Fold	Good
Conventional Hangar	#C2	1	1	40' x 40' 1,600 sf	40' x 12' Bi- Fold	Good
Conventional Hangar	#C3	1	1	40' x 60' 2,400 sf	40' x 12' Bi- Fold	Good
Conventional Hangar	#C4	1	1	60' x 60' 3,600 sf	60' x 20' Sliding Doors	Good
T- Hangar	1	1	1	40' x 30' 900 sf	40' x 12' Sliding Doors	Good
T- Hangar	2	1	1	40' x 30' 900 sf	40' x 12' Sliding Doors	Good
T- Hangar	3	1	1	40' x 30' 900 sf	40' x 12' Bi- Fold	Good
Nested T- Hangars	#4- 13	10	10	45' x 220' 9,900 sf	40' x 20' Bi- Fold	Good

#T-1

#C1

#C2

#C3

#C4

#1

#2

#3

#4-13

Exhibit 1H
Aircraft Hangars Located at the Abilene Municipal Airport

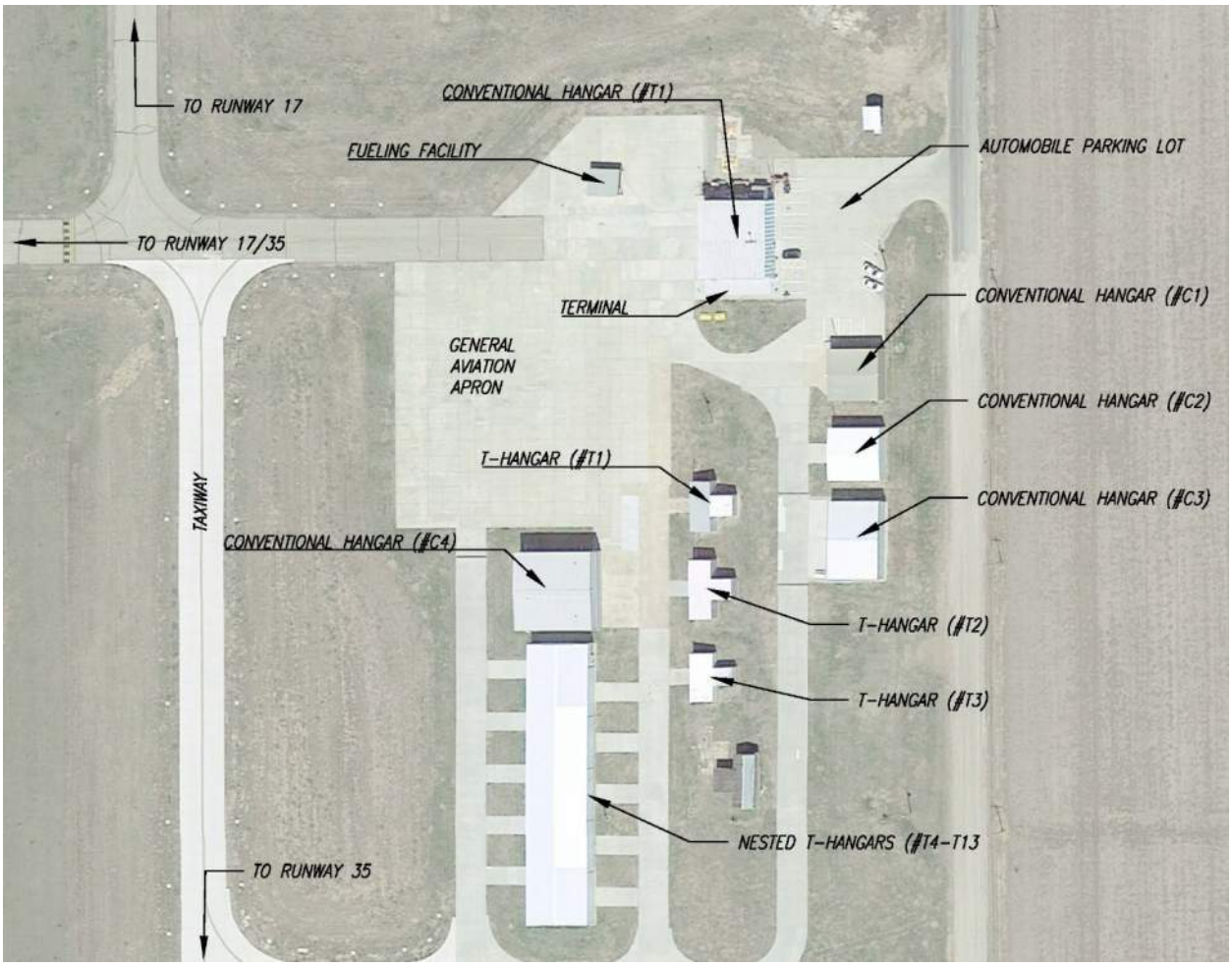


Exhibit 1I
Building Layout for Hangar Area

General Aviation Apron Looking South at Abilene Municipal Airport

Aircraft Apron

The primary apron is approximately 200 feet long by 200 feet wide, constructed of concrete, and includes 11 tie-downs for outdoor parking of aircraft. In addition to aircraft parking, the apron provides aircraft access to the Airport terminal building, maintenance hangar, general aviation hangars, aircraft fueling area, and the taxiway to the primary runway. The apron is located just north and adjacent to the Airport Terminal/fueling area

Automobile Access and Parking

The Airport is accessed by one primary entrance off of Washington Street which is a two-lane secondary road. Washington Street is free flow at the entrance. The drive is constructed of pavement approximately 30 feet wide with no curb and gutter. Due to the Airport's location, there is no sidewalk or walking trail system that provides walking access to the Airport.

The automobile parking area is located east of the general aviation apron and terminal building. It is a concrete paved parking lot approximately 150 feet long. Approximately 20 regular sized vehicles can park in the parking lot.

The Abilene Municipal Airport Automobile Parking Lot

Utilities

The availability and capacity of the utilities serving the Airport are important in determining the development potential of Airport property. Of primary importance is the availability of water, sewer and electricity sources at the Airport. Airport utilities itemization and respective providers are:

- **Water** provided by the City of Abilene.
- **Sanitary Sewer** is connected to an on-site septic system.
- **Electric Power** provided by Westar Energy. Headquartered in Topeka, Kansas. Westar has no local office in Abilene
- **Natural Gas** is supplied by Kansas Gas Service (KGS), a division of Oneok, Inc. of Tulsa, Oklahoma. Kansas Gas Service headquartered in Overland Park, Kansas and has no local office in Abilene.
- **Telephone** service is provided by Nex-Tech. Nex-tech is a rural telephone provider with a local office in Salina, Kansas.
- **Cable Television** Is not provided at the airport.
- **Internet Access** is provided by AT&T. AT&T is headquartered in Dallas, Texas, has a regional office located in Kansas City, Missouri and has no local office in Abilene.

Support Services

Support services at the Airport are those services that help keep the Airport operational on a daily basis and aid the Airport during times of emergency. Such services and respective providers are:

General Maintenance is provided by the City of Abilene Department of Public Works.
Snow Removal services are provided by the City of Abilene Street Department.
Mowing is provided by the City of Abilene Department of Public Works.
Fire Protection is provided by the Abilene Fire Department.
Emergency Medical Services (EMS) provided by the Abilene EMS.

Fixed Base Operator (FBO)

A Fixed Base Operator (FBO) is a commercial business granted the right by an airport sponsor to operate on the Airport and provide aeronautical services to the general public such as sale of fuel, hangar rental, aircraft tie-down and parking services, aircraft rental, aircraft maintenance, flight instruction, and air taxi/charter operations. FBOs also provide non-aviation services such as access to restrooms, ground transportation services, food and drink refreshments, internet access and lounge areas.

In the aviation industry, an FBO is a service center at an airport may be a private enterprise or may be a department of the municipality that the Airport serves. In common practice, an FBO is a primary provider of support services to general aviation operators at a public-use airport either located on airport leasehold property or, in rare cases, adjacent to airport leasehold property as a through-the-fence operation. Most FBO operators doing business at airports of high to moderate traffic volume are non-governmental organizations such as either privately or publicly held companies.

The Abilene Municipal Airport has a full service FBO located in the Terminal Building and Storage Hangar. The FBO service is provided by Abilene Flying Service. At the Abilene Municipal Airport, the FBO provides the services listed below.

- Airport management
- Aviation fuel
- Aircraft parking (ramp or tiedown)
- Hangar leasing / sales
- Flight training
- Courtesy transportation
- Internet access
- Restrooms
- 24-hour assistance
- Community and aviation information available in the lobby area

Ground Transportation

The availability of ground transportation at a rural airport is critical to the usefulness and future economic viability of a general aviation facility. A key component of the economic impact any airport brings to its local economy is directly tied to the ability of visitors arriving via aircraft to easily leave the airport and engage in local attractions and activities or conduct business in the host community and/or surrounding area. Readily available ground transportation from the airport to the Abilene community and area highway system is an important characteristic of the airport that adds a necessary and pleasing convenience for aircraft travelers thus resulting in more visitor attraction to the airport and its host

community of Abilene. A good ground transportation link allows for the itinerant aircraft transporting visitors and pilots to better utilize the airport, the Abilene community, and the regional highway system. The Airport offers the following ground transportation linkages:

Two Chevy Impala Courtesy Cars are provided by the FBO.

Public transportation service provided by the Abilene Parks & Recreation department.

With the said transportation options, the Airport has a very good ground transportation linkage to the Abilene community and regional highway system. The Courtesy Car option is often used.

Fueling Facility

Aviation fuel is a specialized type of petroleum-based fuel used to power aircraft. It is generally of a higher quality than fuels used in less critical applications, such as heating or road transport, and often contains additives to reduce the risk of icing or explosion due to high temperatures, among other properties. Most aviation fuels available for aircraft are kinds of petroleum spirits, which is used in engines with spark plugs, or fuel for jet turbine engines, which is also used in diesel aircraft engines. Alcohol, alcohol mixtures, and other alternative fuels may be used experimentally, but alcohol is not permitted in any certified aviation fuel specification. The three main types of aviation fuel are:

- **Aviation gasoline (Avgas)** is used in piston engine aircraft where the emphasis is on anti-knock characteristics. The most commonly used Avgas is 100 octane Low Lead (100 LL). The fuel must meet performance guidelines for both the rich mixture condition required for higher power during takeoff and the weak mixture which permits economic cruising. Avgas is used to power spark-ignited piston-engine aircraft. Avgas is formulated for stability, safety, and predictable performance under a wide range of environments and is typically used in aircraft that use reciprocating engines. The Airport currently has Avgas service.

- **Motor gasoline (Mogas)** is the everyday unleaded petroleum spirit used in automobiles and is now more often a choice of aircraft owners rather than Avgas for a variety of reasons. The primary reason is cost. The savings in fuel prices between auto fuel and Avgas are quite significant. In an airplane using 15 gallons per hour, a savings of only 50 cents per gallon will be approximately $7.50 per flight hour less than the cost of using Avgas. In 200 engine hours, this adds up to $1,500. Maintenance costs are also reduced when using Mogas. Many aircraft pilots use Mogas simply because their airplanes run better on it than they do on 100 Low Lead Avgas which, despite its name (100 Low Lead), contains twice as much lead as regular leaded auto fuel prior to the lead reductions which took place in 1986. This excess lead contributes to a host of problems, including fouled plugs and sticking valves. The Airport does not currently have Mogas service.

- **Jet Fuel** is a type of aviation fuel designed for use in aircraft powered by gas-turbine engines. The most commonly used fuels for commercial aviation are Jet-A, which has been used since the 1950s. Jet-A fuel is less flammable than Avgas, and therefore safer to transport and handle. Jet-A fuel service at an airport is imperative to attract jet aircraft. The Airport currently has Jet-A fuel for sale.

There are two 2,000-gallon aboveground fuel storage tanks installed with fuel pumps, leak detection and monitoring systems to meet Environmental Protection Agency (EPA) standards. The fuel tanks are filled with Avgas 100 LL and Jet Fuel. A fire extinguisher for an emergency and a cable on a retractable reel for electrically bonding aircraft to the fueling equipment before fueling are available at the Fueling Facility. The fuel pumps are owned by the City of Abilene but operated by the FBO.

Abilene Municipal Airport Fueling Facility

Radio Communications

Radio communications are an important requirement for the safe and proper operation of aircraft at airports. Radio communications vary greatly based on if the airport is controlled or uncontrolled.

Controlled Airports have an operating Air Traffic Control (ATC) tower. Two-way radio communications are required. ATC is responsible for providing for the safe, orderly, and expeditious flow of air traffic at airports where the type of operations and/or volume of traffic requires such a service. Tower controllers issue taxi, departure, and arrival instructions for pilots to follow on specific ATC radio frequencies. Because of that, pilots operating from a controlled airport are required to maintain two-way radio communication with air traffic controllers and to acknowledge and comply with their instructions. Pilots must advise ATC if they cannot comply with the instructions issued and request amended instructions. A pilot may deviate from an air traffic instruction in an emergency but must advise ATC of the deviation as soon as possible. Some airports have part-time ATC towers. When the tower is closed (usually at night) uncontrolled airport operating procedures apply. The tower frequency usually becomes the Common Traffic Advisory Frequency (CTAF) when the tower is closed. Aeronautical Sectional Charts depict controlled airports in blue color.

Uncontrolled Airports do not have an operating ATC tower. Two-way radio communications are not required, although it is a good idea to have that. At uncontrolled airports, pilots hear advisories on a Common Traffic Advisory Frequency (CTAF), but the responsibility for collision avoidance, landing and takeoff sequencing, and knowing the local airport procedures lies solely with the pilot. Uncontrolled airports are much more common than controlled airports. In fact, nearly 20,000 airports in the United States are uncontrolled, compared to approximately 500 that have an ATC tower. Millions of safe operations in all types of aircraft are conducted at Uncontrolled Airports in a variety of weather conditions. The process works well because pilots place safety first and use Federal Aviation Administration (FAA) required procedures. Radio communication at uncontrolled airports is not always easy, especially in metropolitan areas where there never seem to be enough radio frequencies to go around. It's not unusual for several airports within radio range to share the same CTAF. Pilots have to make sure they state the airport name at the beginning and end of each radio transmission for the sake of both clarity and safety. Aeronautical Sectional Charts depict uncontrolled airports in magenta color.

The Abilene Municipal Airport is an Uncontrolled Airport and does not have an ATC tower.

In General Aviation (GA), the most common types of radios operate using Very High Frequency (VHF). A VHF radio operates on frequencies between 118.0 megahertz (MHz) and 136.975 MHz and is classified by the number of channels the VHF radio can accommodate such as 720 or 760 channels. The 720 and 760 VHF radios uses a 0.025 MHz frequency spacing (example: 118.025 MHz up one frequency space to 118.050 MHz) with the 720 having a frequency range up to 135.975, and the 760 going up to 136.975. VHF radios are limited to line of sight transmissions. Therefore, aircraft at higher altitudes are able to transmit and receive at greater distances.

Two-way radio communications are not required at an uncontrolled airport, although it is a good operating practice for pilots to transmit their intentions on the specified frequency for the benefit of other aircraft traffic in the area. The key for pilots communicating at an airport without an operating ATC tower is selection of the correct common frequency which is called the Common Traffic Advisory Frequency (CTAF). A CTAF is a frequency designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating ATC tower.

The Abilene Municipal Airport utilizes a Universal Communication (UNICOM) Air-to-Ground (ATG) radio communication station. In the United States, UNICOM radio frequencies range from 122.700 MHz to 123.075 MHZ. The CTAF radio communication frequency at the Airport is 122.800 MHZ. On pilot request, UNICOM base stations may provide pilots with weather information, wind direction, the recommended runway, or other necessary information.

Perimeter Control

To delineate and adequately protect security areas of GA airports from unauthorized access, it is important to consider boundary measures such as fencing, walls, or other physical barriers, electronic boundaries such as sensor lines and alarms, and/or natural barriers. Physical barriers can be used to deter and delay the access of unauthorized persons onto sensitive areas of airports. Such structures are usually permanent and are designed to be a visual and psychological deterrent as well as a physical barrier. They also serve to meet FAA safety requirements in many cases. Where possible, security fencing or other physical barriers should be aligned with security area boundaries. The purpose of the perimeter fence is to also keep wildlife out of the airport, which can be very dangerous to operating aircraft.

Entrance to Abilene Municipal Airport Parking Lot

There is no perimeter control at the Abilene Municipal Airport. There is no perimeter fencing at the airport to delineate the apron from the parking area.

Through-The-Fence Operations

Federal Aviation Administration (FAA) defines through-the-fence operations as:

> *"Those activities permitted by an airport sponsor through an agreement that permits access to the public landing area by independent entities or operations offering an aeronautical activity or to*

owner of aircraft based on land adjacent to, but not part of, the airport property. The obligation to make an airport available for the use and benefit of the public does not impose any requirement for the airport sponsor to permit ground access by aircraft from adjacent property."

Through-the-fence operations include businesses or individuals that have access to airport infrastructure from outside the Airport property boundary, or that utilize Airport property to conduct a business but do not rent business space at the Airport. More common types of through-the-fence agreements are for free-lance flight instruction, crop sprayer operations, aircraft maintenance, and aircraft hangars.
FAA's official policy concerning through-the-fence operations is as follows:

"FAA regulations do not permit "through-the-fence" operations and exceptions can be granted where operating restrictions ensure safety and equitable compensation for use of the airport."

The FAA strongly discourages airport owners from entering into any agreement which grants access to the public landing area by aircraft normally stored and serviced on adjacent property. The reason for this FAA policy is that the existence of such agreements could result in the airport owner's inability to comply with their grant obligations and could jeopardize Federal Funding of airport improvements. Through grant agreements with the Federal government, the City is obligated to retain control over airport property, insure that any development is in accordance with the approved Airport Layout Plan (ALP), insure fair and equitable treatment of all airport users in a non-discriminatory manner, and manage the airport facilities in such a manner as to derive sufficient revenue to make the Airport as self-sufficient as possible.

The Abilene Municipal Airport does not have any through-the-fence operations at the airport.

SOCIOECONOMIC FORECASTS

Local and regional forecasts developed for socioeconomic variables provide an indication of the potential for supporting growth in aviation activity. Three variables often found to be most valuable in evaluating local and regional aviation traffic growth potential are population, employment and income. Employment and per capita personal income can be particularly useful because they reflect swings in the economy and are usually available on an annual basis. This information is essential in determining aviation service level requirements, as well as forecasting the number of based aircraft and annual aircraft activity at the Airport.

For purposes of this Master Plan, economic and demographic data and projections were prepared and obtained from Woods & Poole Economics, Inc. of Washington, D.C. (www.woodsandpoole.com). Woods & Poole is an independent firm that specializes in long-term county economic and demographic projections. Woods & Poole projections rely on a very detailed database that is one of the most comprehensive county-level projections available.

Table 1F below presents historic and forecast socioeconomic information used for future analysis in this Master Plan. Dickinson County experienced slight population increases between 1987 and 2017 with an average yearly population growth of 0.079%. In the last two decades, between 1997 and 2017, Dickinson County has experienced a slight population decrease with an average rate of -0.824%. Aviation demand can also be significantly influenced by other socioeconomic conditions of a community as well. Total employment, personal & per capita personal income (PCPI), and mean household income have all seen moderate to strong increases over the last three decades.

Table 1F
Historical and Forecast Socioeconomic Conditions

Year	Population	Total Employment	Personal Income (Thousands of '09 $)	Income Per Capita ('09 $)	Mean Household Income ('09 $)
History					
1987	18,921	9,734	$461,461	$24,389	$60,051
1997	19,532	11,066	$543,516	$27,827	$67,651
2007	19,454	10,433	$734,374	$37,749	$89,633
2017	19,371	10,126	$824,159	$42,546	$97,310
Forecasts					
2022	19,570	10,376	$888,583	$45,405	$103,162
2027	19,749	10,581	$951,224	$48,166	$110,506
2032	19,881	10,736	$1,003,859	$50,493	$117,632
2037	19,918	10,837	$1,048,001	$52,616	$124,637

Source: Dickinson County, Kansas 2017 Data Pamphlet by Woods and Poole Economic, Inc.

Forecasted population estimates indicate a small increase in total population of Dickinson County over the next 20 years. The County population is projected to increase from 19,371 currently in 2017 to 19,918 in 2037, an increase of 547 people. This equates to an average annual increase of 0.141% over the next 20 years.

Forecasts for total employment, Per Capita Income, total personal income and mean household income indicate continued growth over the forecasted period. Over the 20-year forecast horizon, total employment is expected to grow approximately 6.85% with total personnel income growing approximately 25.19%. Adjusted Per Capita Income is anticipated to increase 22.18% over the 20-year planning horizon whereas the mean household income is projected to increase more, at 26.49%. Socioeconomic indicators present a favorable outlook for Dickinson County, Abilene and the surrounding area.

MAJOR EMPLOYERS

Since flying began making the world a smaller place, the ability to traverse long distances quickly has become progressively faster, easier, safer and more efficient. Without the vital network of General Aviation gateways in the United States, rural locations around the Nation become out of reach for a larger part of the general public and smaller businesses. GA airports support the growth and development of businesses in a community thus helping the community and surrounding area to prosper. The major employers within Dickinson County are listed in Table 1G below.

Table 1G
Major Employers

Firm	# Employees	Products
Russell Stover Candies, Inc.	545	Manufacturing
Orscheln Farm & Home	467	Distribution
Memorial Health System	292	Health Services
USD 435	335	Education
Dickinson County, Kansas	131	Government
Great Plains Manufacturing, Inc.	122	Manufacturing
Abilene Machine, Inc.	121	Retail
City of Abilene	75	Government
Holm Automotive, Inc.	44	Retail
DS&O Electric Cooperative, Inc.	42	Utility
West Country Mart	171	Retail
Eisenhower Presidential Library and Museum	36	Government
ADM Milling	23	Retail
Don's Tire and Supply	25	Retail
Gavilon Grain	21	Retail

AIRPORT ECONOMIC IMPACTS

Airports are not only important to air travelers; they provide significant economic and quality of life benefits to the communities that an airport is located in or near. Airports create jobs for local residents. This is accomplished either directly through the labor needed to operate an airport, or indirectly through the associated businesses that spring up in the community due to the convenience of the Airport. These businesses in turn generate important tax revenues for the city, county, state and Nation. Airports help keep existing businesses and employees in the community and attract new ones to the region.

The economic impact created by airports goes far beyond the revenue created directly by airport use. An airport creates new business and job opportunities; helps keep existing businesses, employers, and employees located in the region; provides greater accessibility to emergency medical services and air ambulance operations; facilitate agricultural aircraft spray operators protecting local crops for better production of the crops for the area farmers; provides convenience for Federal, state and local law-enforcement to transport and apprehend criminals; recreation; tourism; and also one of the more important aspects to General Aviation – it facilitates the hundreds of thousands of Americans to fly their

own aircraft and to create interests for others to begin to fly. All in all, airports, no matter how big or small create an overall better life for people and can provide positive economic impact.

The economic contribution of an airport should be publicly recognized, so that actions to protect its continued operation can gain community support. For some, an airport is viewed as a recreational facility that is used by relatively few persons. However, a broader vision is more appropriate, as airports provide services that affect most all citizens. For example, an airport enables such activities as:

- Access to the National air transportation system
- Trans-shipment of equipment, supplies, and personnel
- Emergency ingress and egress transportation, including medical response
- Protection of Kansas' #1 export: agriculture
- Shipment of time-sensitive items
- Pilot training
- Tourism
- Aircraft maintenance and storage

The importance of air transportation, particularly in the business aviation sector, is growing. The ability to make just-in-time deliveries and to transport sales and customer service staff to quickly forming events is a critical business advantage. Communities with an airport that can support such business activity tend to economically grow and prosper.

Estimated Economic Impacts of All Kansas Airports

There is a strong relationship between the Kansas economy and aviation. The Kansas system of 8 Commercial Service airports and 132 General Aviation airports serves as an integral connection between Kansas businesses and residents and the ever-expanding global economy. Airports in Kansas help to both lead and sustain growth and economic diversification. Airports are important economic catalysts, supporting thousands of jobs and billions of dollars in economic activity. Most of the largest employers in Kansas, as well as many smaller businesses, rely on the Kansas aviation system to reliably transport employees, customers, supplies, and products to and from their operations. Airports in Kansas serve as the base of operations for a variety of businesses, including airlines, air cargo companies, flight instructors, charters, concessionaires, government entities, and many others. The Kansas tourism industry also depends on the Kansas system of airports to accommodate thousands of visitors each year.

The Kansas Department of Transportation, Division of Aviation (KDOT Aviation), commissioned a FAA funded study to examine the relationship between the Kansas system of airports and the Kansas economy. That study, named the *Kansas Aviation Economic Impact Study 2010* (KAEIS), was prepared by *Wilbur Smith Associates, Inc.* of Cincinnati, Ohio with assistance from *Burns & McDonnell,* of Kansas City, Missouri.

The KAEIS study follows an approved methodology that has successfully quantified the value of airports and airport systems throughout the United States. The economic contribution of each airport in the Kansas airport system was measured in terms of employment, payroll, and output. Through a comprehensive survey process, the direct economic benefits related to on-airport businesses and government tenants, and the indirect benefits associated with visitor-related expenditures, were

calculated for each airport. The multiplier effect of these airport activities was also calculated using economic multipliers that are specific to Kansas. For example, when an airport employee purchases local goods and services, that spending and re-spending generates additional economic activity in the region of the airport location. The total economic impact of an airport is the sum of all direct, indirect, and induced (multiplier) impacts.

- **Direct Economic Impacts** are defined as the jobs and sales generated by businesses located at an airport, that is, those jobs and sales which are dependent on access to the airport facility. The expenditures by these businesses for local goods, services, and capital improvements are also classified as direct impacts.
- **Indirect Economic Impacts** are the jobs and revenues generated by businesses located elsewhere in the community but are due to their use of the airport. This would include any sector of the local economy that serves users of the airport facility, or that uses an airport to transport goods, supplies, or personnel in order to enhance business opportunities and activities. Like on-airport businesses, these enterprises employ staff, purchase locally produced goods and services, and invest in capital projects. Businesses in this category can include hotels, restaurants, manufacturers, shippers, and retail stores whose existence is tied to the airport or to aviation. When assessing economic impact values, distinction is made between those generated as a result of the airport (direct) and those serving other segments of the local economy (indirect).
- **Induced Economic Impacts** are those generated in a community caused by the recycling of spending from both the direct and indirect economic impacts. Airport businesses, users, employees, and the airport itself are, in essence, consumers whose expenditures support other businesses and employment in the community. Studies indicated that an aviation dollar spent in a region will create at least another 50 cents to approximately one 1 dollar of income in that region. This reaction is commonly referred to as the “multiplier effect.” Thus, the induced economic impact of any activity is at least equal to the sum of the direct and indirect impacts, in terms of dollars.

Impact measures used in the KAEIS are:

- Employment measures the total number of full-time equivalent (FTE) jobs related to airport activity including on-airport construction. A part-time employee counts as one half of a full-time employee.
- Payroll measures the total annual wages and benefits paid to all workers whose salaries are directly attributable to airport activity.
- Economic Activity (Output) measures the value of goods and services related to airports in Kansas. The output of on-airport businesses is typically assumed to be the sum of annual gross sales and average annual capital expenditures.

When all of the impacts of the 140 airports in Kansas are added together, approximately 47,651 total jobs can be traced to the aviation industry. These employees receive more than $2.3 billion in total payroll and generate nearly $10.4 billion in total economic activity. In addition, Kansas airports provide a number of health, welfare, and safety benefits, the impacts including aerial agricultural spraying, medical transport and emergency evacuation, flight training, law enforcement, wildlife management, military exercises, and search and rescue operations. Appendix F of this Airport Master Plan contains the KAEIS Executive Summary.

Estimated Economic Impacts of the Abilene Municipal Airport

In formulating the KAEIS, the Abilene Municipal Airport underwent a detailed study. The methodology used to quantitatively estimate economic benefits of the airport involved on-site data gathering and surveys mailed to the City of Abilene and Airport tenants to tabulate the direct economic benefits of the airport and its tenants. A survey also sampled spending habits of General Aviation visitors while traveling in Kansas to determine their indirect economic benefits. Kansas specific ratios were used to convert this spending into jobs and payroll.

As these first-round economic benefits are released into the regional and statewide economy, additional second round benefits are created by the airport. For example, when the airport Fixed Base Operator (FBO) uses their airport income to buy groceries, this spending helps support additional economic activity. This spending recirculates or multiplies until the benefits ultimately leak outside of the airport region and eventually Kansas. Second round benefits for the KAEIS were calculated using Kansas specific multipliers. In general, for every $100 of first round benefits generated by aviation-related businesses, an additional second round benefit of $55 is created. The total economic benefit is the sum of first round and second round benefits.

In first round economic impacts, the KAEIS estimated that the Abilene Municipal Airport has an annual Direct Output of $387,200 and Indirect Output of $284,600. Second round economic impacts resulted in an annual Induced Output (economic multiplier effect) of $397,800. The KAEIS also determined that the Total Economic Impact of the airport is 18 Total Jobs with a Total Payroll of $359,400 and a Total Economic Output of $1.1 Million. Those economic impacts of the airport are summarized in Exhibit 1J below. The Abilene Municipal Airport KAEIS Summary is included in Appendix G. The estimated economic impacts of the airport are overall very positive for the Abilene and the Dickinson County community.

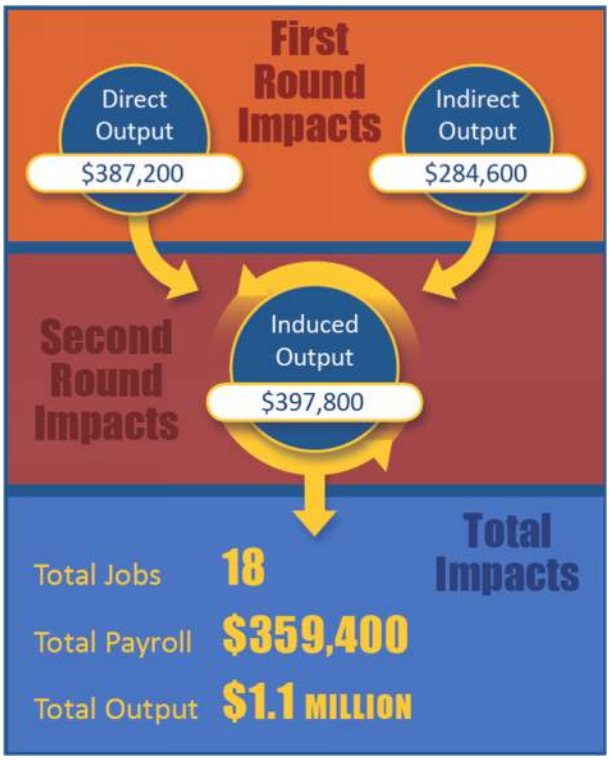


Exhibit 1J
Economic Impacts of the Abilene Municipal Airport

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CHAPTER 2

AVIATION DEMAND FORECASTS

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AVIATION DEMAND FORECASTS

The purpose of this chapter is to develop forecasts that define future aviation demand for the Abilene Municipal Airport (K78). These forecasts serve as the basis for planning new or expanded facilities that are required to meet the aviation needs of the Abilene service area for the next 20 years. The forecasts will be used to analyze the future needs of the airfield and landside facilities.

In general, forecasts should be realistic, based on the latest available data, supported by information in the study and with adequate justification for airport planning and development. Forecasting any type of future activity is as much an art as it is a science. Regardless of the methodology used, assumptions must be made regarding how aviation activity may change in the future. The objective of the forecast process is to develop estimates of the degree of these changes, in order that their impacts may be determined. Plans and preparations may then be made to accommodate them smoothly and cost-effectively. The primary point to remember about forecasts is that they serve only as guidelines for facility planning.

The following forecast analyzes recent developments, historical information, and current aviation trends to provide an updated set of aviation projections for Abilene Municipal Airport. The intent is to permit the City of Abilene to make planning adjustments necessary to make sure the airport facilities meet projected demands in a cost effective and efficient manner.

The proper planning of a facility of any type must begin with a definition of the demand that may occur over a specified period. Forecasts of general aviation, military and air taxi activity at the airport will be used as a basis for determining the types and sizes of facilities required to accommodate the aviation needs of the Dickinson County area through the 20-year planning horizon of the Master Plan - Year 2037.

In order to fully assess current and future aviation demands for the Abilene Municipal Airport, an examination of several key factors is needed. Factors to be considered and analyzed include historical and forecast socioeconomic and demographic information, national and regional aviation trends, and competing transportation modes and facilities. Considering these factors will ensure a comprehensive outlook for future aviation demand at the Abilene Municipal Airport.

NATIONAL ECONOMIC FORECASTS

National aviation forecasts are published each year by the Federal Aviation Administration (FAA). The latest edition of this publication is *FAA Aerospace Forecast Fiscal Years 2017-2037*. The forecast uses the economic performance of the United States as an indicator of future aviation industry growth. For the U.S., the outlook through 2037 is for sustained, moderate economic growth. The following discussion and forecast information is taken from the *FAA Aerospace Forecasts – Fiscal Years 2017-2037.*

Gross Domestic Product (GDP) - In the short term, (the five-year period between 2017 and 2022), U.S. economic growth is projected to grow an average 2.3 percent per year with rates ranging between 2.1 and 2.5 percent. Income growth remains muted during the same period (up an average of 2.7 percent). For the balance of the forecast period, U.S. real GDP growth remains around 2.0 percent annually while income growth increases to 2.4 percent annually. The long-term

stability of U.S. economic growth depends on sustained growth in the workforce and capital stock along with improved productivity and competitiveness.

Inflation - Inflation continues to remain in check as energy prices remain low through 2016 and 2017. After 2017, the inflation rate (as measured by the CPI), is projected to rise an average of 2.5 percent per year for the balance of the forecast period.

Unemployment - Since peaking at 10.0 percent in the fourth quarter of FY 2009, the unemployment rate has come down gradually, dropping to 4.1 percent in the last quarter of FY 2017. IHS Global Insight projects that the unemployment rate will remain steady at around 4.1 percent for the remainder of the forecast period.

Oil Prices - After the price of oil decreased by 23.9 percent in 2015 and 57 percent in total since 2008, it is projected to begin rising at an average rate of 9.9 percent from 2017 to 2026 to $100 per barrel, outpacing the inflation rate three fold. From 2027-2037, it is forecasted to slow to an average rate of 2.8 percent per year rising to $131 per barrel keeping pace with inflation.

NATIONAL GENERAL AVIATION TRENDS

The FAA uses estimates of fleet size, hours flown, and utilization rates from the General Aviation and part 135 Activity Survey (GA Survey) as baseline figures to forecast the GA fleet and activity. Forecasts of new aircraft deliveries, which use the data from General Aviation Manufacturers Association (GAMA), together with assumptions of aircraft retirement rates, produce growth rates of the fleet by aircraft categories, which are applied to the GA Survey fleet estimates. The forecasts are carried out for "active aircraft," (aircraft that fly at least one hour during the year) not total aircraft. The FAA's general aviation forecasts also rely on discussions with the industry experts conducted at industry meetings.

The results of the 2015 GA Survey, the latest available, showed the second increase to the GA fleet since 2007. The active GA fleet was estimated as 210,030 aircraft in 2015 (up 2.75 percent from 20143), with 24.1 million hours flown (up 3.7 percent from 2014).

Exhibit 2A show the U.S. General Aviation Shipments and billings for the last 10 years. In 2016, the general aviation industry experienced its second year of decline in deliveries since 2010. Single engine piston aircraft deliveries by U.S. manufacturers was down by 7.4 percent, turboprop deliveries were down by 2.1 percent, and the much smaller category of multi-engine piston deliveries declined 23.3 percent. U.S. manufacturers of general aviation aircraft delivered 1,525 aircraft in 2016, 4.2 percent fewer than 2015.

This was the second year of decline after four years of growth in shipments that showed first signs of slowing down in 2014.

Even with the slowed aircraft production, the long term outlook for general aviation, driven by turbine aircraft activity, remains somewhat favorable. Exhibit 2B below shows the forecast for the general aviation aircraft fleet over the next 20 years. The active general aviation fleet is projected to grow slowly, with an average annual rate of 0.1 percent over the 20-year forecast period, from an estimated 203,880 in 2015 to 209,905 aircraft by 2037. Driven by steady GDP growth and long term corporate profits, the more expensive and sophisticated turbine powered fleet (including rotorcraft) is projected to grow at a much quicker rate of 2.3 percent a year adding a total of 14,710 aircraft.

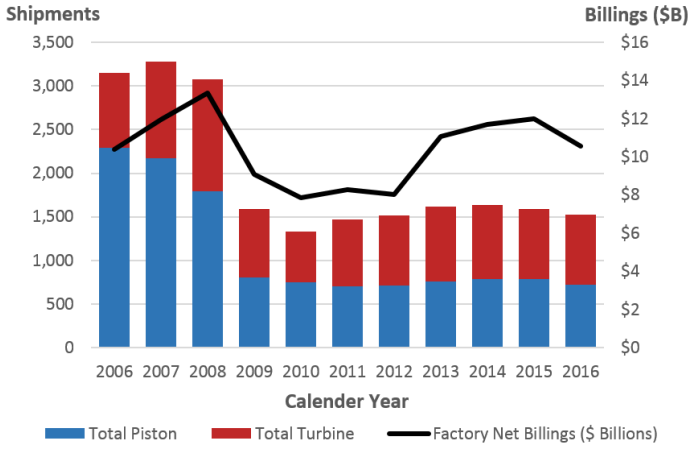

Exhibit 2A

U.S. General Aviation Shipments and Billings

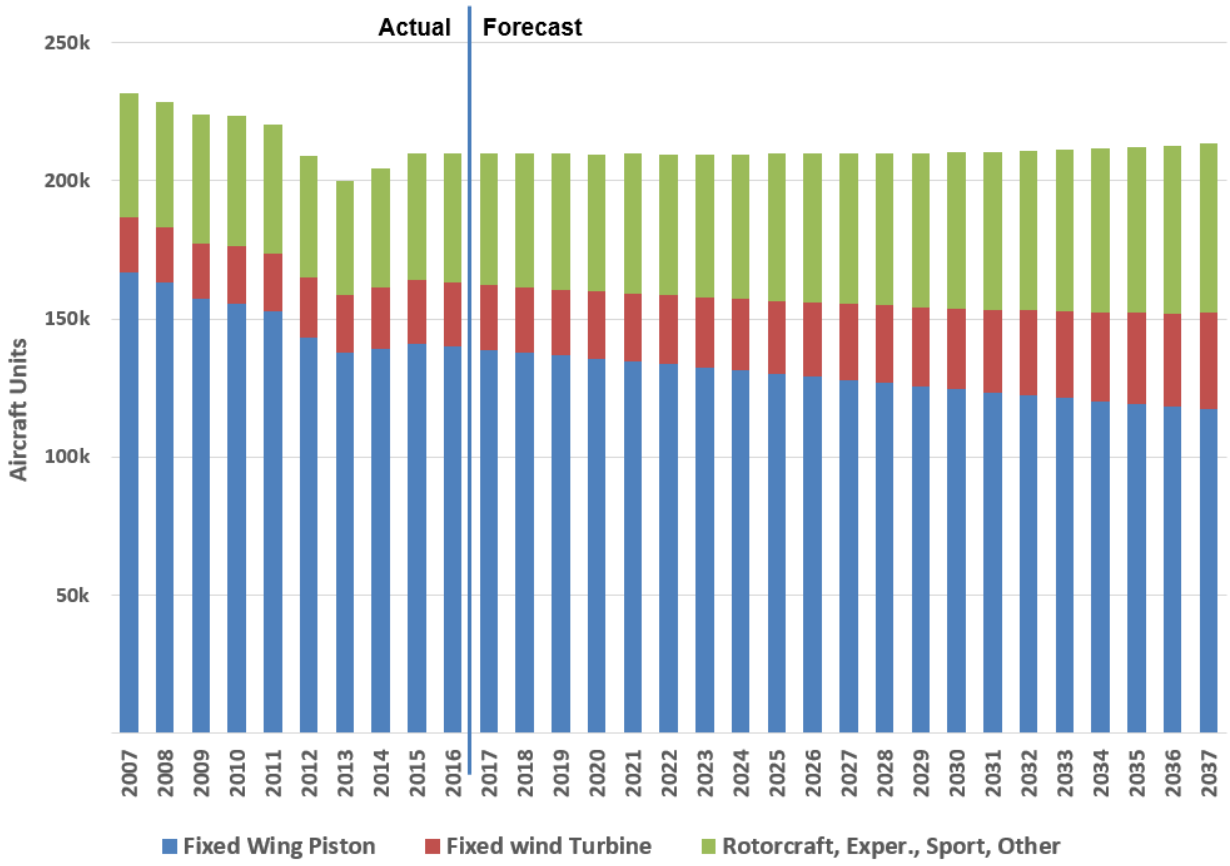

Exhibit 2B

Active General Aviation Aircraft Forecast

The largest segment of the fleet, fixed wing piston aircraft, is predicted to shrink over the forecast period by 21,400 aircraft (at an average annual rate of 0.8 percent). This is expected to occur as the fleet ages and is replaced by Light Sport aircraft and Very Light Jet (VLJs).

The smallest category, Light Sport Aircraft, which was created in 2005, is forecasted to grow by 5.9 percent annually, adding about 3,050 new aircraft by 2037, doubling its 2015 fleet size.

Exhibit 2C below depicts the forecast for the active General Aviation (GA) fleet by percent of aircraft type. The exhibit helps to illustrate how the GA industry continues to change and evolve in different areas of aircrafts, such as the VLJs or Sport Aircraft. Single engine piston aircraft are projected to decrease the most (11 percent) in the total percentage they make up in the GA fleet. As discussed earlier, this reflects the introduction of the VLJ and new Light Sport aircraft which are expected to dilute the replacement market for piston aircraft.

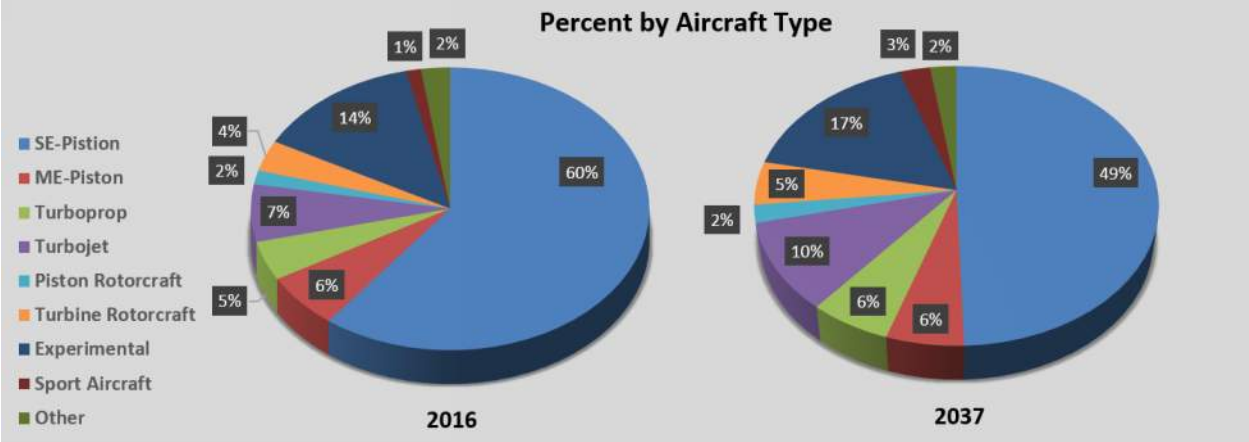

Exhibit 2C
Active General Aviation Aircraft Forecast by Percentage of Aircraft Type

Moderate fleet growth also impacts the number of general aviation hours flown, projected to increase an average of 0.9 percent per year through 2037. Following the decline in piston fleet, fixed wing piston hours are forecast to decrease by 0.8 percent per year. Countering this trend, hours flown by fixed wing turbine aircraft are forecast to increase 2.5 percent yearly over the forecast period. Jet aircraft are expected to account for most of the increase, with hours flown increasing at an average annual rate of 3.0 percent over the forecast period. The large increases in jet hours result mainly from the increasing size of the business jet fleet, along with continuing increase in utilization rates. Exhibit 2D below illustrates the forecast for active General Aviation hours flown.

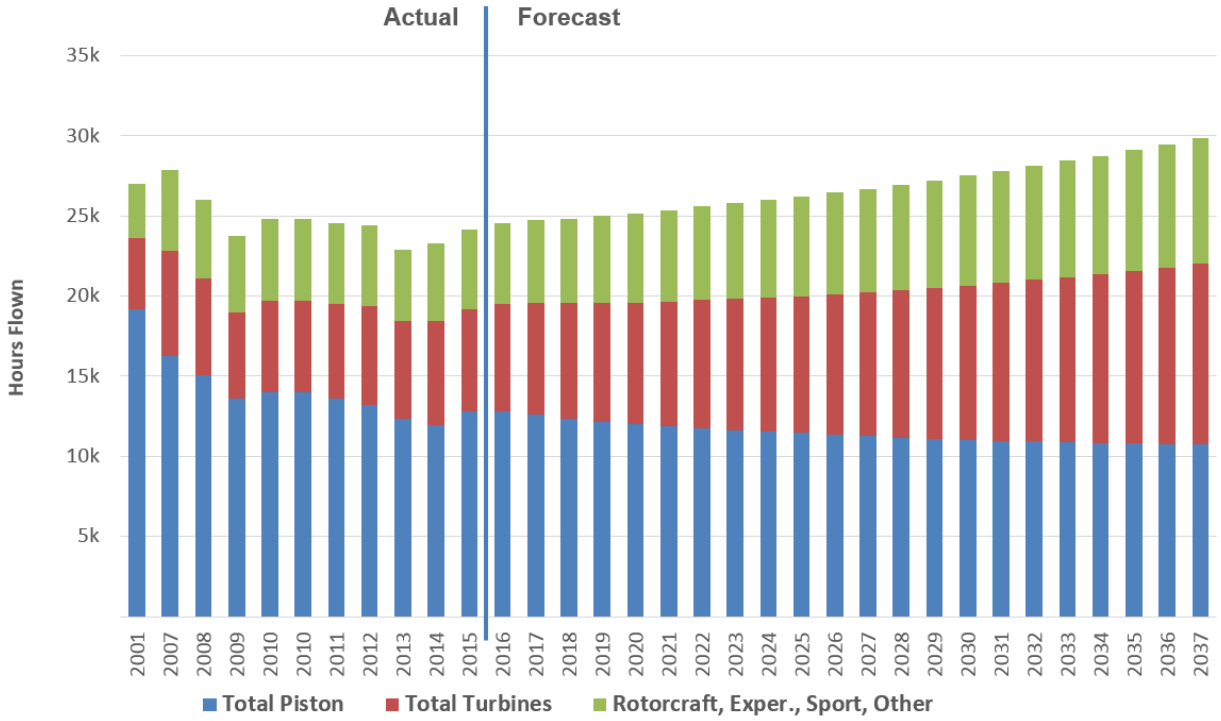

Exhibit 2D

Active General Aviation and Air Taxi Hours Flown

Exhibit 2E below shows the projected active pilot trends for student, private, and commercial pilots. The total pilot population is expected to decrease from an estimated 584,362 in 2016 to around 575,970 from 2016 to 2021, then increase to 590,715 by 2037, an average annual increase of 0.1 percent over the entire forecast period.

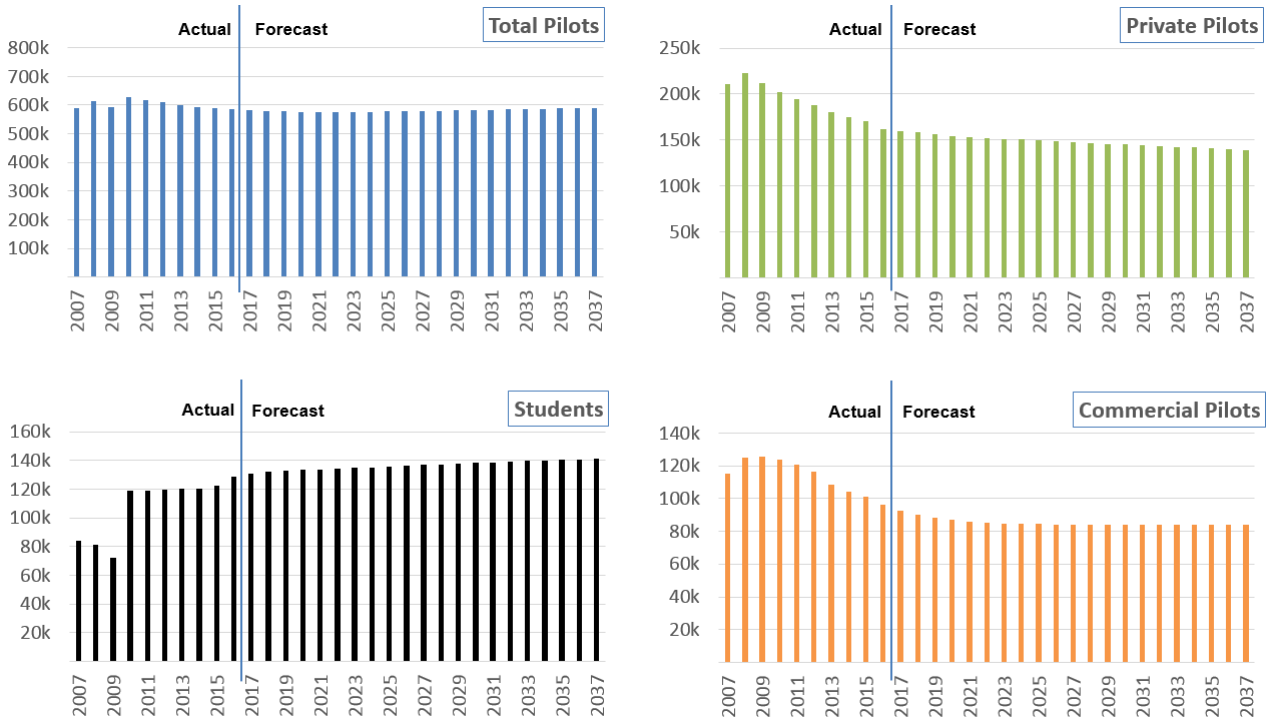

Exhibit 2E
Active Pilot Trends

AIRPORT SERVICE AREA

One of the initial steps in determining future aviation demand at the Abilene Municipal Airport is to define the generalized service area for the various types of aviation activity the Airport can accommodate. The primary service area for the Abilene Municipal Airport as shown in Exhibit 2F on page 2-7 was determined by considering other air facility choices available for users in the geographical region centered in Abilene. With information on competing airports, their capabilities and services and their relative attraction of convenience, a determination can be established regarding the Airport's share of the market.

The location of the Airport relative to the region's larger population centers (Salina and Manhattan) and other area airports indicates that the primary General Aviation service area for Abilene includes Dickinson County and the Abilene community. In determining the aviation demand for the Airport, it was also necessary to identify the Airport's role and intended services. As discussed in Chapter 1, the primary role of the Abilene Municipal Airport has been that of a General Aviation airport serving primarily recreational and business aircraft with minimal military use.

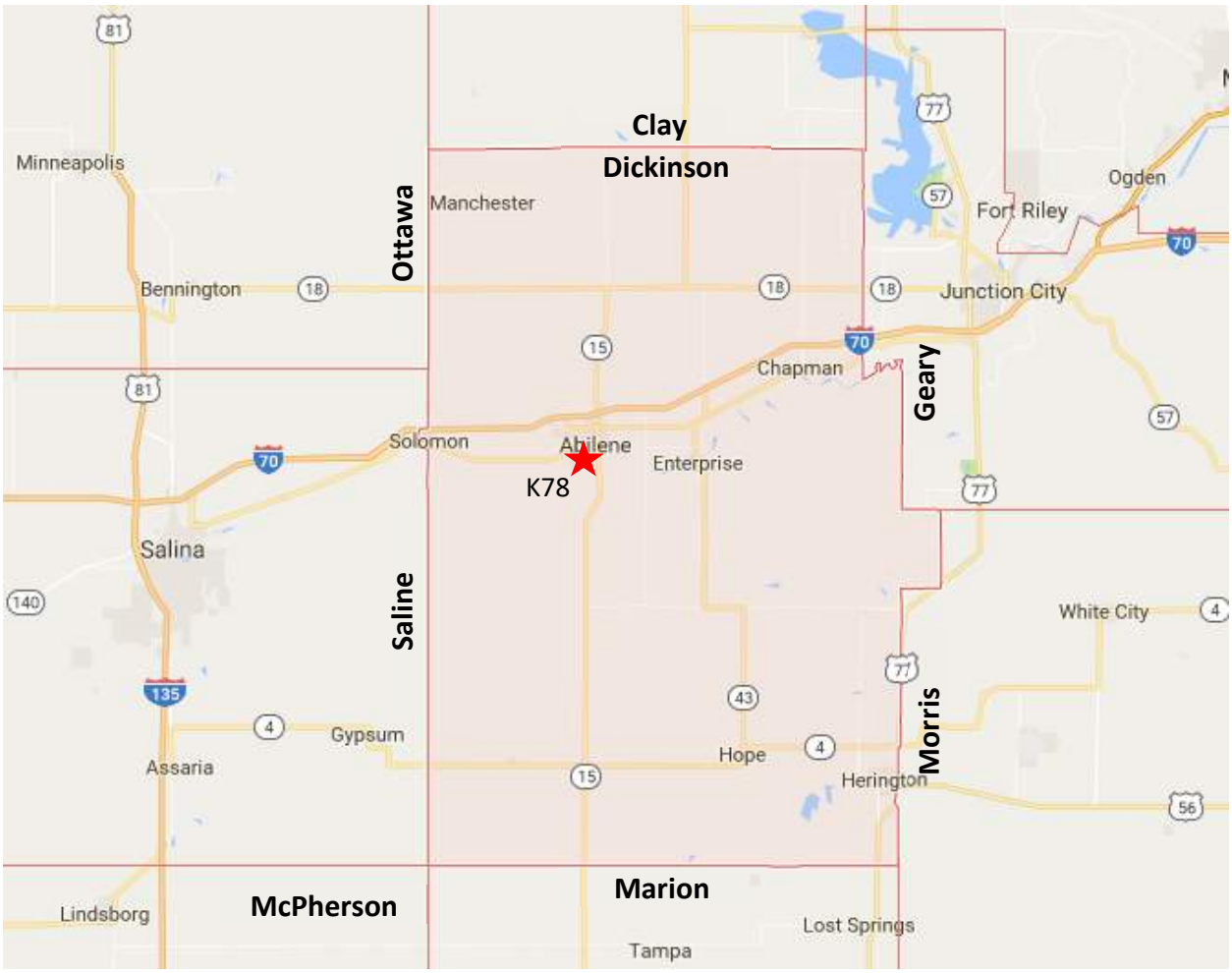

Exhibit 2F
Primary Service Area

FORECAST METHODOLOGY

The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include trend line projection, correlation and regression analysis, and market share analysis.

- **Trend line projection** is probably the simplest and most familiar of forecasting techniques. By fitting classical growth curves to historical demand data, then extending them into the future, a basic trend line projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in much the same manner as in the past. As broad as this assumption may be, the trend line projection does serve as a reliable benchmark for comparing other projections.

- **Correlation analysis** provides a measure of the direct relationship between two separate sets of historic data. Should there be a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

- **Regression analysis** uses the values for the aviation demand element in question, that being the dependent variables, projected on the basis of one (1) or more other indicators, the independent variables. Historical values for all variables are analyzed to determine the relationship between the independent and dependent variables. These relationships may then be used, with projected values of the independent variable(s), to project corresponding values of the dependent variable.

- **Market share analysis** involves a historical review of the activity at an airport or airport system as a percentage share of a larger statewide or national aviation market. Trend analysis of this historical share of the market is followed by projection of the share into the future. These shares are then multiplied by forecasts of the activity within the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections and similarly can provide a useful check on the validity of other forecasting techniques.

Population Projections

Population data was discussed in detail in the socioeconomic Forecasts section of Chapter 1 as obtained from Woods & Poole Economics, Inc. of Washington, D.C. (www.woodsandpoole.com). To summarize, the historic population figures show an increase in population from 1987 to the present. Forecasted population estimates for Dickinson County show a continued increase of 1.78 percent through the next 20 years. Likewise, all other employment and income projections are anticipated to increase significantly; Total Employment (increase 4.44 percent), Personal Income (increase 17.94 percent), Per Capita Personal Income (increase 15.88 percent), and Mean Household Income (increase 20.82 percent). From this data, it can be surmised that the airport service area provides an indication of the potential for sustaining growth in aviation activity over the planning period.

Based Aircraft Projections

At a general aviation airport the most important factor in the development of the aviation activity forecast is the number of based aircraft. The number of based aircraft is a direct correlation to airport facility needs such as hangars and fuel supply. In addition, based aircraft trends help to establish an airport's role within the regional and state air transportation system.

Table 2A below shows the based aircraft totals at the airport since 2011 and compares them with active GA aircraft in the Nation. As indicated, the airport's historical based aircraft totals have remained close to 19 based aircraft.

Past listings of aircraft based at the Abilene Regional Airport were obtained from the estimates on the FAA's Airport Master Record Form 5010 and airport records. The FAA Aerospace Forecasts, Fiscal Year (FY) 2017-2037, were used to obtain the U.S. active GA aircraft historical estimates and projections out to 2037. As discussed with Exhibit 2A, the FAA Aerospace Forecasts predicts that the total GA fleet is anticipated to have an average annual growth of 0.1 percent through the forecasts horizon, 2017-2037, which is reflected in Table 2A.

This data, based aircraft and U.S. active GA fleet size, were used to calculate the percentage of GA fleet based at the Abilene Municipal Airport, currently 0.0094 percent. Assuming that the Airport's share of

active aircraft would remain constant, the growth of the GA fleet predicts that 19 aircraft would be based at the airport by the year 2037.

Based on the economic projections and the estimated positive outcome for Dickinson County's future economic base, there is potential for the airport's share of U.S. active aircraft to increase over the planning period. Abilene and the airports in the surrounding counties adjacent to Dickinson County have a total of 340 based aircraft as shown on Table 1A on page 1-23. It is possible that with continued improvements to the airport and growth to the Abilene Community, aircraft in the vicinity could possibly relocate to Abilene. With that considered, a 1 percent per year increase in market share of U.S. active aircraft could yield up to 25 based aircraft by the year 2037.

Table 2A
Growth Projections of Based Aircraft Per National Active Market Share

Year	Based Aircraft	U.S. Active Aircraft	Market Share of U.S. Active Aircraft
2011	18	220,453	0.0082%
2012	21	209,034	0.0100%
2013	21	199,927	0.0105%
2014	21	204,408	0.0103%
2015	19	210,031	0.0090%
2016	19	209,908	0.0091%
2017	19	209,800	0.0091%
Forecasts			
Constant Share			
2018	19	209,800	0.0091%
2023	19	209,605	0.0091%
2028	19	209,920	0.0091%
2033	19	211,205	0.0091%
2038	19	213,420	0.0091%
Increasing Share			
2018	20	209,800	0.0095%
2023	21	209,605	0.0100%
2028	22	209,920	0.0105%
2033	23	211,205	0.0110%
2038	25	213,420	0.0116%

Sources for Historical and Forecast Data:
FAA/APO Terminal Area Forecast System,
FAA/APO Aerospace Forecasts (FY2017-2037)

Another forecasting methodology examined historic per capita based aircraft totals for the population of Dickinson County. Projections have been developed assuming a continuation of an existing ratio of aircraft per 1,000 residents as well as an increasing ratio. The population projections, as determined by Woods & Poole Economics, Inc., are a slight increase of population for Dickinson County through the planning horizon, year 2037. Therefore a constant share ratio method shows 20 based aircraft at the end of the forecasted period. With the projected economic and employment increases for Dickinson County, an increasing ratio was assumed to be a more realistic trend. A 1 percent per year increase was used. With this method, the number of based aircraft could grow to 24 by the year 2037. Table 2B shows the projections based on per capita ratios.

Table 2B
Growth Projections of Based Aircraft Per 1,000 Residents

Year	Based Aircraft	Dickinson County Population	Aircraft per 1,000 Residents
2011	18	19,706	0.91
2012	21	19,733	1.06
2013	21	19,479	1.08
2014	21	19,360	1.08
2015	19	19,303	0.98
2016	19	19,330	0.98
2017	19	19,371	0.98
Forecasts			
Constant Share			
2018	19	19,411	0.98
2023	19	19,608	0.98
2028	19	19,781	0.98
2033	20	19,896	0.98
2038	20	19,918	0.98
Increasing Share			
2018	19	19,411	0.99
2023	20	19,608	1.04
2028	22	19,781	1.09
2033	23	19,896	1.15
2038	24	19,918	1.20

Sources for Historical and Forecast Data:
Woods & Poole Economics, Inc. (Dickinson County, Kansas 2017)
FAA/APO Terminal Area Forecast System,

A summary showing the comparison of both forecasting methods is shown in Table 2C below. The selected planning forecast assumes the Abilene Municipal Airport captures a moderate market share over the planning horizon. Projected economic growth and airport improvements, support the potential for an increase in the number of based aircraft at the airport. The most likely forecast is seen to be a combination of increasing aircraft per 1,000 residents and an increase in national market share.

The FAA also publishes an official FAA aviation forecast called the Terminal Area Forecast (TAF). The most recent forecast published January 2018 shows for the Abilene Municipal Airport 19 based aircraft, 15,000 local operations, and 20,800 itinerant operations. The TAF does not show any growth to these numbers.

The selected forecast is the average of all of these scenarios. This forecast will be utilized in the remainder of the Master Plan and yields 20 based aircraft for the short term (5 year), 21 based aircraft for the intermediate term (10 year) and 23 based aircraft for the long range (20 year).

Table 2C
Comparison of Two Forecast Methods

	Historic			Forecasted			
	2011	2014	2017	2023	2028	2033	2038
National Market Share of Registeres Aircraft							
Constant Market Share	18	21	19	19	19	19	19
Increasing Market Share	18	21	19	21	22	23	25
Aircraft Per 1,000 Residents							
Constant Market Share	18	21	19	19	19	20	20
Increasing Market Share	18	21	19	20	22	23	24
Selected Planning Forecast	**18**	**21**	**19**	**20**	**21**	**22**	**23**

Exhibit 2G below shows the based aircraft forecasts for the airport. Since these forecasts are based on assumptions of anticipated growth, it is virtually impossible to predict actual activity and year-to-year functions. Actual growth could fluctuate above or below the selected line.

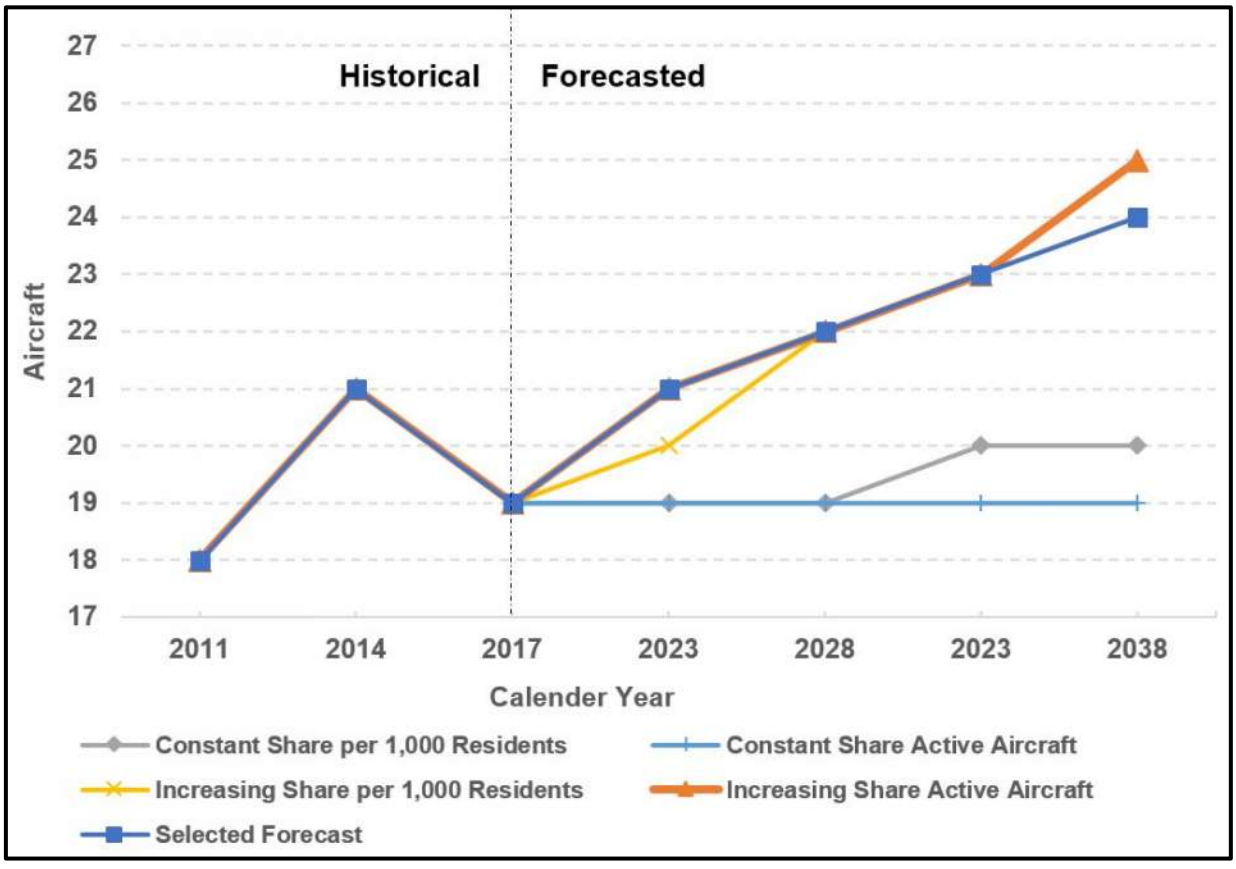

Exhibit 2G
Based Aircraft Forecast Summary – Abilene Municipal Airport

Fleet Mix Projections

The based aircraft fleet mix expected to use the Abilene Municipal Airport must be known in order to properly plan the facilities for the types of aviation activities expected at the airport. Out of the 19 currently based aircraft at the airport, there are 18 single engine aircraft and 1 multi engine aircraft as shown in Table 1B on page 1-25.

The forecast mix of aircraft for the Airport was determined by examining existing and forecast U.S. General Aviation fleet trends. The FAA Aerospace Forecasts Fiscal Years 2017-2037 was reviewed (See Exhibit 2B on Page 2-10). These were combined with the forecasted based aircraft forecast to predict the fleet mix at the Short, Intermediate, and Long term planning horizons. The fleet mix of based aircraft at the airport is anticipated to remain dominantly single-engine aircraft. If additional runway length can be provided, growth in the multi-engine aircraft and small to medium turbine-powered aircraft could be expected. Table 2D and Exhibit 2H on page 2-17 summarize the based aircraft fleet mix projections for the airport.

Table 2D
Based Aircraft Fleet Mix Projections

		Piston		Turbine		
Year	Total	Single	Multi	Turboprop	Jet	Rotorcraft
2017	19	18	1	0	0	0
Planning Horizon						
Short Term (2023)	20	19	1	0	0	0
Intermediate Term (2028)	22	20	2	0	0	0
Long Term (2038)	24	21	2	0	1	0

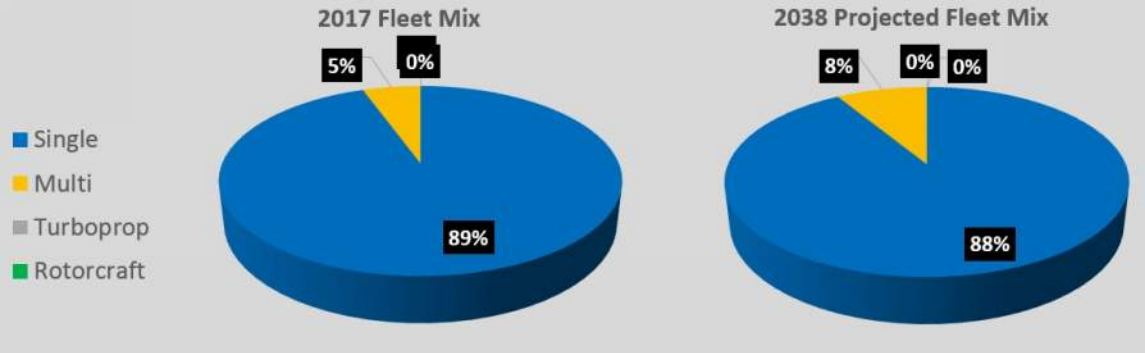

Exhibit 2H
Based Aircraft Fleet Projections – Abilene Municipal Airport

General Aviation Operations

The aircraft operations forecast is another key factor in planning airport development. The distribution of Federal funding grant programs by the FAA are often based upon the levels of activities realized throughout the planning horizon. Furthermore, the aircraft operations forecast drive what improvements are required and when.

Generally, local operations are characterized by training or agricultural spray operations.

There are two types of operations at an airport: local operations and itinerant operations.

Local Operations are a takeoff and landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go training operations at the airport.

Itinerant Operations are those performed by aircraft with a specific origin or destination away from the airport that includes a flight of at least 20 miles. Itinerant operations are typically operations for business, air ambulance services or industrial uses.

The forecasts for operations have been based on the number of operations per based aircraft. Two forecasts of operations have been developed; one assuming a constant market share and one assuming an increasing market share.

Due to the absence of an Air Traffic Control (ATC) tower at the airport, operations have not been regularly monitored. For our analysis, current aircraft operations have been estimated based on an average of 187 operations per based aircraft. Table 2E, shows the current operations per based aircraft along with the two forecasts.

The first forecast utilizes a constant market share of 187 operations per based aircraft. This figure was applied to the forecasted number of aircraft to arrive at 3,737, 4,111, and 4,484 operations for the short term, intermediate term and long term, respectively. The second forecast uses an increasing number of operations per based aircraft over the planning horizons. Forecasted operations from the increasing ratios resulted in operations of 4,111, 4,974, and 5,968 operations respectively.

Table 2E
General Aviation Operations

Year	Local	Itinerant	Total GA Ops	Based Aircraft	Operations per Based
2017	2,130	1,420	3,550	19	187
Forecasts					
		Constant Share		Increasing Share	
Year	Based Aircraft	Operations	Ratio	Operations	Ratio
Short Term (2023)	20	3,737	187	4,111	206
Intermediate Term (2028)	22	4,111	187	4,974	226
Long Term (2038)	24	4,484	187	5,968	249

The FAA projects the number of general aviation GA hours flown to decrease at an average growth rate of 0.8 percent per year. It is reasonable to believe that given continual improvements and maintenance to the airport, operations will maintain where they are at for the airport. Therefore, for planning purposes, the constant share number of operations per based aircraft forecast is selected as the most indicative of future growth potential.

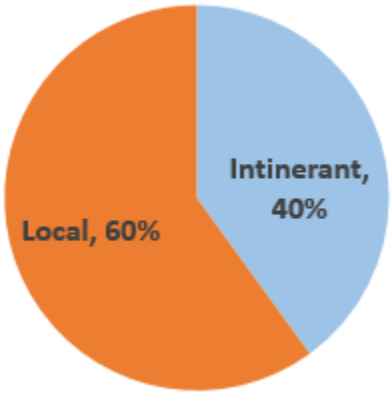

Exhibit 2I
Percentage of Annual Operations

The FAA Office of Aviation Policy and Plans (APO) Terminal Area Forecast data has historically indicated that itinerant operations account for a smaller percentage of the total annual operations than the local operations at the Abilene Municipal Airport. As discussed earlier, the National trend projects increased use of GA aircraft for business and corporate uses. This will result in continued use of the airport by itinerant aircraft. Therefore, it is anticipated, based on historic and forecasted data, the split will be 60 percent local to 40 percent itinerant throughout the planning horizon as shown in Exhibit 2I on this page.

Annual Instrument Approaches

Forecasts of Annual Instrument Approaches (AIA) provide guidance in determining an airport's requirements for navigational aid facilities. An instrument approach is defined by the FAA as "*an approach to an airport, with intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.*"

Historical data on instrument approaches were obtained from FAA's Traffic Flow Management System Counts (TFMSC) data. From May 2016 – May 2017, the airport there have been 102 recorded instrument approaches. Currently the airport has a published Global Positioning System (GPS) approach to both Runway 17 and Runway 35 and a VOR/DME circling approach.

With new technology, such as Global Positioning System with Localizer Performance with Vertical Guidance (GPS-LPV) instrument approaches, lower visibility minimums for instrument approaches are now becoming a reality for airports without the installation of expensive ground navigational aids. Many airports today experience itinerant operations that commonly use instrument approaches. Air taxi, charter and business flights commonly use instrument approaches. Air taxi operators, for example, if operating under Federal Aviation Regulation (FAR) Part 121 *Operating Requirements: Domestic, Flag, and Supplemental Operations* are required to use instrument approaches.

Small GA airports can estimate the number of instrument approaches through the FAA's TFMSC data. Since the airport has non-precision GPS approaches, annual instrument approaches have been forecasted for the planning horizon. It is estimated that 10 percent of the forecasted itinerant operations will use the instrument approaches. Local pilots also utilize the instrument approaches, therefore it is assumed that 5 percent of forecasted local operations are under Instrument Flight Rules (IFR). These figures are shown in Table 2F below.

Table 2F
Annual Instrument Approach Forecast

	Short Term	Intermediate Term	Long Term
Itinerant Instrument Operations (10% of Itinerant Ops)	51	72	86
Local Instrument Operations (5% of Local Ops)	57	80	96
Total Annual Instrument Approaches	**108**	**152**	**182**

CRITICAL DESIGN AIRCRAFT

The selection of the appropriate FAA design standards for the development of the airfield facilities is based primarily upon the aircraft characteristics that are expected to use the Abilene Municipal Airport. The most critical characteristics are the approach speed and the size of the critical design aircraft anticipated to use the airport now or in the future. The critical design aircraft is the most demanding category of aircraft that accounts for 500 or more operations per year. Planning for future aircraft use is of particular importance because design standards are used to plan separation distances between facilities. It is important that these standards are determined now because facility relocations will likely be extremely expensive at a later date.

The Airport Reference Code (ARC) is a coding system whereby airport design criteria are related to the operational and physical characteristics of the aircraft intended to operate at the airport. The ARC has two components: the first is the Aircraft Approach Category (AAC) which is depicted by a letter and relates to aircraft approach speed (operational characteristic); the second component is the Airplane Design Group (ADG) which is depicted by a Roman numeral and relates to aircraft wingspan or tail height (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan and tail height primarily relates to separation criteria involving taxiways and taxilanes. Table 2G on page 2-18 provides a depiction of typical aircraft and their associated ARC.

The five Aircraft Approach Categories (AAC) used in airport design are as follows:

AIRCRAFT APPROACH CATAGORIES

Category A:	Speeds of less than 91 knots
Category B:	Speeds of 91 knots or more, but less than 121 knots
Category C:	Speeds of 121 knots or more, but less than 141 knots
Category D:	Speeds of 141 knots or more, but less than 166 knots

The second basic design criteria is related to aircraft size. The Airplane Design Group (ADG) is based on wingspan or tail height. The six ADG are as follows:

AIRCRAFT DESIGN GROUPS

Category I:	Up to but not including 49 feet wingspan or tail height up to but not including 20 feet.
Category II:	49 feet up to but not including 79 feet wingspan or tail height from 20 feet up to but not including 30 feet.
Category III:	79 feet up to but not including 118 feet wingspan or tail height from 30 feet up to but not including 65 feet.
Category IV:	118 feet up to but not including 171 feet wingspan or tail height from 45 feet up to but not including 60 feet.
Category V:	171 feet up to but not including 214 feet wingspan or tail height from 60 feet up to but not including 66 feet.
Category VI:	214 feet up to but not including 262 feet wingspan or tail height from 66 feet up to but not including 80 feet.

The FAA advises designing all airfield elements to meet the requirements of the most demanding or critical aircraft utilizing the airport. As discussed previously, this is the aircraft, or group of aircraft accounting for at least 500 operations per year. In order to determine the airport's facility requirements, the Airport Reference Code (ARC) of the Airport's critical aircraft should be determined, which enables the application of appropriate design criteria.

Based aircraft currently located at the Airport consist mostly of small single and multi-engine aircraft. These aircraft primarily fit into Design Group "I" and have an Approach Category of "A".

Itinerant aircraft, as discussed in chapter 1 are made up of three categories of aircraft: light single-engine and twin-engine aircraft, turboprop aircraft, and jets (ARC A-I and B-I). The current aircraft family with substantial use is the B-I category. The most critical aircraft in this category is the Piper 31T Cheyenne.

With the continued need for fixed wing air ambulance service and the continuation of corporate activity in the future, it is anticipated that the airport will continue to have adequate operations by aircraft in the

ARC B-I category over the long term to qualify as the ultimate critical aircraft for the airport. The most critical aircraft in this category is the Piper 31T Cheyenne II turboprop aircraft. Table 2H below summarizes the characteristics of the critical aircraft.

Table 2G
Critical Design Aircraft Information

	Wing Span (ft)	Length (ft)	Height (ft)	Seating	MTOW (lbs)	Takeoff at MGTW (ft)	Approach Speed (kts)
Current/Ultimate Critical Design Aircraft Piper 31T Cheyenne II (B-I)	43	35	13	10	9,000	3,300	98

Note:
MTOW - Maximum Gross Takeoff Weight

Piper 31T Cheyenne II
Ultimate Critical Design Aircraft

Table 2H

Typical Aircraft and Their Associated Airport Reference Code (ARC)

ARC	Typical Aircraft	ARC	Typical Aircraft
A-I	Beech Baron 55 Beech Bonanza Cessna 150 Cessna 172 Piper Archer Piper Sencea	C-I D-I	Lear 25, 35, 55 Israeli Westwind HS 125
B-I Less Than 12,500 lbs.	Beech Baron 58 Beech King Air 100 Cessna 402 Cessna 421 Piper Navajo Swearingen Metroliner	C-II D-II	Gulfstream II, III, IV Canadaair 600 Canada Air Regional Jet Lockheed Jetstar
B-II Less Than 12,500 lbs.	Beech King Air C90 Super King Air 200 Cessna 411 DCH Twin Otter	C -III D-III	B727-200 B737-200 B737-300, 400, 500 DC 9 Fokker 70, 100 MD-80 A320
B-I, II Over 12,500 lbs.	Super King Air 300 Beech 1900 Jetstream 31 Falcon 10, 20, 50 Falcon 200, 900 Cessna Citation Saab 340 Embraer 120	C-IV D-IV	B-757 B767 DC-8-70 DC-10 MD-11 L1011
A-III B-III	DHC Dash 7 DHC Dash 8 DC-3 Convair 580 Fairfield F-27 ATR 72 ATP	D-V	B-747 Series B-777

CHAPTER 3

FACILITY REQUIREMENTS

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FACILITY REQUIREMENTS

Chapter One inventoried the existing facilities and their condition and services at the Abilene Municipal Airport (K78). Chapter Two established the aviation demand forecasts for the Airport. The next step in the Master Plan process is to investigate the capability of the Airport facilities and services to accommodate the forecasted aviation demand.

The objective of Chapter Three is to translate the projected future aviation demand levels into specific aviation facility and service requirements that can serve and meet the projected demand at the airport. The adequacy of existing airport facilities will be analyzed with recommendations of what new facilities and/or services are needed and when.

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

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

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

AIRFIELD REQUIREMENTS

Chapter One identified that the airport is presently utilized by a wide variety of General Aviation aircraft ranging from small Airport Reference Code (ARC) A-I single-engine piston driven aircraft to larger ARC B-II multi-engine, turbine driven type aircraft. An inventory of various aircraft utilizing the airport is shown in Table 1C located on page 1-25 of this Master Plan. It is anticipated that operational growth by these types of aircraft will continue during the planning period.

As stated in Chapter Two, the selection of the appropriate FAA design standards for the development of the airfield facilities is based primarily upon the characteristics of the aircraft that are expected to use Abilene Municipal Airport (K78). The most critical characteristics are the approach speed and the size of the critical design aircraft anticipated to use the Airport now or in the future because these design standards are used to plan separation distances between facilities.

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

From Chapter Two, it was concluded that the largest family of airplanes with substantial use at the airport is the large ARC B-I aircraft. Specifically, the Piper 31T Cheyenne II is the largest airplane in this category with recorded itinerant operations and was chosen as the critical design aircraft for the airport.

The airfield facility requirements outlined in this Chapter correspond to the FAA design standards detailed in *FAA Advisory Circular (AC) 150/5300-13A Airport Design*. Airfield requirements include the needs for airport facilities such as runways, taxiways, airfield marking and lighting, and navigational aids. The following airfield facilities are outlined to describe the scope of facilities that are necessary to accommodate the role of the airport through the planning horizon.

Airfield Capacity

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

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

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

With respect to the demand/capacity analysis detailed in AC 150/5060-5, the ASV of a single runway configuration similar to that of Abilene Municipal Airport normally exceeds 230,000 operations. Because the projected forecasts for the airport indicate the activity throughout the planning horizon will reach no more than 5,968 annual operations, the capacity of the existing airfield system will meet operational demands for the planning period of this Airport Master Plan.

Runway Orientation And Wind Coverage

There is currently one runway at the airport:

- Runway 17/35 serves as the airport's primary runway. It is 4,100 feet long and 75 feet wide, concrete paved, and oriented in a north-south direction.

Ideally, the primary runway at an airport should be oriented as close as practical in the direction of the predominant winds in order to maximize usage of the runway. This minimizes the percent of time that a crosswind speed could make the primary runway inoperable. Runway 17/35, which is oriented in the north-south direction, meets this recommendation.

FAA AC 150/5300-13, Airport Design recommends that a crosswind runway should be made available when the primary runway orientation provides less than 95% wind coverage for any aircraft forecast to

use the airport on a regular basis. The 95% wind coverage is computed on the basis of the crosswind component not exceeding a wind speed of:

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

A wind rose analysis is utilized to determine wind coverage. Originally, a wind rose diagram was created using the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) utilizing ten years of available wind data (2007 to 2017) from the Salina, Kansas weather observation station (the closest station with 10 years of data). However, after several project delays, the wind rose was recreated using NOAA NCDC wind data from 2010 to 2019. Both sets of electronic wind data, obtained through NOAA, have been analyzed using the Wind Analysis Tool from the FAA Airport Surveying - GIS Program website. The AWOS data from the Abilene Municipal Airport was not available at the time of this report. Table 3A presents various wind speeds and related wind coverage percentages specific to the airport for existing Runway 17/35.

The original wind data established that the current runway configuration would provide at least the FAA recommended 95 percent wind coverage at 10.5 knots (12 mph); however, the updated data does not. Exhibit 3A shows the Wind Rose Diagram Data for existing Runway 17/35. After evaluating wind data and airport history, it was determined that a crosswind runway would not be included for future development. Airport history reveals that the previous cross wind runway was decommissioned.

Table 3A
Wind Data Summary for Existing Runways (2007 to 2017 Data)

Existing Runway	Wind Coverage Percentage (%)			
	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 17/35	95.96%	98.13%	99.59%	99.92%

Wind Data Summary for Existing Runways (2010 to 2019 Data)

Existing Runway	Wind Coverage Percentage (%)			
	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 17/35 (All Weather)	93.44%	96.83%	98.98%	99.71%
Runway 17/35 (All Weather)	92.45%	96.17%	98.67%	99.54%

Runway 17/35 Orientation is N0°03'38.15"E

Source: National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) located at Asheville, North Carolina

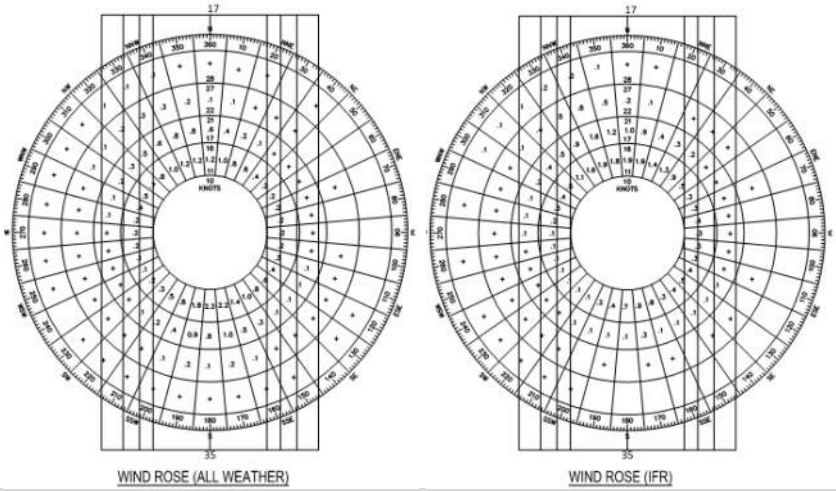

Exhibit 3A
Wind Rose Diagrams for Abilene Municipal Airport

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

- There is not a recommended need for a crosswind runway for smaller aircraft in the ARC A-I/B-1 categories.

- The orientation of primary Runway 17/35 is adequate for the critical design aircraft which is an ARC B-I category aircraft; however, the required length for this runway must be determined.

Requirement Factors for Determining Runway Length

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

In Abilene, KS, the mean maximum daily temperature of the hottest month (July) is 93°F. The elevation of the Airport is 1,153 feet above Mean Sea Level (MSL).

Primary Runway Length Determination

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

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

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

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

- The list of aircraft based at the Abilene Municipal Airport was formulated and itemized in Table 1B located in Chapter One on page 1-25. The determined itinerant operations that normally use the airport was formulated and itemized in Table 1C on page 1-25.

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

- As determined in Chapter Two of this Master Plan, the most critical aircraft is the *Piper P31T Cheyenne II*, an ARC B-I aircraft with an MTOW of less than 12,500 pounds

- The FAA categorizes aircraft with an MTOW below 12,500 pounds into two groupings of aircraft based on passenger capacity.

Step #3: Table 1-1 on Page 3 of *AC 150/5325-4B,* titled A*irplane Weight Categorization for Runway Length Requirements* was used to identify the primary runway design approach for the aircraft type identified in Step #2 above.

- Table 1-1 indicates that the design guidelines for an aircraft with an MTOW below 12,500 pounds, approach speeds of 50 knots or more, and with less than 10 passengers are located in *Chapter 2 of AC 150/5325-4B,* paragraph 205, and to use *Figure 2-1* for the recommended runway length utilizing the 95% of fleet category. This Figure, shown as Exhibit 3B on page 3-5, should be used for determining runway length.

Step #4: Select the recommended primary runway length using the guidelines from Step #3.

- Given the following factors, Exhibit 3B below was utilized to determine recommended runway length:
  - The mean daily maximum temperature of the hottest month of the year (93 °F as discussed on page 1-23).

  - The airport elevation (1152 feet above sea level).

Figure 2-1. Small Airplanes with Fewer than 10 Passenger Seats
(Excludes Pilot and Co-pilot)

Example:

Temperature (mean day max hot month): 59° F (15° C)
Airport Elevation: Mean Sea Level

Note: Dashed lines shown in the table are mid values of adjacent solid lines.

Recommended Runway Length:

For 95% = 2,700 feet (823 m)
For 100% = 3,200 feet (975 m)

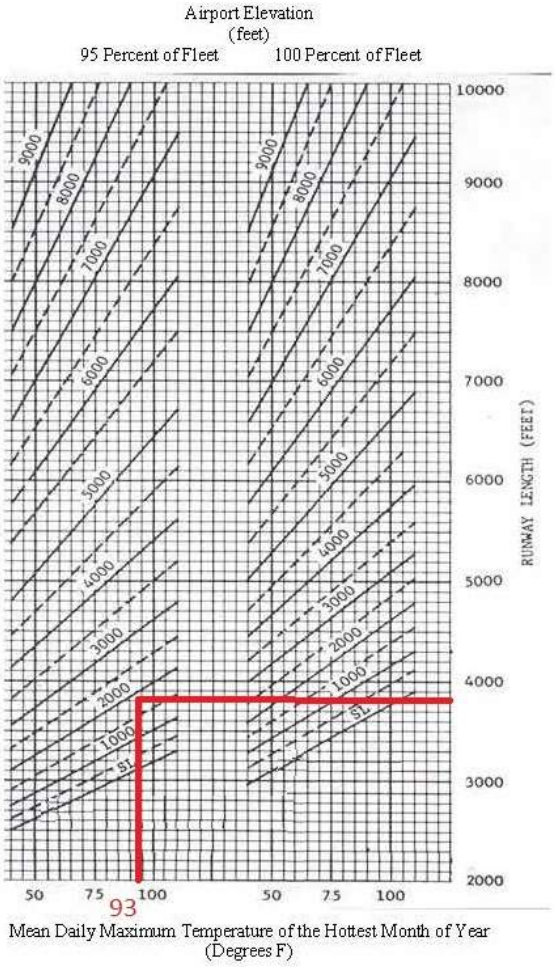

Exhibit 3B
Runway Length Requirements Taken from FAA AC 150/5325-4B

- Exhibit 3B allows for the interpolation of the runway length. These factors were used to find the recommended primary runway length of 3,800 feet.

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

- No runway length adjustments are required for Figure 2-2 for a total recommended runway length of 3,800 feet.

Runway Width

Primary Runway 17/35 is 75 feet wide. According to FAA Advisory Circular *(AC) 150/5300-13A Airport Design*, aircraft in the Airport Reference Code (ARC) B-I category (with not lower than 1 mile visibility minimums) require a minimum runway width of 60 feet.

Runway Strength and Condition

Primary Runway 17/35 has pavement strength of 13,000 pounds Single Wheel Gear (SWG) and 16,000 pounds Double Wheel Gear (DWG). Aircraft such as the *Beech B300*, with a gross weight of 15,000 pounds DWG frequent the airport. The existing pavement strength of primary Runway 17/35 is sufficient to allow existing based aircraft to operate on the airfield and does not limit airport growth. Therefore, using the *Piper Cheyenne* as the critical design aircraft, the existing primary runway pavement strength is adequate to accommodate the forecasted fleet mix and should be maintained as the runway is maintained.

In 2012, KDOT commissioned a statewide Pavement Management Report for each airport within the state. Runway 17/35 was reconstructed after that study was completed and is currently assessed as having a Pavement Condition Index (PCI) of 96 which is deemed *Excellent* in the PCI scoring system. The report also evaluated the taxiways and apron. The Airfield Pavement Management Report for the Abilene Municipal Airport is included in Appendix I.

Taxiways

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between aprons and runways, whereas others become necessary as activity increases at an airport to provide safe and efficient use of the airfield. When considering taxiway requirements, the FAA has categorized aircraft into Taxiway Design Groups (TDG) based on Cockpit to Main Gear Length and Main Gear Width. The Piper Cheyenne is a TDG IA, and the airport should be planned to meet this standard.

Abilene Municipal Airport has four connecting taxiways from Runway 17/35 to gain access to the parallel taxiway. The taxiways runs east/west and are approximately 200-250 feet long. There are also two shorter connecting taxiways connecting the parallel taxiway to the existing aprons, terminal building, fueling facility, and hangar area. The connecting taxiways are 25 feet wide and therefore meet the criteria for TDG IA category aircraft.

Runway 17/35 also has a parallel taxiway. It runs along the full length of Runway 17/35 (4,100 feet). The runway to taxiway centerline offset at the north is approximately 250 feet, and the taxiway is 35 feet wide. This meets the required offset of 150 feet for ARC B-I aircraft with not lower than 1 mile visibility minimums.

Dimensional Design Standards

Airfield dimensional design standards define the widths and clearance requirements to optimize safe aircraft operations in the landing, takeoff and taxiway areas. These dimensional standards vary depending upon the ARC category for the proposed runway design as well as the approach visibility minimums. The FAA, in *Advisory Circular 150/5300-13A*, establishes several imaginary surfaces to assist in defining the dimensional areas. Among these areas and surfaces are the Runway Safety Area (RSA),

Object Free Area (OFA), Obstacle Free Zone (OFZ), Runway Protection Zone (RPZ), and Taxiway Safety Area (TSA). Exhibit 3E below illustrates these various surfaces. Table 3B on page 3-8 summarizes key dimensional design standards applicable to the Abilene Municipal Airport now and in the future.

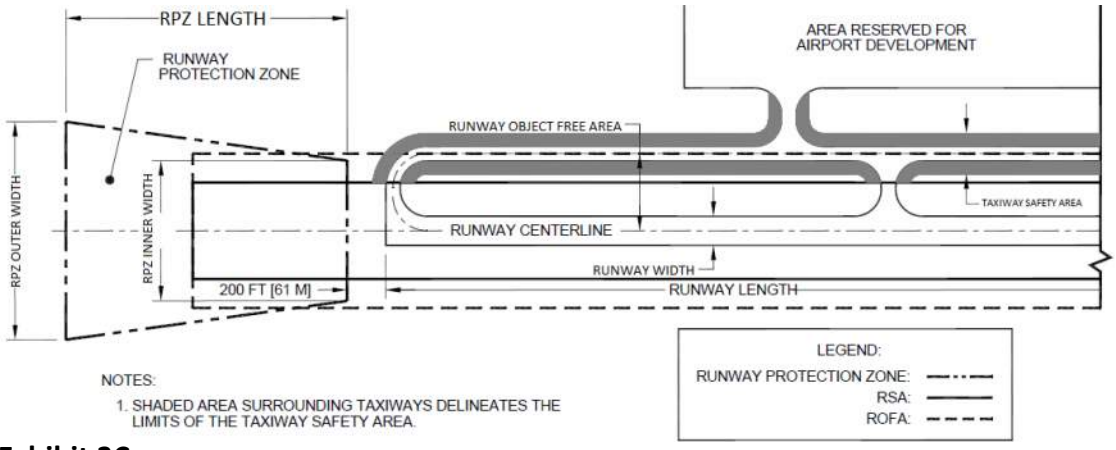

Exhibit 3C
Typical Airport Safety Areas

The primary runway for Abilene Municipal Airport should be planned to the standards of the future critical design aircraft which is an ARC B-I category aircraft. The RPZ for Runway 17/35 is recommended to remain at not lower than 1 mile visibility minimum. Taxiway clearances should also be planned to meet TDG IA category aircraft requirements as well as meeting runway to taxiway separation requirements for a runway approach with not lower than 1 mile visibility minimum.

Table 3B
Airfield Design Standards

Design Criteria	Runway 17/35	
	Existing Runway (feet)	Ultimate Runway (feet)
Runway Length	4,100	3,800
Runway Width	75	60
Runway Safety Area (RSA)		
Width	120	120
Length Beyond End	240	240
Obstacle Free Zone (OFZ)		
Width	250	250
Length Beyond End	200	200
Object Free Area (OFA)		
Width	250	250
Length Beyond End	240	240
Runway Protection Zone (RPZ)		
Inner Width	250	250
Outer Width	450	450
Length	1000	1000
Building Restriction Area (BRL)		
Width	990	990
Taxiway		
Width	25	25
Taxiway and Taxilane Safety Area	49	49
Taxiway Object Free Area	89	89
Taxilane Object Free Area	79	79
Per Requirements of FAA AC 150/5300- 13A Airport Design		

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

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

Obstacle Free Zone (OFZ) is a three dimensional volume of airspace which protects the transition of aircraft to and from the runway. It is a defined volume of airspace centered above the runway centerline, above a surface whose elevation at any point is the same as the elevation of the nearest point of the runway centerline. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible Navigation Aid (NAVAID) locations that are fixed by function. Additionally, vehicles, equipment, and personnel may be authorized to enter the OFZ area using the provisions of FAA *Order JO 7110.65U Air Traffic Control*, Paragraph 3-1-5, Vehicles/Equipment/Personnel on Runways.

Object Free Area (OFA) is an area on the ground centered on the runway centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. Like the Runway Safety Area (RSA), the OFA extends beyond the runway ends and an area centered over the runway centerline extending outward.

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

Building Restriction Line (BRL) is the line indicating building limits in proximity to aircraft movement areas. The location of the BRL is dependent upon the selected structure height, typically 35 feet, and that line defines the suitable building area locations on the airport. The BRL, by definition, is only applicable on land owned by the airport and thereby under airport control.

AIRSPACE REQUIREMENTS

Airspace analysis is vital to protect the use of the runway in visual and instrument meteorological conditions near the airport. FAA AC 150/5300-13A *Airport Design*, Paragraph 303, defines several Threshold Siting Surfaces (TSS) based on the size and approach category of aircraft utilizing the airport as well as visibility minimums for the runway. Table 3C and Exhibit 3F show these TSS. These surfaces must be clear in order for a threshold to remain in place without being displaced. These TSS are also used when evaluating and obtaining Instrument Flight Procedures (IFPs) for the airport.

Primary Runway 17/35 will be utilized by aircraft in the B-I category and will have visibility minimums of not lower than 1 mile with a vertically guided approach. This requires the use of rows 4 & 8 of the TSS for evaluating its threshold location. Both ends should also be evaluated using row 9 to protect the instrument departure capabilities of the airport.

Table 3C
Threshold Siting Surface Standards Table

	Runway Type	Dimensional Standards (Feet)					Slope/OCS
		A	B	C	D	E	
1	Approach end of runways expected to serve small airplanes with approach speeds less than 50 knots. (Visual runways only, day/night)	0	120	300	500	2,500	15:1
2	Approach end of runways expected to serve small airplanes with approach speeds of 50 knots or more. (Visual runways only, day/night)	0	250	700	2,250	2,750	20:1
3	Approach end of runways expected to serve large airplanes (Visual day/night); or instrument minimums ≥ 1 statute mile (1.6 km) (day only).	0	400	1,000	1,500	8,500	20:1
4	Approach end of runways expected to support instrument night operations, serving approach Category A and B aircraft only.	200	400	3,800	10,000	0	20:1
5	Approach end of runways expected to support instrument night operations serving greater than approach Category B aircraft.	200	800	3,800	10,000	0	20:1
6	Approach end of runways expected to accommodate instrument approaches having visibility minimums ≥ 3/4 but <1statute mile (≥ 1.2 km but < 1.6 km), day or night.	200	800	3,800	10,000	0	20:1
7	Approach end of runways expected to accommodate instrument approaches having visibility minimums < 3/4 statute mile (1.2 km).	200	800	3,800	10,000	0	34:1
8	Approach end of runways expected to accommodate approaches with vertical guidance (Glide Path Qualification Surface [GQS]).	0	Runway Width + 200	1,520	10,000	0	30:1
9	Departure runway ends for all instrument operations.	0	1,000	6,466	10,200	0	40:1

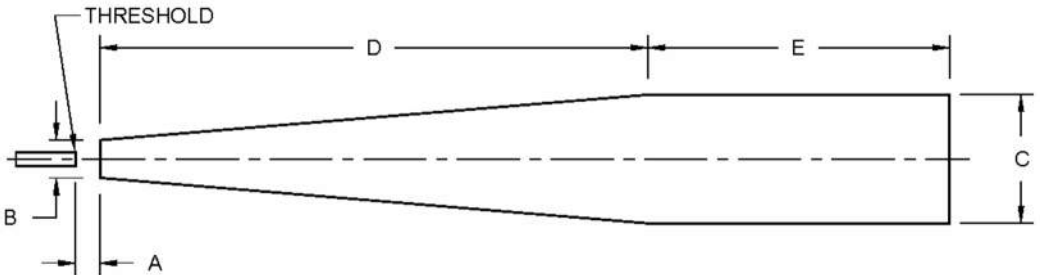

Exhibit 3D
Threshold Siting Surface Dimensions

AIRCRAFT APRON

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

FAA *Advisory Circular 150/5300-13, Airport Design* suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. The FAA Central Region created a spreadsheet entitled Apron Size Calculations for Transient Aircraft as a tool to estimate the need for Apron space at general aviation airports. This spreadsheet was completed for the Abilene Municipal Airport for the current year and short, intermediate, and long-term planning horizons. The completed Apron Size Calculations spreadsheets are in Appendix H.

At the airport, it was assumed that 20% of the annual operations occur during the busiest month of the year. The busiest month, considered to be July, was determined from historical aviation averages in the state of Kansas. As stated in Chapter Two, from historical and forecasted data, itinerant aircraft will make up approximately 40% of the operations at the airport. FAA planning criterion of 960 square yards per aircraft (for Airplane Design Group (ADG) I category aircraft with taxilane) was applied to the number of itinerant spaces to determine future transient apron requirements.

It was also assumed that approximately 5% of based aircraft would require tie-down space. FAA planning criterion of 960 square yards per aircraft (for ADG I category aircraft with taxilane) was used since most aircraft based at the airport are in the ADG I group. The results of this analysis are presented in Table 3D below. There are currently sufficient tie downs on the main apron, and the apron is sufficiently sized in order to accommodate anticipated needs through the planning horizon. The city should ensure that the apron is maintained.

Table 3D
General Aviation (GA) Apron Requirements

Descriptions	Existing Conditions	Required			
		2018	2023	2028	2038
Based Aircraft	---	19	21	22	24
5% Of Based Aircraft	---	1	1	1	1
Based Aircaft Apron Size (Square Yards)	---	960	960	960	960
Total Annual Operations	---	2,850	3,465	3,993	4,792
Itinerant Aircraft On Ground[1]	---	2	2	3	3
Itinerant Aircraft Apron Size (Square Yards)	---	2,207	2,597	2,992	3,591
Total Aircraft Tie-Downs	11	3	3	4	4
Total Planned GA Apron Size (Square Yards)	4,500	3,167	3,557	3,952	4,551

Note 1- Information derived from Federal Aviation Administration (FAA) Central Region Spreadsheet titled *Apron Size Calculations For Transient Aircraft* . Refer to Appendix H of this Master Plan for that spreadsheet with calculations.

In order to prevent accidental runway incursions, FAA AC 150/5300-13A *Airport Design*, published in 2014, states that direct access points be eliminated as soon as practicable. Direct access occurs when a taxiway leads from an apron to a runway without requiring a turn. This could lead to confusion when a

pilot typically expects to encounter a parallel taxiway but instead accidently enters a runway. At the airport, the taxiway leading from the north side of the main apron provides direct access to Runway 17/35 and should be relocated.

Aircraft Maintenance Hangar

An aircraft Maintenance Hangar that is clean, neat, brightly painted and well equipped with necessary building amenities will help attract and keep a good FBO at the airport which in turn brings aircraft operations to the airport.

Currently, the terminal building has an aircraft maintenance building attached. The current FBO provides major maintenance services to based aircraft and itinerant aircraft.

It is recommended that the maintenance hangar be maintained to allow the FBO to continue to provide maintenance services for general aviation aircraft at the Abilene Municipal Airport.

Aircraft Storage Hangars

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

Until recently, the number of new GA aircraft manufactured each year has been declining which causes older aircraft to retain their value. In order to protect their investment, an increasing number of aircraft owners are renting hangar space. In addition, in areas of the United States that can have severe weather throughout the year such as Kansas, the use of a hangar is almost a necessity. Therefore, it is assumed that all aircraft based at the airport will require hangar space.

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

On this basis, it has been assumed that all turbine aircraft and 10 percent of all other based aircraft will be placed in Conventional Hangars. An area equal to at least 10 percent of the total hangar space on the airport should be allocated for aviation maintenance and repair facilities. The remaining aircraft requiring hangar space will be allocated to T-Hangars

The final step in the planning process of determining hangar requirements involves estimating the area necessary to accommodate the required hangar space. A planning standard of 1,200 square feet per based aircraft stored in T-hangars was used. Planning figures for conventional hangars and executive hangars indicate an area of 1,200 square feet for single engine and rotary aircraft, 1,500 square feet for twin-engine piston aircraft, and 2,500 square feet for turbine powered aircraft. These planning figures

were then applied to the aircraft to be placed in conventional hangars, executive hangars, and T-hangars to determine the area to be devoted to respective hangar facility requirements during the planning period.

Current Hangar space at the Abilene Municipal Airport (as discussed in Chapter One, Table 1H) consists of three existing structures): one storage hangar/terminal building, one 4-place nested T-hanger, and one 10-place nested T-hanger. The City of Abilene owns all hangars located on airport property and leases the space to individuals and businesses in need of aviation related space. Hangar lease income is used by the City to help cover airport operational and capital costs.

Conventional Hangar, Executive Hangars and T-Hangar needs are presented in Table 3E on below. As the data indicates, the existing blend of hangar space at the airport is adequate for the present needs of the airport. There is currently a wait list of 8 planes waiting for hangar space at the Abilene Municipal airport. This is an opportunity for the airport to increase its income while making improvements to the airport. It is recommended that the airport build additional T-hangars to store additional aircraft based at the airport.

The addition of new T-Hangars will also make the airport more appealing to aircraft owners and pilots in the local area storing their aircraft elsewhere, and could possibly entice single engine aircraft being stored in communal Conventional Hangars elsewhere to transfer to these aircraft to the T-Hangars at the airport.

Table 3E
Hangar Stalls and Hangar Space Requirements

Based Aircraft	2018	2023	2028	2038
Single Engine	17	17	20	21
Ultra Light	0	0	0	0
Multi- Engine	1	1	2	2
Turboprop	0	0	0	0
Business Jet	1	1	1	1
Helicopter	0	0	0	0
Total Aircraft to be Hangared	**19**	**19**	**23**	**24**
Hangar Stall and Space	Available	Required	Required	Required
Hangar Stalls	19	19	23	24
Hangar Space (S.F.)	46,050	23,640	28,560	29,790
T- Hangar Positions	13	16	20	21
T- Hangar Space (S.F.)	12,600	19,440	23,760	24,840
Conventional Hangar Stalls	6	3	3	3
Conventional Hangar Space (S.F.)	11,800	4,200	4,800	4,950
Executive Hangar Stalls	0	0	0	1
Executive Hangar Space (S.F.)	0	0	0	2,500
Total Aircraft Maintenance Space (S.F.)	2,600	2,364	2,856	2,979

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

AIRFIELD LIGHTING SYSTEMS

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

Medium Intensity Runway Lights (MIRLs) are installed on primary Runway 17/35 and are Air-To-Ground (ATG) radio controlled. A MIRL system is sufficient for the future Non-Precision approaches that are proposed as part of this Master Plan. MIRLs are located 10 feet from the edge of the runway, and are elevated with split red/green or white/yellow globes depending on their location along the runway. The existing MIRLs at the airport should be maintained and extended on any extension or new paved runway.

Typical Medium Intensity Runway Light (MIRL)

Typical Medium Intensity Taxiway Light (MITL)

Medium Intensity Taxiway Lights (MITLs) are currently installed on the main taxiway and connecting taxiways. It is recommended that the MITLs be maintained on the main taxiway and all connecting taxiways to follow the recommendations of AC 150/5340-30G. MITLs are elevated blue lights used to mark taxiway edges. With a MITL lighting system installed at the airport, the system is adequate for all proposed existing and future taxiway improvements at the airport.

Runway End Identifier Lights (REILs) provide rapid and positive identification of the end of the runway. The system consists of two synchronized flashing lights, uni-directional or omni-directional, one located on each corner of the runway-landing threshold at an angle of 10 to 15 degrees. The uni-directional lights face the approach area. REILs are effective for identification of a runway surrounded by a preponderance of other lighting; identification of a runway which lacks contrast with surrounding terrain; and identification of a runway during reduced visibility. Runway 17/35 currently has REILs installed at each approach and should be maintained.

There are several more Approach Lighting Systems that are much more sophisticated and primarily used at Commercial Service or General Aviation (GA) airports with at least 300 instrument approaches annually. Since the airport is forecasted to have less than 300 instrument approaches by the end of the forecast period, an Airfield Lighting System with a complement of Precision Approach Path Indicators (PAPIs), and REILs, installed at the airport will suffice to meet the aviation demands through the forecast period.

PAVEMENT MARKING

FAA *AC 150/5340-1L Standards for Airport Markings*, provides the standards and guidance necessary for markings used on airport runways, taxiways, and aprons. The signage system on the airport should be in accordance with *AC 150/5340-18F Standards for Airport Sign Systems*. Airport pavement markings and signs provide information that is useful to an aircraft pilot during takeoff, landing, and taxiing. Uniformity in airport markings and signs from one airport to another enhances safety and improves efficiency. Airport markings and signage are designed according to the type of approach available (Visual, Non-Precision Instrument and Precision Instrument) on the runway. Exhibit 3G below shows the differences between Visual and Non-Precision markings.

Pavement markings on Runway 17/35 are Non-Precision markings that include runway centerline markings, runway designator (number) markings, runway threshold markings, and aiming point markings. The current markings are sufficient for the present Non-Precision approaches.
Taxiway and apron areas have pavement markings to help pilots navigate aircraft along the pavement. Yellow centerline marking strips are painted on all taxiway surfaces to provide guidance to pilots.
Runway Holding Position Markings on taxiways identify the location on a taxiway where an aircraft is to stop when the pilot does not have clearance to proceed onto the runway. At airports without Air Traffic Control Towers, these runway hold position markings identify the location where a pilot is assured there is adequate separation with other aircraft to stop before proceeding onto the runway. Currently there are holding position markings on all the primary connector taxiways for runway 17/35. According to AC 150/5340-18E, for ARC B-I category aircraft with Visual or Non-Precision approaches, holding position

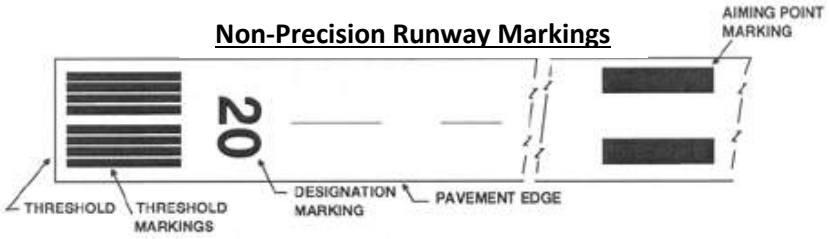

Exhibit 3E
Typical Runway Markings

marking should be located at a distance of 200 feet from the runway centerline. The holding position markings on the connecting taxiways are located 200 feet from runway centerline.

Airfield Signage provides guidance and direction to pilots on the ground and should be a goal of every airport. There are six types of signs installed on airfields: mandatory instruction signs, location signs, direction signs, destination signs, information signs, and runway distance remaining signs. The signs should be lighted if the runway or taxiway that they are installed for is lighted. The Abilene Municipal Airport has signs at the holding positions of the taxiway.

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

NAVIGATION AIDS

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

A Lighted Wind Cone provides a centralized location for such indicators and signal devices as may be required on a particular airport. The lighted wind cone identifies the wind direction for runway operations. The airport currently has a lighted wind cone on the north side of the apron. The airport should continue to maintain the wind cone at its current location.

Airport Rotating Light Beacon is used to indicate the location of the airport to pilots at night. The beacon flashes at 24 to 30 times per minute through its rotation and has a green and white color combination signifying a lighted land airport. The rotating beacon is currently installed atop the maintenance/terminal building. The airport should continue to maintain the beacon at its current location.

Visual Glide Slope Indicators (VGSIs) are commonly provided at airports to provide aircraft pilots with visual descent guidance information during landings to the runway. There are two forms of these aids that have been regularly installed. They include the Precision Approach Path Indicator (PAPI) and the Visual Approach Slope Indicator (VASI). The difference between a VASI and a PAPI is that a PAPI also has a slightly high and a slightly low indication. The VASI is no longer approved for installation at airports and are slowly being replaced by the PAPI.

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

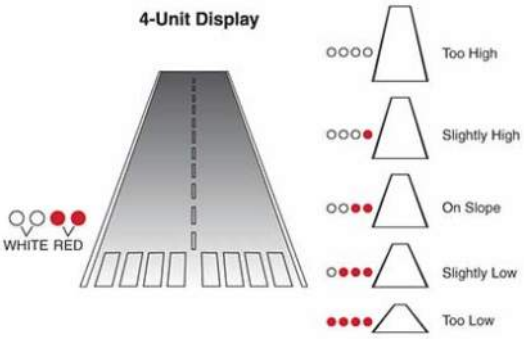

Exhibit 3F
Typical 4-Light PAPI

Currently, the airport has sets of abbreviated 2-light PAPIs installed at each approach of Runway 17/35. It is recommended that the airport maintain its PAPI system in its current configuration.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA using electronic NAVAIDs that assist pilots in locating and landing at an airport, especially during instrument flight conditions. The visibility and cloud ceiling associated with the approach define the capability of an aircraft navigation instrument. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach to the runway. Cloud ceilings define the lowest level of cloud layer, in feet above the ground, which can exist for a pilot to complete the approach. If visibility

distances and cloud ceiling heights drop below the minimum prescribed for a particular runway approach, then the pilot will not be able to complete the instrument approach.

Approach Procedures at the Abilene Municipal Airport are designed and published by the FAA. Abilene has published GPS approach procedures for Runway 17 and Runway 35. The approach procedures are included in this report in Appendix E.

In reviewing the requirements shown in Table 3F below, Runway 17/35 currently meets the required standards for an instrument approach of not lower than 1 mile. Although Table 3F recommends an Approach Lighting System (ALS) for approaches not lower than 1 mile, the FAA requires 300 instrument approaches annually to justify the need of an ALS. Since the airport is not forecasted to receive 300 instrument approaches, it is recommended that the airport maintain its REIL and PAPIs for both approaches.

Table 3F
Standards for Instrument Approach Procedures

Visibility Minimums	Less Than 3/4 Mile	Less Than 1 Mile	Not Lower Than 1 Mile	Circling	Existing Runway
Minimum Runway Length (feet)	4,200 (Paved)	3,200 (Paved)	3,200	3,200	4,100
Runway Markings	Precision	Non-Precision		Visual/Basic	Non-Precision
Runway Edge Lighting	HIRL[3] or MIRL[2]		MIRL[2]/LIRL[1]		MIRL[2]
Approach Lighting	MALS[4], ALSF[5], or SSALS[7]	MALS[4], ODALS[6], or SSALS[7] (Recommended)			REILs[8]
Parallel Taxiway	Required		Recommended		Full Length
Holding Position Signs & Markings	Precision	Non-Precision		Visual/Basic	Hold Line Only

Source: Table 3-4, FAA AC 150/5300-13A, Airport Design

1 LIRL - Low Intensity Runway Lights
2 MIRL - Medium Intensity Runway Lights
3 HIRL - High Intensity Runway Lights
4 MALS - Medium Intensity Approach Lighting System
5 ALSF - Approach Lighting System with Sequenced Flashers
6 ODALS - Omni-Directional Approach Lighting System
7 SSALS - Simplified Short Approach Lighting System
8 REILS - Runway End Identifier Lights

WEATHER OBSERVATION

The Abilene Municipal Airport has onsite weather observation from an Automated Weather Observing System III (AWOS-III). The AWOS-III was installed in 2010 utilizing a grant for the Kansas Department of Transportation (KDOT) Kansas Airport Improvement Program (KAIP) grant. An AWOS-III allows the airport to monitor barometric pressure, altimeter settings, wind speed and gusts, wind direction, temperature, dew point, visibility, cloud conditions, and precipitation amount. The presence of this system in Abilene supports KDOT's goal to install AWOS across the State of Kansas to fill holes in the system.

In order for the AWOS to accurately represent the meteorological conditions at the airport, there are several siting requirements that must be met. Among these are the requirements that the there be no objects greater than 15 feet below the height of the wind sensor within a 500 foot radius. Additionally, there should be no objects greater than 10 feet above the sensor within the 1,000 foot radius. Currently,

these requirements are met. There are portions of this surface that is currently located off of City controlled land. It is recommended that the City obtain this area through easement or fee-for-title to ensure that further developments around the airport do not violate these siting requirements.

LANDSIDE REQUIREMENTS

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

TERMINAL BUILDING

The Terminal Facilities are often the first impression of the Abilene community that private individuals, corporate officials, or vacationers that fly into the Abilene Municipal Airport will encounter. Terminal Building space is required for waiting passengers, pilot's lounge, restrooms, concessions, management, storage and various other needs. This space is not necessarily limited to a single, separate Terminal Building but also includes the space offered by the FBO for these functions and services.

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

From the same information used to size the airport apron area, the busiest month at the airport is the month of July. If 20% of the total annual operations (4,792 operations in 2037) are assumed to occur during the busiest month and 40% of the total annual operations are by itinerant aircraft, then the airport can expect to see approximately 383 itinerant operations during the month of July. There are 31 days in July, so on average the airport will see approximately 12 itinerant aircraft per day. As a rule of thumb, airports can have peak hour aircraft operations as high as 12% to 20% of daily total aircraft operations. If it is assumed that 12 itinerant aircraft operations occur during the busiest day and that 20% of those occur during the peak hour, the airport will have 3 aircraft during the busiest hour.

AC 150/5360-13 recommends, as a rule of thumb, that about 150 square feet of gross terminal building area be provided per design itinerant peak-hour passenger. Assume 3 itinerant aircraft during the busiest hour with an average of two passengers per aircraft would require a Terminal Building of about 1,000 square feet. The present terminal building at the Abilene Municipal Airport is a single story building with approximately 600 square feet of floor area. This is less than the recommended space.

The current terminal building is in fair to poor condition. It is recommended that the airport invest in upgrading its current terminal building to provide the recommended area.

AVIATION FUELING FACILITY

With the projected level of aircraft operations, the present fuel storage capacity of a 2,000 gallon aviation fuel and a 2,000 gallon Jet-A fuel storage tank is estimated to be adequate

based on maintaining a two week minimum fuel supply. The fuel pump has a card reader which allows pilots that fly into the airport to fuel their aircraft without calling the FBO for service, especially after normal business hours. This is a nice amenity for pilots visiting the airport and Abilene community.

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

Both fuel tanks and pump are in fair condition. The City should consider replacing them in order to ensure uncontaminated fuel is provided.

Oxygen Facility

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

Automobile Parking Lot

The current terminal building parking lot for vehicles is a paved lot located adjacent to the east end of the terminal building and apron. The pavement is in excellent condition, and the airport should maintain it.

Vehicle parking demands have been determined for the General Aviation users. The parking demand requirements are based on the forecasted design hour passengers multiplied by a factor of 1.8. Therefore, based on total forecasted design hour passengers of 6, the airport would need about 15 parking stalls by the year 2037. It is recommended to have some additional parking above and beyond this count for overflow parking.

The current size of the parking area is adequate, and it is anticipated that no additional parking spaces will be needed during the planning horizon.

Perimeter Control

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

Airport Utilities

The airport is well serviced by almost a full complement of appropriate and ample utilities.

Waste Reduction, Reuse, and Recycling

The FAA requires airport sponsors to incorporate sustainability in airport planning, design, and operations. An important component of this is having an effective plan for recycling, reuse, and reduction of waste. Waste streams from the Ottawa Municipal Airport include Municipal Solid Waste (MSW) and Hazardous Materials. MSW includes everyday items that are discarded such as newspapers, furniture, and Construction and Demolition Waste (C&D) materials such as concrete, wood, metals, drywall, and carpeting. Hazardous Materials include items like used fuel and oil, used batteries, and solvents.

The airport has many pathways and sources of airport waste. Tenant lease holders operating businesses at the airport, users of hangars performing preventative maintenance of aircraft, users of the terminal, and construction activities at the airport. It is recommended that waste in these streams be reduced by providing collection containers for separate stream recycling where users can dispose of recyclable materials such as paper and plastic containers easily. The reuse of construction waste should also be considered during every construction project to reduce waste. The airport can reduce the risk of hazardous materials from entering the waste stream by encouraging its users to properly recycle used batteries and oil/fuel.

Ground Transportation

The aviation to ground transportation linkage at the Abilene Municipal Airport is very good to excellent. The airport is encouraged to keep a reliable courtesy car in operation at the airport at all times.

Airport Land Requirements

According to FAA AC 150/5300-13A, it is preferred that the airport have control over all of the RPZs in order to clear and maintain them clear of incompatible objects and activities. Currently, the city has sufficient property interest to prevent incompatible land use from occurring within the RPZ of the airport. Recommended land for future facility upgrades and expansions will be outlined in Chapter Six (Capital Improvement Plan) of this Master Plan.

SUMMARY

The intent of this chapter has been to outline the facilities, equipment, programs, and services required to meet aviation demands projected for the Abilene Municipal Airport throughout the 20 year planning horizon. A summary of the findings and requirements in this chapter is presented in Table 3G located on pages 3-23 through 3-24. Following the facility requirement determination, the next step is to develop a direction for airport development that best meets these requirements at the airport. The remainder of the Master Plan is devoted to outlining a prudent development direction.

Table 3G

Summary of Airport Facility Requirements for Abilene Municipal Airport

Item	Existing (2018)	Short Term (2023)	Intermediate Term (2028)	Long Term (2038)
Runways				
Runway 17/35	4,100' x 75' Paved Surface 13,000 Pounds SWG	Maintain Standard	Maintain Standard	3,800' x 60' Paved Surface 13,000 Pounds SWG
Taxiways				
Connecting Taxiway	35' Wide Connects Taxiway To Apron	Maintain Standard	Maintain Standard	Maintain Standard (25' Wide If Reconstructed)
Parallel Taxiway	35' Wide x 4,100' Long Parallel Taxiway	Maintain Standard	Maintain Standard	Maintain Standard (25' Wide If Reconstructed)
Taxiway Lighting	MITLs	Maintain Standard	Maintain Standard	Maintain Standard
Apron				
Primary Apron	4,500 SY Concrete	Maintain Standard	Maintain Standard	Maintain Standard
Hangars				
Maintenance Hangar	2,600 SF Maintenance Hangar	Maintain Standard	Maintain Standard	Maintain Standard
Aircraft Storage Hangars	19 Hangar Stalls	Maintain Standard	Maintain Standard	Install 1x 10 place Nested T- Hangar
Airfield Lighting Systems				
Runway Lighting	MIRL's	Maintain Standard	Maintain Standard	Maintain Standard
Runway End Identifier Lights	REILS	Maintain Standard	Maintain Standard	Maintain Standard
Pavement Marking	Non- Precision	Maintain Standard	Maintain Standard	Maintain Standard
Airfield Signage	Hold Signs on taxiways	Maintain Standard	Maintain Standard	Maintain Standard
Navigation Aids				
Segmented Circle with Lighted Wind Cone	Lighted Cone near terminal	Relocate In Accordance With Standards	Maintain Standard	Maintain Standard
Airport Rotating Light Beacon	Located on Maintenance Hangar	Maintain Standard	Maintain Standard	Maintain Standard
Precision Approach Path Indicator Lights	Located on Runway 17/35	Maintain Standard	Maintain Standard	Maintain Standard

Table 3G (Continued)

Summary of Airport Facility Requirements for Abilene Municipal Airport

Item	Existing (2018)	Short Term (2023)	Intermediate Term (2028)	Long Term (2038)
Weather Observation				
Automated Weather Operating System (AWOS)	AWOS-III located on airport	Maintain Standard	Maintain Standard	Maintain Standard
Landside Facilities				
Terminal Building	600 SF	Maintain Standard	Maintain Standard	Upgrade Facility to 1,000 SF
Aviation Fueling Facility	1-2,000 Gallon AVGAS 1-2,000 Gallon Jet-A	Maintain Standard	Replace Fuel System	Maintain Standard
Automobile Parking Lot	20 Stalls Paved	Maintain Standard	Maintain Standard	Maintain Standard
Perimeter Control	Minimal	Install Automobile Fencing Between Apron & Parking Lot	Maintain Standard	Maintain Standard
Utilities	Ample Utilities Available	Maintain Standard	Maintain Standard	Maintain Standard
Oxygen Facilities	No Facilities Avaliable	Monitor Aircraft utilization for oxygen need	Maintain Standard	Maintain Standard
Ground Transportation	Ground Link Adequate	Maintain Standard	Maintain Standard	Maintain Standard
Airport Land Requirements	Adequate Property Interest at Airport	Maintain Standard	Acquire land for Runway extension	Maintain Standard

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CHAPTER 4

ALTERNATIVE DEVELOPMENT & EVALUATION

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ALTERNATIVE DEVELOPMENT & EVALUATION

PLANNING

Chapter Three identified airside and landside facilities and airport services required to satisfy the demand of a 20-year long-range planning period for the Abilene Municipal Airport (K78). The next step in the planning process is to evaluate a reasonable way to provide those facilities. There are a number of options and combination of solutions, but the alternatives presented are those with the greatest potential for implementation.

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

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

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

The alternatives considered are laid out using the criteria set forth and discussed in Chapter Three and is compared using economic, environmental, and aviation factors to determine which of the alternatives will best fulfill the aviation needs of the Abilene community as well as the airport service area. With this information, as well as the input and the direction from local government agencies, area citizens, and airport users, a final airport concept can evolve into a realistic development plan.

There are three planning alternatives that were not considered to be prudent choices nor are they considered to be viable alternatives. Those alternatives, listed as follows, are discussed in detail in the following pages:

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

Do Nothing

The "do nothing" alternative essentially considers keeping the Abilene Municipal Airport in its present condition and not providing improvements to the existing facilities. The primary result would be the inability of the airport to better satisfy current needs of the airport service area and the projected future aviation demands at K78.

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

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

Finally, to "do nothing" would mean the city would return existing and future FAA entitlement grant funds set aside for use at the airport. The ability to leverage FAA and KDOT funds at the airport with minimal local match means the return on the local investment is extremely high.

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

Use of Another Airport System

As discussed in Chapter One in the Area Airports section, there are six airports in the vicinity of K78 as shown in Exhibit 4A that could possibly absorb the aviation activity from the Abilene Municipal Airport. However, those airport locations would provide a great inconvenience to local users and businesses that would far outweigh the benefit of transferring airport aviation activity to any one of those area airports.

Furthermore, the continuing growth expected by the major employers in the Abilene area, as well as the always growing trend of new businesses and industries coming into the Abilene area, demonstrates the need for a highly functional and modern local airport. As stated earlier, Dickinson County is projected to slightly

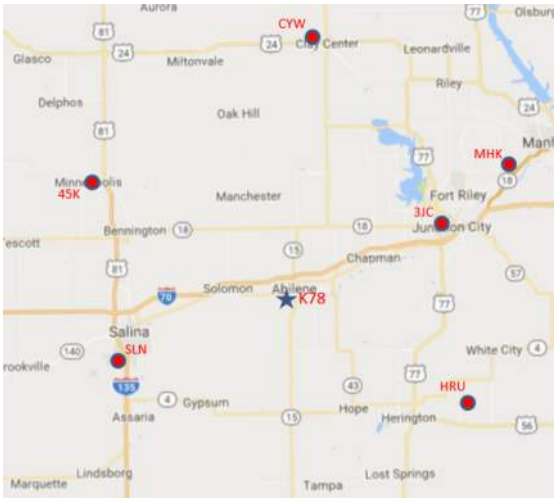

Exhibit 4A
Vicinity Airports

increase in population over the 20-year planning period. It is anticipated total employment, personal income, income per capita, and mean household income will expand over the 20-year planning period. That can be attributed to the growing economic strength of Abilene and the surrounding area.

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

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

Relocation of Existing Airport to an Alternate Site

The development and construction of an entirely new airport facility to meet the aviation needs of the Abilene community would be a large undertaking for the local community. Land acquisition, site preparation and the construction of an entirely new replacement facility can be very difficult and costly. Significant environmental impacts are often associated with disturbing large land areas when developing a new airport site. Federal, State and local public funds are very limited, and the replacement of a functional airport facility would represent an unjustifiable loss of a significant public investment. The development of a new site may be a reasonable alternative provided development around the existing site is very constrained. However, at the current time, K78 is not constrained such that a new airport site is warranted or justified.

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

Airfield Development Alternatives

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

Of particular importance is the airside runway system since it requires the greatest commitment of land area and often impacts and influences the development of other Airport facilities. The following discussion centers on the ultimate configuration of a runway that will meet the 20-year planning horizon.

RUNWAY AND PARALLEL TAXIWAY ALTERNATIVES

In the facility requirements analysis (Chapter Three), the existing Runway 17/35 length of 4,100 feet long by 75 feet wide currently meets the length requirement for the majority of the aircraft that is now utilizing the Abilene Municipal Airport. The primary runway length is adequate to accommodate the current design aircraft of the airport, a Piper 31T Cheyenne II Turboprop, designated as an Airport Reference Code (ARC) B-I category aircraft; however, future growth of larger aircraft at the airport could be restricted. Therefore, the ultimate runway length is listed as discussed in Chapter 3 is 3,800 feet long by 60 feet wide. The City of Abilene desires to have a 5,000 feet by 75 feet runway on the Airport Layout Plan. It is understood that any length or width beyond the previously determined 3,800 feet by 60 feet would be AIP ineligible at the time of this report.

ARC B-I category aircraft generally utilizing K78 will operate at gross weights of 13,000 pounds Single Wheel Gear (SWG) and 16,000 pounds Double Wheel Gear (DWG), so the current runway strength is adequate. Several alternatives were formulated and reviewed regarding the most economical, feasible and effective way to develop a 5,000 feet long by 75 feet wide primary runway as desired by the Airport.

As discussed in Chapter Three, *Facility Requirements*, the lower the visibility minimums, the more demanding the airfield design standards become. It is recommended that runways with not less than 1-mile approach visibility minimums have a full-length parallel taxiway. All runway alternatives include the analysis of a parallel taxiway.

All airside and landside alternatives presented herein (for cost comparison purposes) look at upgrading the existing facilities directly to the currently justified ARC B-I category configuration. In reality, a phased approach would most likely be utilized. The runway and taxiway upgrades would most likely be constructed first, followed by the landside developments.

The Plan Drawings for the following airport development alternatives (Primary Runway Alternatives R-1 through R-4 and Landside Alternatives L-1 through L-4) are located in Appendix J. The corresponding Runway Alternative cost estimates are located in Appendix K. The pros and cons of each alternative, while discussed below, can also be found directly on the exhibits.

All four runway alternatives examined within the master plan are estimated with installation of new base mounted Medium Intensity Runway Lights (MIRLs) and Medium Intensity Taxiway Lights (MITLs). The new lighting systems should be installed on a new parallel cable circuit installed in duct. In addition, all of the cost analyses include site preparation and mobilization, construction staking, earthwork and seeding, traffic control, drainage structures, and runway and taxiway marking. Since most of these costs are going to be similar no matter which alternative is selected, the largest differences in price come from the amount of land to be acquired, the amount of pavement to be removed, and the amount of new pavement to be constructed.

Each alternative also includes an environmental overview identifying factors which should be considered during alternative selection. These issues include Aquatic Concerns, Cultural Concerns, and Land Use Concerns. This initial analysis will be used when conducting an environmental assessment of the preferred development alternative in accordance with the National Environmental Policy Act (NEPA).

Based on FAA Order 1050.1F, Paragraph B-1, a detailed noise analysis is not required for projects involving ADG A-1 through D-II when the forecasted operations do not exceed 90,000 annual operations or 700 annual jet operations. The current forecast for the Abilene Municipal Airport is below this threshold, and no detailed noise analysis was conducted.

AIRSIDE PRIMARY RUNWAY ALTERNATIVE R-1

- Land Acquisition: 36 Acres
- Pavement Removal: None
- New Concrete Pavement: 7,800 Square Yards
- New County Road: 5,500 Square Yards
- Estimated Cost: $1.4 Million
- Construction Sequencing
    - Purchase Land
    - Relocate 2100 Avenue
    - Extend Runway 17/35 & Parallel Taxiway By 500'

Alternative R-1 will extend the runway to the south 500 feet in order to obtain the runway length of 4,600 feet. This extension includes extending the full-length parallel taxiway 500 feet also. Design of this runway utilizes visibility minimums not less than 1 mile on Runway 35 and Runway 17 approaches.

It is estimated that the new runway extension and taxiway would need to be constructed of 6" of concrete pavement on 6" aggregate base on compacted subgrade. The design and construction of this runway extension should provide a consistent pavement section for the entire runway. A consistent pavement is important from the air to ensure pilots can clearly see runway pavement markings. The assumed pavement sections are consistent across all alternatives.

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

Therefore, Alternative R-1 shows a sufficient amount of land to be purchased on the south end of the Airport. The land on the south end of Runway 17/35 needs to be acquired as fee-for-title or avigation easement to accommodate the relocation of 2100 Avenue and to prevent structures that could be built in the proposed Runway Protection Zone (RPZ), Runway Safety Area (RSA), Taxiway (TSA), Object Free Area (OFA), and within the 35 foot Building Restriction Line (BRL).

The most objectionable environmental concern to the general public is most often noise exposure. The land surrounding the airport is currently used primarily for agricultural, although there are a couple of

single-family dwellings located in vicinity of the airport. By extending the runway to the south, noise exposure to existing dwellings is not increased.

AIRSIDE PRIMARY RUNWAY ALTERNATIVE R-2

- Land Acquisition: 51 Acres
- Pavement Removal: 7,100 Square Yards
- New Concrete Pavement: 15,000 Square Yards
- New County Road: 6,700 Square Yards
- Estimated Cost: $2.4 Million
- Construction Sequencing
    - Purchase Land
    - Relocate 2100 Avenue
    - Extend Runway 17/35 & Parallel Taxiway By 1,000'
    - Remove 500' of Runway 17/35 & Parallel Taxiway on the north

Primary Runway Alternative R-2 looks at "shifting" existing Runway 17/35 to the south until the north to mitigate obstruction hazards to the north of the airport. This results in relocating Runway 17/35 500 feet to the south, then extending the runway the remaining 500 feet to the south. The result is the removal of 500 feet of runway on the north end, and 1,000 feet of new runway construction on the south end. Design of this runway utilizes visibility minimums not less than 1 mile on Runway 35 and Runway 17 approaches.

The existing Airport property is insufficient to be able to construct the runway upgrades shown in Alternative R-2. Additional land will first have to be purchased by the City before any airport improvements can be constructed. The land located on the south ends of the proposed new primary runway needs to be acquired as fee-for-title to accommodate the relocation of 2100 Avenue, the shift and extension of the runway, and to control structures that could be built in the proposed RPZ or within the 35 foot Building Restriction Line (BRL) area that extend beyond the Airport's existing property line.

This alternative has the same environmental issues as R-1.

AIRSIDE PRIMARY RUNWAY ALTERNATIVE R-3

- Land Acquisition: 103 Acres
- Pavement Removal: None
- New Concrete Pavement: 43,800 Square Yards
- New County Road: None
- Estimated Cost: $4.4 Million
- Construction Sequencing
    - Purchase Land
    - Close/Relocate Fawn Road
    - Construct New 4,500' Runway 09/27 & Parallel Taxiway

Primary Runway Alternative R-3 involves the construction of a completely new runway 09/27. This will leave the existing Runway 17/35 intact with the construction of a new runway on a new, different alignment. Since

it is on the new alignment, none of the existing airfield pavement could be utilized for the new runway, which inflates the cost dramatically. This option would also result in the closure or relocation of Fawn Road which would add to the cost. Design of this runway utilizes visibility minimums not less than 1 mile on Runway 35 and Runway 17 approaches.

Alternative R-3 is the most expensive of the alternatives examined as it requires the most land and new pavement. As such, it was determined early on in the feasibility discussion of this option that it was not desired.

AIRSIDE PRIMARY RUNWAY ALTERNATIVE R-4

- Land Acquisition: 43 Acres
- Pavement Removal: None
- New Concrete Pavement: 12,700 Square Yards
- New County Road: 6,500 Square Yards
- Estimated Cost: $1.9 Million
- Construction Sequencing
    - Purchase Land
    - Relocate 2100 Avenue
    - Extend Runway 17/35 & Parallel Taxiway by 900 feet

Primary Runway Alternative R-4 will extend the existing runway and parallel Taxiway South by 900 feet to obtain a runway length of 5,000 feet. The design of the runway utilizes visibility minimums not less than 1 mile of the approaches of Runway 17 and Runway 35. This option was created after discussion with the airport advisory board which desired to increase the length to obtain 5,000 feet. It is understood that the FAA would participate in construction and maintenance of up to 3,800 feet as previously discussed, and that the additional 1,200 feet would be 100% locally funded at this time.

In order to extend the runway, additional land and planned airspace must be acquired south of the runway by the City of Abilene via fee-for-title. This land will accommodate the relocation of 2100 Avenue, the extension of the runway, and to control structures that could be built in the proposed Runway Protection Zone (RPZ) or within the 35 foot Building Restriction Line (BRL) area that extend beyond the Airport's existing property line. Land acquired will allow for safe and efficient aircraft operations to be protected from possible future obstructions.

This alternative has the same environmental issues as R-1.

LANDSIDE DEVELOPMENT ALTERNATIVES

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

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

The facility requirements analysis for the Abilene Municipal Airport determined the need for additional hangar space to meet the demands of the planning horizon addressed in this Master Plan. The landside development alternatives depict alternatives for developing taxiways, taxilanes, apron areas, T-hangars, conventional/executive hangars, existing hangar expansion, automobile parking, and development opportunities. The proposed layouts are designed to handle Airplane Design Group (ADG) II aircraft with wingspans of 49 feet up to but not including 79 feet or tail height from 20 feet up to but not including 30 feet).

At this time, no cost estimates were developed for the landside alternatives. Costs are developed for landside improvements in Chapter Six, Capital Improvement Plan of this Master Plan. The Plan Drawings as well as the pros and cons for each alternative for the following landside development Alternatives L-1, L-2, L-3, and L-4 are located in Appendix J. The following is a discussion on each of those concepts.

Landside Alternative L-1

Landside Alternative L-1 proposes the expansion of an existing hangar and installation of T-hangars, Executive Hangars, and a Nested Hangar for ARC B-1 category aircraft. South and East of the hangars on the West side of South Washington Street will be a new commercial and industrial use area for utilization by the airport. One new 10-place T-Hangar for ARC B-1 category aircraft is to be constructed south of the existing 10 place T-Hangar with accessible taxilanes. Further expansions could be constructed to the south in the future.

Access to the main taxiway is provided via 2 connecting taxiways: one near the small and medium aircraft tiedown area that will be removed to prevent direct access to the runway, and a connecting taxiway south of the existing 10 place T-Hangar.

Landside Alternative L-2

This alternative shows the addition of 5 single T-Hangars on the east of existing taxiways and a new 4 place T-Hangar to the south of the existing 10 place T-Hangar. A new 1,000 Square foot expansion on the North side of the North existing hangar will have accessible automobile parking and will expand the services offered at that hangar. An additional parking area expanding the existing parking area North will provide 20 additional parking spaces. Access to the taxiway is provided by two connecting taxilanes, the North one is being relocated South to prevent direct access to the runway. This alternative provides an additional area South of the airport along the West side of South Washington Street that can be used for a commercial and industrial area development.

Landside Alternative L-3

Landside Alternative L-3 proposes 3 new hangars with new accessible taxilane and additional small and medium aircraft tiedown area to the North of existing hangars. An additional new T-Hangar will be constructed on the East of a taxilane, and a new 10 place T-Hangar will be built to the South of existing

hangars. Access to the taxiway is provided by two connecting taxilanes, the North one being relocated North to prevent direct access to the runway. A new commercial and industrial use area is also available for development along the West side of South Washington Street.

LANDSIDE ALTERNATIVE L-4

Landside Alternative L-4 provides multiple additions to the airport including new hangars, expanded parking lot, and more tiedown areas. The Alternative includes 3 new executive hangars with private automobile access from South Washington Street, new 2 place nested hangar, and two 10 place T-hangars to be constructed to the South of the existing hangars. Along with a 1,000 square foot expansion to be made on the South of the North existing hangar, 20 spaces of additional parking will be added to the parking area. New small and medium aircraft tiedown areas will be added from the large addition of concrete area to be constructed to the North and extend the current area on the West side further South. Access to the taxiway will be provided via two connecting taxilanes, the North one being relocated North to prevent direct access to the runway. A new commercial and industrial use area will be available for development along the West side of South Washington Street.

SUMMARY OF DEVELOPMENT ALTERNATIVES AND RECOMMENDATIONS

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

The alternatives listed in this chapter were reviewed and discussed with the Abilene Airport Advisory Board on July 2, 2018. From this meeting, the Board made recommendations for which alternative should be implemented for the Abilene Municipal Airport. The selected alternatives were the Airside Primary Runway Alternative R-1 and Landside Alternative L-4 (see Appendix J).

After obstruction analysis completion, it was determined that the Runway 17 end would require a displacement to mitigate the railroad tracks located to the north of the airport. Through the approach and surface analysis along with discussions with the Airport and City, it was determined that the Runway 17 end should be displaced to the first row of runway lights, 186.21 feet. This distance allows an appropriate clearance over the railroad tracks and allows the existing runway lights to remain at their existing location.

After further discussions with the City, the ultimate ALP drawings will reflect a combination of the Airside Primary Runway Alternatives, Landside Alternatives, and the Runway 17 displaced threshold. These concepts and the City's finalized review will be utilized in the creation of the Airport Layout Plan in Chapter 5.

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CHAPTER 5

AIRPORT LAYOUT PLAN

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AIRPORT LAYOUT PLAN

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

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

PLANNING PROCESS FOR THE AIRPORT LAYOUT PLAN

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

Under the current Federal guidelines, an ALP that is approved by the FAA is a prerequisite to receiving subsequent approval of a Federal Airport Improvement Program (FAIP) development project and related grant funding. The FAA developed a to-do checklist titled, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)* for preparing Master Plan and ALP updates. That checklist provides guidance to the airport designer to make sure the FAA required information is presented in the Narrative Report and on the ALP. The checklist also helps to standardize ALP drawings and reports within the aviation industry. The current checklist, dated October 1, 2013 was used in preparing this Narrative Report and attached ALP drawings.

All public airports are encouraged to keep an up-to-date ALP and to conform to the requirements of the approved ALP. It is good to keep in mind that the aviation industry is constantly changing and expanding and thus airports must remain flexible in all their proposed future developments. An airport owner may request and receive approval of specific revisions to an already approved ALP from the FAA as the changes are warranted. In summary, the ALP is the primary planning document utilized by Local, State and Federal agencies to review and approve expenditures for a specific airport, and hence, it is a very important part of this Narrative Report. Upon approval by the city of Abilene and the FAA, the ALP becomes the official guidance for future decisions concerning development and funding of airfield and landside improvements.

Prior to the preparation of the ALP, a set of development alternatives were created to meet the needs and requirements of the Airport. All alternatives were sent to the members of the Abilene Airport Advisory Committee and the City Commission for their review and study before review meetings were held. The alternatives were then presented at an Airport Advisory Board meeting and a City Commission meeting. The pros and cons of each development alternative were publicly explained and a desired layout of the airport was determined and voted on by an official quorum of the City Commission.

A final planning meeting was held with the City to finalize the desired layout in the ALP set on January 9, 2020.

The remaining portion of this Chapter explains the ALP in more detail utilizing the selected alternatives discussed above and in Chapter 4.

Title Sheet (Sheet No. 1)

The *Title Sheet* for the ALP shows the vicinity and airport location map and indexes the entire set of sheets contained in the ALP.

Airport Layout Plan Drawing (Sheet No. 2)

The Airport Layout Drawing graphically presents existing and ultimate airport improvements associated with both the airfield and landside areas.

Existing Runway 17/35 is the primary runway with a length of approximately 4,100 feet and a width of 75 feet. Planned is an extension of the existing runway to the south to gain distance towards the ultimate length desired by the Airport. The ultimate Runway 17/35 is desired to be 5,000 feet long by 75 feet wide.

As analyzed in Chapter Three of this Airport Master Plan report, the ultimate Runway 17/35 configuration will provide at least the FAA recommended 95 percent wind coverage at 10.5 knots (12 mph) and the orientation of Primary Runway 17/35 is adequate for the critical design aircraft which is an ARC B category. Therefore, it is noted in Chapter 3 that there is not a recommended need for a crosswind runway for smaller aircraft in the ARC A-I/B-I categories; however, a cross-wind runway is shown on the ultimate layout since it is desired by the Airport.

Existing Runway 17/35 is currently served by Non-Precision/Other Than Utility approaches on both Runway 17 and Runway 35. Ultimately, primary Runway 17/35 is anticipated to maintain its Non-precision/Other Than Utility with Greater Than 1 Mile approach procedure on both approaches.

Before construction of the ultimate runway length, the City will need to acquire land to complete a Runway 17/35 extension. Further discussion on land acquisition is located later in this chapter in the section titled *Airport Property Map,* also known as Airport *Exhibit A Property Map (Sheet No. 17).*

The *Airport Layout Plan* Drawing also shows the proposed future development of the Terminal Area. Several new hangar spaces created by a combination of new Executive Hangars and Standard T-Hangars are depicted for construction in the future to help accommodate the future demand of Airport aircraft that require hangar space. In pavement tie-down locations for aircraft are added for local and itinerant pilots that wish to park their aircraft on the apron for a short period of time. The improvements associated with landside developments are illustrated in more detail and in larger scale on the *Terminal Area Drawing (Sheet No. 12)* discussed later in this Chapter.

Airport Data (Sheet No. 3)

The *Airport Data* sheet presents data associated with the Abilene Municipal Airport in tabular and/or graphic format. This sheet shows the detailed data information used to formulate the ALP. This includes all information pertaining to the existing, interim, and ultimate configuration of the runway for the

airport with declared distances, runway end coordinates, obstacle-free zone object penetrations, and the wind rose data for the existing and ultimate runway configurations.

AIRPORT AIRSPACE DRAWING (SHEET NO. 4)

The *Airport Airspace Drawing* for K78 is based on Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*. In order to protect airspace and approaches to each runway at the Airport from hazards that would affect the safe and efficient operation of the Airport, the FAA established Federal criteria for use by airport engineers when designing airport improvements. Those criteria are also used by local planning and land use jurisdictions to control the location and height of objects in Airport vicinity.

The *Airport Airspace Drawing* shows all of the two-dimensional land areas that contain three-dimensional imaginary airspace protection surfaces that surround the Airport for up to 10,000 feet in every direction and provides a holistic look at the effect the Airport airspace protection areas have on the surrounding Abilene community. These imaginary surfaces emanate from the runway centerline and are dimensioned to protect approaching and departing aircraft from the potential hazard of obstructions. The *Airport Airspace Drawing* also indicates obstructions currently located within Airport airspace protection areas defined by the FAR Part 77 imaginary surfaces.

The *Airport Airspace Drawing* permits Abilene to determine readily if the construction of a proposed structure in the Airport vicinity will penetrate any of the protected airspace areas and surfaces.

The FAR Part 77 imaginary airspace protection surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. FAR Part 77 surfaces were formulated then drawn in plan view to illustrate the ultimate runway configuration for the Airport. FAR Part 77 imaginary surfaces and are described in the following paragraphs.

- **Primary Surface:** The primary surface is an imaginary surface longitudinally centered on the runway. The Primary Surface extends 200 feet beyond each runway end (for runways with hard prepared surfaces or planned hard prepared surfaces in the ultimate condition) and stops at the physical end of each turf runway (or runway without a hard prepared surface). The width of the primary surface is determined by the type of approach procedure established for a particular runway approach end (such as visual, non-precision, precision). The elevation of any point on the Primary Surface is the same as the elevation of the nearest point on the runway centerline. For the ultimate planned non-precision (greater than one mile) approach procedures to primary Runway 17/35, the Primary Surface is 500 feet wide.

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

- **Approach Surface:** The Approach Surface for each runway begins at the end of the primary surface previously discussed. The approach surface has the same width of 500 feet as the

Primary Surface and extends upward and outward from the Primary Surface centered along an extended runway centerline. The upward slope and length of the approach surface is determined by the type of approach procedure (existing and/or ultimate) to the runway end. For ultimate Runway 17/35, a 34:1 non-precision approach surface is depicted.

- **Transitional Surface:** Each runway approach end has a transitional surface which extends outward and upward at right angles to the runway centerline at a slope of 7:1 from the sides of the primary surface and from the sides of the approach surface. The transitional surface extends upward until it meets the Horizontal Surface, where the transitional surface is replaced by the horizontal surface.

- **Horizontal Surface:** The horizontal surface is an imaginary surface established at 150 feet above the established airport elevation. Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical Surface at a distance of 10,000 feet from the primary surfaces of each runway. The established airport elevation at the Abilene Municipal Airport is 1,152.5 feet above Mean Sea Level (MSL) Therefore, the proposed Horizontal Surface elevation for the Airport is located at an elevation of 1,302.5 feet above MSL.

- **Conical Surface:** The conical surface begins at the outer perimeter of the horizontal surface. The conical surface extends outward and upward from the horizontal surface at a slope of 20:1. Therefore, at 4,000 feet from the outer perimeter of the horizontal surface, the elevation of the conical surface is 350 feet above the established airport elevation. The proposed Conical Surface elevation for the Airport is located at an elevation of 1,652.5 feet above MSL.

Data was gathered of all FAA studied towers in the vicinity of the Abilene Municipal Airport. The locations of towers within the conical surface, as well as their heights, are shown on this drawing. Analysis of existing terrain data indicates that there are obstructions to the FAR Part 77 Surfaces of the Airport. The Obstructions and methods of correction are shown on this sheet.

Runway Line of Sight Profiles (Sheet No. 5)

The *Line of Site Profiles* Sheet shows the profile view for the existing and ultimate Runway 17/35and the ultimate crosswind Runway 14/32 at the Abilene Municipal Airport. This sheet shows the existing runway and design of the future runways existing/planned profile and whether there are any issues with sight distances on the associated runway due to the curvature of the runway surface. Runways with a full parallel taxiway are required to have any point 5 feet above the runway be mutually visible with any other point 5 feet above the runway at a distance less than half the length of the runway. This becomes an issue when a vertical crest curve is constructed on a runway to match the surrounding terrain. As an example, think of a highway when a vehicle is approaching the top of a hill and the driver can only see a limited distance ahead. Airport engineers avoid that inappropriate site line when formulating a runway design. As depicted within these Drawings, all proposed runway construction at the Airport meet FAA runway line of site profile requirements.

Inner Portion Approach surface Drawings (Sheets No. 6 thru 11)

The *Inner Portion of Runway Approach Surface Sheets* show the plan view and profile view for each existing, and proposed runway approach at the Abilene Municipal Airport. These Sheets provide a larger scale representation of each runway, with topographic contours, to assist with identification of potential encroachments on Runway Safety Areas (RSAs), Object Free Areas (OFAs), FAR Part 77 Approach Slopes (ASs), Threshold Siting Surfaces (TSS), and Runway Protection Zones (RPZs). An obstruction table is also included on each drawing.

Terminal Area Drawing (Sheet No. 12)

The *Terminal Area Drawing* for the airport is a large scale drawing of the future landside area and terminal area. Several items are shown more clearly than possible on the *Airport Layout Plan* Drawing depicted on Sheet Number 2. Proposed changes shown on the drawing primarily include new Standard T-Hangars, Executive Hangars, apron expansion with tie-downs, a Terminal Expansion connected to the existing Maintenance Hangar, associated new taxilanes for access, and an additional automobile parking area.

Departure Surface Drawings (Sheet No. 13 & 14)

The *Departure Surface* Drawings for the airport is used for runways supporting instrument departures. When clear, this surface allows pilots to follow standard departure procedures. Obstacles frequently penetrate the departure surface. Where object penetrations exist, the departure procedure for the airport can be adjusted by adding non-standard climb rates and higher departure minimums. For this reason, it is important for the City to identify and remove obstacles whenever possible and prevent new obstacles from penetrating the departure surface.

Airport Existing And Ultimate Land Use Drawing (Sheets No. 15 & 16)

The plan for the existing and future land use within the airport property lines is depicted by the Airport Existing Land Use and Airport Ultimate Land Use Sheets. The primary objective is to prevent, through planning, any future land use condition which could negatively impact the City/Airport's ultimate development plan. This includes such considerations as space for airport facility expansion and the prevention of visual barriers, radio disturbance and other safety hazards related to aviation uses, such as on-airfield crops, at the airport. Secondary objectives of the Land Use Plan relate to considerations of the non-airfield revenue-producing capabilities of the site and tertiary objectives involve the considerations of positive impact on economic development of the entire Dickinson County community and surrounding rural area.

The largest land use category is agricultural. Agriculture designated areas on Airport property permit growing of crops; however, crops that attract birds in sufficient quantity should not be produced on any of the airport property. Crops should not be produced closer than shown on the *Airport Land Use - Ultimate* Drawing per the crop restriction limits as determined in accordance with FAA AC 150/5300-13 *Airport Design*, Change 12, Appendix 17. The space between crop production areas and runways and taxiways should be in turf and regularly mowed and maintained. If at any time the costs of crop production exceed the revenues generated by the crops for a sustained period, the recommended alternate land use is unimproved open space maintained to prevent erosion and height or visual obstructions.

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

One of the most critical areas that airports have to address is existing buildings that are or will be within Runway Protection Zones (RPZ). As approach minimums are lowered and/or airports get better instrument approaches into their airports, the size of the RPZs will increase. AC 150/5300-13 states: "Where practical, airport owners should own the property under the runway approach and departure areas to at least the limits of the RPZ. It is desirable to clear the entire RPZ of all above-ground objects. Where this is impractical, airport owners, as a minimum, should maintain the RPZ clear of all facilities supporting incompatible activities." The AC also references "FAA Memorandum, Interim Guidance on Land Uses Within a Runway Protection Zone, dated 9/27/2012, for guidance on incompatible activities." Land uses in the RPZ that are undesirable and require FAA coordination include, but are not limited to, residences and places of public assembly (Churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typify places of public assembly), Fuel storage facilities and transportation facilities.

RPZs, off the end of each runway, are the areas that the FAA has found through historical data to be the locations with the highest probability for accidents to occur. Therefore it is crucial that local zoning agencies control the types of the buildings/facilities that are constructed directly off the end of any runway. By zoning and controlling encroaching development from negatively impacting the ultimate airport configurations, including future RPZ sizes, it will allow an airport to reach their final development goal much more easily and in a more cost effective way.

The second largest airport land use category is designated for aviation purposes. This category includes runways, taxiways, aprons, aircraft hangars, maintenance and storage buildings, administrative offices, and other facilities related to aircraft and aviation operations at the Airport.

To generate new revenue for the Airport, facilitate prudent community growth, and help foster economic development and quality job creation in Abilene and the surrounding rural areas, there are changes to the existing land use and related zoning on Airport property and adjacent land. Future developments forecasted in the next 20 years are depicted on the Airport Ultimate Land Use Drawing. The expansion of commercial and industrial areas on the south side of the existing hangars is depicted. This area should be utilized for expansion of aeronautical related commercial and industrial uses.

AIRPORT PROPERTY MAP (SHEET NO. 17)

The Airport *Exhibit A Property Map* drawing depicts the history of how the land parcels were acquired (fee-for-title or easement) and how land should be acquired (fee-for-title or easement) in the short, intermediate, or long term to help protect the airport from encroaching developments.

The FAA recommends that the airport own land, in fee-for-title, out to the 35-foot Building Restriction Line (BRL) for each runway located at the airport. The FAA also recommends that the airport control (in

fee-for-title when possible) the RPZs to help eliminate incompatible land uses off the end of each runway.

Most of the land acquired by the City per the Airport Property Map Drawing should be acquired fee-for-title. There is land to the south of Runway 35 that will need to be acquired for the runway extension and also a small portion of land that will likely be fiscally advantageous to control through avigation easement to prevent obstructions to FAR Part 77 surfaces. The City should then consider leasing surplus airport property to individuals and businesses for their use as pasture, farmland, commercial or industrial development. City ownership with adherence to FAA regulations would eliminate the possibility of obstructions constructed in the protected airspace of the Airport.

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CHAPTER 6

CAPITAL IMPROVEMENT PLAN

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CAPITAL IMPROVEMENT PLAN

PURPOSE AND PROCEDURES

The analysis performed in the previous Chapters evaluated developmental needs at the Abilene Municipal Airport (K78) based on operational efficiency and forecast activity. This Chapter addresses the proposed developments in regard to estimated project costs and realistic scheduling for putting the developments into place. The result will be an Airport Capital Improvement Plan (CIP) with a term of 20 years that addresses the needs of the Airport as determined by the master planning process. Development is grouped into three phases. Phase I is short-term and covers years one through five. Phase II is intermediate-term and covers years six through ten. Phase III is long-term and covers years eleven through twenty.

"The purpose of the CIP is to provide a strategic approach for the continued maintenance, upgrade and improvement of the airport facility…"

The purpose of the CIP is to provide a strategic approach for the continued maintenance, upgrade and improvement of the airport facility that is consistent with forecast levels of demand and the long-term role and community vision of the airport. The airport CIP is intended to provide guidance for developing future airfield and landside areas in an orderly series to maintain a safe, efficient, productive, and attractive public facility. The development plan is structured to provide flexibility to meet the short-term to long-range needs of the airport in a financially responsible and prudent manner. As part of the CIP plan versatility, Abilene can move most projects ahead of initial CIP schedule, or delay some projects, until demand levels warrant specific development items.

Individual Airport projects are identified as part of the CIP in order to preserve the integrity of the airport, satisfy airport design standards, and to allow for facility needs based on special requirements. The scheduling of projects within the CIP is prioritized with respect to need in order to permit for improvements in an integrated fashion.

The timing of projects within each phase (short, intermediate, long) is prioritized with respect to airport safety-related requirements, demand levels, compatibility with other project needs, potential funding levels, and with Federal Aviation Administration (FAA) and Kansas Department of Transportation Division of Aviation (KDOT Aviation) programming schedules, and in recognition of other major public work goals and projects.

Although this Chapter discusses just the CIP for the planning period of this Master Plan report, ample funding of the CIP is necessary for identified needs to become a reality. Funding for the recommended Airport development program comes from three major sources for airport development and improvement:

- **Federal Funding –** FAA Airport Improvement Program (FAIP) grants
- **State Funding –** Kansas Airport Improvement Program (KAIP) grants

- **Local Funding –** Multiple Sources
  - Tax-exempt bonds;
  - Airport user fees such as airfield area fees, landing fees, terminal area concessions, and rent, land and facility leases, aircraft and ground vehicle parking, hangar rent, etc.
  - Passenger Facility Charge (PFC) which is a local fee charged on each boarding passenger at commercial airports controlled by public agencies;

Different airports use different combinations of these funding sources depending on the individual airport's financial situation and the type of project being considered. Small airports are more likely to be dependent on FAIP grants than large or medium-sized airports because of a lower volume of aircraft operations, no passenger/user fees and no passenger facility charges (PFCs). The larger airports are much more likely to participate in the tax-exempt bond market or finance capital development projects with the proceeds generated from the PFC and other user fees. Each of these funding sources places differing legislative, regulatory, or contractual constraints on airports that use them.

FEDERAL FUNDING

Prior to World War II, the United States of America federal government limited its role in aviation to maintaining the airway system, viewing airports as a local responsibility. Some Federal monies were spent on airports during the 1930s (about $150 million) but only as part of Federal work relief activities such as Works Progress Administration (WPA) projects. Primarily, the National defense need for a strong system of airports during World War II led to the first major Federal support for airport construction.

To promote the development of a system of airports to meet the Nation's needs, the Federal government embarked on a grants-in-aid program to units of state and local governments shortly after the end of World War II. That early program, the *Federal-Aid Airport Program* (FAAP) was authorized by the *Federal Airport Act of 1946* and drew its funding from the General Fund of the United States Treasury. Today, the *Airport and Airway Trust Fund* (AATF) created by the F*ederal Airport and Airway Revenue Act of 1970*, provides public funding for the Federal commitment to the Nation's aviation system through several aviation-related Federal excise taxes.

By Federal statute, the safe operation of airports is the highest aviation priority. Other priorities include increasing capacity to the maximum feasible extent, minimizing noise impacts, and encouraging efficient service to state and local communities (such as support for General Aviation airports). Those Federal priorities along with the assessment of airport capital needs and the availability of budgetary resources for FAIP all influence the scope and structure of the FAIP.

The primary source of AATF funds for airport development is from Federal excise taxes paid on the sale of aviation goods and services. Normally, Congress annually authorizes funding levels from those tax funds deposited into the AATF. The FAA then establishes priorities via the FAIP under which the AATF

funds then distributed to airports located throughout the United States. Per the *National Plan of Integrated Airport System (NPIAS) Report* submitted to Congress on September 26, 2018, there are more than 19,600 airports in the United States but only 3,321 are eligible for Federal funding under the FAIP. Since the AATF is financed solely from Federal taxes paid on aviation goods and services and is used strictly for aviation purposes, the AATF is self-sufficient. Therefore, AATF revenue does not contribute to the National debt. Table 6A below itemizes the various Federal excise authorized under current Federal law that contribute and make up the AATF.

Table 6A
Aviation Taxes

Aviation Component	Computation Formula
Domestic Passenger Segment Tax	7.5% Of Ticket Price
Domestic Flight Segment Tax	$4.00 Per Segment During Calendar Year 2016 Indexed To CPI In CY 2002 And Beyond
Passenger Ticket Tax for Rural Airports Having Less Than 100,000 Enplanements And More Than 75 Miles From An Airport With 100,000 Enplanements	7.5% Of Ticket Price Flight Segment Tax Does Not Apply
International Arrival And Departure Tax	$17.80 Per Segment During Calendar Year 2016 Indexed To CPI In CY 1999 And Beyond
Flights Between Continental U.S. And Alaska Or Hawaii	$8.90 Per Segment During Calendar Year 2016 Indexed To CPI In CY 1999 And Beyond
Frequent Flyer Tax	7.5% Value Of Miles
Domestic Cargo/Mail	6.25% Of Shipment Cost
Commercial Fuel Tax	4.3¢ Per Gallon
General Aviation Fuel Tax	Aviation Gasoline: 19.3¢ Per Gallon Jet Fuel: 21.8¢ Per Gallon Fractional Ownership Porgram: 14.1¢ Per Gallon Surcharge
Source: FAA Airport & Airway Trust Fund (AATF) Fact Sheet	

Airport Classification

An airport's classification within the NPIAS is dependent upon whether commercial service exists. A fixed amount of funding under the FAIP is available for each category of airport in each FAA region. These airport classifications are significant, as they affect the availability of funding under the FAIP. Table 6B on page 6-4 itemizes the various types of airport classifications within the FAIP program.

The Abilene Municipal Airport falls under the **Non-Primary General Aviation (GA) category**. This airport type is the largest single group of airports in the United States system of airports. The GA category also includes privately owned, public-use airports that enplane less than 2,500 passengers annually and receive scheduled airline service. GA airports do not serve military or scheduled commercial service but typically do support one or more of the following: business, personal, instructional flying, agricultural spraying, air ambulance services, on-demand air taxies, and charter aircraft services.

Table 6B
Definition of Airport Categories

Airport Classifications		Hub Types: Percentage of Annual Passenger Boardings	Common Name
Commercial Service: Publicly Owned Airports That Have At Least 2,500 Passenger Boardings Each Calendar Year And Receive Scheduled Passenger Service	Primary: Have More Than 10,000 Passenger Boardings Each Year	Large: 1% Or More	Large Hub
		Medium: At Least 0.25% But Less Than 1%	Medium Hub
		Small: At Lease 0.05% But Less Than 0.25%	Small Hub
		Non-Hub: More Than 10,000 But Less Thank 0.05%	Non-Hub Primary
	s	Non-Hub: At Least 2,500 But Less Than 10,000	Non-Primary Commercial Service
Non-Primary (Except Commercial Service)			Reliever & General Aviation
Other Than Passenger Classification			Cargo Service

Source: FAA Airport Improvement Handbook, Order 5100.38D, Effective Date September 30, 2014

In 2012 and 2014, the FAA completed several reviews of the existing GA facilities in an 'asset' study and generated two reports detailing the functions and economic contributions of NPIAS GA airports. This study created five new categories for GA airports based on existing activity levels. These five categories are listed with description in Table 6C below. Abilene Municipal Airport has been classified with a role of **Local**.

Table 6C
Genaral Aviation (GA) Airport Categories

Role	Description
National	Supports the national and state system by providing communities with access to national and international markets in multiple states and throughout the United States.
Regional	Supports regional economies by connecting communities to statewide and interstate markets.
Local	Supplements communities by providing access to primarily intrastate and some interstate markets.
Basic	Links the community with the national airport system and supports general aviation activities (e.g., emergency services, charter or critical passenger service, cargo operations, flight training and personal flying).
Unclassified	Provides access to the aviation system.

Source: FAA Website *https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/categories/*

Federal Funding History

The current FAIP was established under the Airport and Airway Improvement Act of 1982 (Act). Since the original authorization and establishment, Congress amended the Act multiple times. The broad objective of the Act is to assist in the development of a nationwide system of public-use airports adequate to meet the current projected growth of civil aviation. The Act provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS). The NPIAS, which is prepared and published every two years, identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense, and the Postal Service.

On December 12, 2003, President George W. Bush signed into law a new multi-year FAA funding bill titled, Vision 100 – Century of Aviation Reauthorization Act of 2003 (Vision 100; Public Law 108-176). Among other things, Vision 100 allowed non-primary airports to use their FAIP entitlement funding for revenue-generating areas if the Secretary of United States Department of Transportation determined that the airport sponsor has made adequate provisions for the airside needs of the airport. Vision 100 temporarily raised the Federal FAIP grant share from 90% to 95% for airports smaller than large and medium hub (other than primary airports) and for non-primary airports in states participating in the Federal block grant program for states. The State of Kansas was not one of the ten states that chose to participate in that block grant program first authorized by FAA in 1989 under Code of Federal Regulations (CFR), Title 14, Part 156, State Block Grant Pilot Program. The temporary increase in Federal share to 95% was established to provide relief to operators of small airports after the September 11, 2001, terrorist attacks.

Under Vision 100, FAIP could fund up to 95% of the cost of certain airside and landside developments. The FAIP funding portion was authorized to remain at 95% until Vision 100 expired on September 30, 2007, upon which time Congress began considering a new multi-year funding bill for the FAA. The FAA fiscal year begins on October 1 and ends on September 30.

With the expiration of Vision 100 on September 30, 2007, FAIP funding was temporarily continued by Congress using a series of 23 Congressional Continuing Resolutions (short-term extensions). Those Continuing Resolutions authorized an extension of FAIP funding for a period as short as one week and no longer than six months. The last Continuing Resolution in FY 2012 authorizing FAIP funding was approved by Congress on January 24, 2012, and expired February 17, 2012. These very volatile periods of Federal funding for FAA and community airports made it very difficult for communities such as Abilene to appropriately and prudently operate, maintain, and develop their local airport.

On February 14, 2012, President Barack Obama signed the current multi-year funding bill for FAA into law. The long-delayed (approximately 4½ years) FAA reauthorization bill was named the Federal Aviation Administration Modernization and Reform Act of 2012, Public Law 112-95. That four-year reauthorization bill (FY 2012 through FY 2015) became a reality before the 23rd Continuing Resolution expired on February 17, 2012.

Modernization 2012 kept the Federal cap on the local Passenger Facility Charge (PFC) at $4.50. It also authorized $3.35 billion annually for the FAIP for the remainder of FY 2012 through FY 2015. This authorization bill was extended in September 2015, and April 2016 by the Airport Airway Extension Act of 2015 & 2016, Public Laws 114-55 and 114-141, and in July 2016 by the FAA Extension, Safety, and Security Act of 2016 Public law 114-190. These bills extended the $3.35 billion annual budget for airport planning, development, and noise compatibility planning and programs through FY 2017. Modernization 2012 also reduced the Federal share for FAIP projects at small airports from 95% to 90%.

The most recent FAA Reauthorization Act of 2018, enacted on October 5, 2018, reauthorized the FAA and other programs through the end of fiscal year 2023. This was the first multi-year reauthorization since the Modernization and Reform Act of 2012 and the first five-year reauthorization since 1982. This most recent Act, decreases the funding uncertainty of the more short-term preceeding FAA reauthorizations.

For the purposes of this Master Plan, the 90% Federal grant match is used for planning and budgeting purposes throughout the 20-year planning horizon.

PROJECT ELIGIBILITY

Eligible projects for FAIP funding include those improvements related to enhancing airport safety, capacity, security, and environmental concerns. Such projects typically fall within the categories of airport planning, airport development, land acquisition, and noise program implementation. Professional services that are necessary for eligible projects, such as planning, surveying, and design, are eligible. All FAIP funded projects must meet the following general requirements:

- The project sponsorship requirements met.
- The project is reasonably consistent with the plans of planning agencies for the development of the area in which the Airport is located.
- Sufficient funds are available for the portion of the project not paid for by the Federal Government.
- The project completed without undue delay.
- The airport location is included in the current version of the NPIAS.
- The project depicted on a current Airport Layout Plan (ALP) approved by the FAA.

Projects related to airport operations and most revenue-generating improvements are typically not eligible for FAIP funding. Prohibitions also exist for art, landscaping, certain public parking facilities, and some aircraft hangars. Operational costs such as salaries, equipment, and supplies are also not eligible for FAIP grants. Table 6D lists typical examples of eligible and ineligible projects. The list does not represent a comprehensive listing of eligible vs. ineligible projects.

Table 6D
Examples of FAIP Eligible Vs. Ineligible Projects

Eligible Projects	Ineligible Project
Aircraft Hangars (Non-Primary Airports)	Artwork
Airfield Drainage	Development That Exceeds FAA Standards
Airfield Lighting	Development For Exclusive Use
Airfield Signage	Improvement For Commercial Enterprises
Apron Construction/Rehabilitation	Industrial Park Development
Environmental Studies	Landscaping
Fuel Farms (Non-Primary Airports)	Maintenance Equipment And Vehicles
General Aviation Terminal Buildings	Marketing Plans
Land Acquisition	Office Equipment
Certain Navaids (REILs, PAPIs, etc.)	Training
Planning Studies	Airport Operational Costs
Runway Construction/Rehabilitation	FBO Support Areas
Safety Area Improvements	
Snow Removal Equipment	
Taxiway Construction/Rehabilitation	
Weather Observation Stations (AWOS)	

Source: FAA AIP Sponsor Guide

GRANT ASSURANCES

When the city of Abilene, the sponsor of the Abilene Municipal Airport, accepts FAIP funds, the City must agree to certain obligations. Those obligations, called Grant Assurances, require the City as a Federal grant recipient to, among other things, operate and maintain the airport in a safe and serviceable condition, not grant exclusive rights, mitigate hazards to airspace, and use Airport revenue properly.

The FAA may require Grant Assurances be attached to the grant application and/or the grant award for Federal assistance and these become part of the final grant offer. The FAA may also require that Grant

Assurances are placed as restrictive covenants on airport property deed(s). The duration of these Federal obligations depends on the type of recipient, the useful life of the airport facility developed, and other conditions stipulated in the Grant Assurances. A copy of the most current required FAA Grant Assurances dated April 3, 2014, and titled A*ssurances - Airport Sponsors* is located in **Appendix N** of this Master Plan.

ENTITLEMENT FUNDS (FORMULA GRANTS)

The *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century* (AIR 21), also known as Public Law (PL) 106-181, is a United States Federal law seeking to improve aviation safety. AIR 21 was enacted on April 5, 2000, and, among other things, introduced Non-Primary Entitlement funding for General Aviation (GA) airports. AIR-21 set aside grant funds for GA airports listed in the NPIAS for routine work to preserve and extend the useful life of runways, taxiways, and aprons.

GA airports can each receive up to $150,000 of Entitlement Funds per year based on the FAA assessment of maintenance needs over a 5-year period. The City can accrue entitlement funds for a maximum of three fiscal years immediately following the year in which the funds are appropriated, or a total of four years. These four years can yield a maximum total of $600,000 of entitlement funds. If entitlements funds are not utilized within four years, those funds are removed from the City and used for other airport projects located in the FAA Central Region.

The funding portions for projects utilizing FAIP Entitlement Funds at the airport are currently 90% Federal and 10% local. For example, a City project for the airport that totals $100,000 would be funded $90,000 FAIP and $10,000 City. Without appropriate and prudent local financial planning and budgeting, airport sponsors such as the City can and do lose FAIP entitlement funds. It is highly recommended each year the City budget $15,000 in the City's Airport Capital Improvement Plan (ACIP) fund so that local match money is available to take advantage of the annual FAIP funding opportunity of $150,000. With prudent budgeting, the City can let the FAA bank $600,000 over four years and have $60,000 of local City funds readily available to undertake an Airport project costing up to $660,000. The current status of the FAIP funds for the airport is discussed in Chapter 7.

DISCRETIONARY FUNDS (COMPETITIVE GRANTS)

The City also has access to FAIP discretionary grants to fund airport projects. Those grant funds are awarded by the FAA via a competitive grant application process based on a National prioritization formula. This type of funding is very competitive and the total dollar amount of annual grant applications normally far exceeds available FAIP discretionary funding authorized by Congress. For example, in FY 2011, the FAA had only $82.8 million of discretionary funds available to fund $98.0 in grant applications. Airport sponsors who have good airport planning practices and who prudently budget and/or accumulate an ample local funding match are the most successful in the competitive grant application process. FAIP discretionary funds are currently 90% Federal and 10% local match.

The FAA ranks projects competitively using what is called the National Priority System (NPS) equation, used to calculate the National Priority Rating (NPR). The NPR is a relatively simple numerical model the FAA uses as a primary factor to prioritize airport development projects. The values generated by the model help categorize airport development in accordance with agency goals and gives the highest

priority to safety, security, reconstruction, standards, and capacity, in that order. The model relies on pre-defined values including:

- Airport Type/Category (one of eight categories, based on enplanements, number of based aircraft, and operations for the non-primary airports);
- Component of the project (identifies the development area, planning study, or type of equipment);
- Purpose of the project (identifies the objective - safety, security, reconstruction, rehabilitation, standards, capacity, etc.); and
- Type of project (identifies the specific area of focus – construction, lighting, install, new plan/study/assessment, update, snow, etc.).

The model applies the assigned values for each of these factors and generates a value for each proposed project, between 1 and 100, with a higher number indicating the project is more aligned with FAA goals and objectives. Typically, a project must receive an NPR value of 62 or higher to be considered for receiving Discretionary Funding. The historical federal grants received by the airport are discussed in chapter 7.

Application and Airport Capital Improvement Program Data Sheet

Abilene, as an eligible airport owner seeking Federal-funding assistance, may accomplish such requests for aid through the FAA Airport Capital Improvement Program (ACIP). The ACIP is an FAA internal program that serves as the primary planning tool for systematically identifying, prioritizing, and assigning Federal funds to critical airport development and associated capital needs. The FAA relies on the ACIP to serve as the basis for the distribution of limited grant funds under the Federal Airport Improvement Program (FAIP).

The City's Capital Improvement Plan (CIP) in this Master Plan represents a 20 year itemized plan for aviation development at The Abilene Municipal Airport. The City identifies those individual airport projects to the FAA by submitting an ACIP Data Sheet for each project item the City desires Federal funding for in the next five years. The City may submit a request-for-aid at any time during the year. However, in order to be included in a specific Federal Fiscal Year (FFY) which is October 1 through September 30, timely submittal of the request is essential. FAA asks that airport sponsors submit ACIP data sheet requests for a particular FFY before February 15 of the previous FFY. For example, requests for FFY 2021 should be promptly submitted before February 15 of 2020.

In order to receive funding consideration from the FAA under the ACIP, the City must prepare and submit and ACIP Data Sheet for each work item listed within the Airport CIP for a minimum of the current and two subsequent Federal fiscal years. A prerequisite for ACIP eligibility is that a requested project must comply with the current approved Airport Layout Plan (ALP) for the airport and be environmentally cleared to proceed. Projects seeking discretionary funds in excess of five million dollars require the City to prepare and submit a Cost and Benefit Analysis. A copy of the most recent FAA Airports Division, Central Region ACIP Data Sheet form and related instructions are attached in Appendix O of this Master Plan.

PROTECTING GRANT FUNDING OPPORTUNITIES

The development plan for the Airport has been and must continue to be, coordinated with the FAA because FAIP discretionary funds distributed by the FAA are on a priority basis. In addition, the City must keep FAA fully abreast of its Airport CIP on a continuing basis in order to maintain appropriate coordination and to act expeditiously in securing the local cost-share for possible FAIP grants. When the City receives an FAA grant offer, the City must be prepared to act quickly in start-up and completion of the approved and federally funded project. In addition, the City must continue to ensure compliance with all required grant assurances previously discussed so funding is not jepardized.

STATE FUNDING

The State of Kansas through the Kansas Department of Transportation (KDOT) Division of Aviation currently administers a Kansas Airport Improvement Program (KAIP) set in place for public-use airports located in Kansas. The program is designed to provide funding assistance for the purpose of planning, constructing, reconstructing or rehabilitating the facilities of public use General Aviation (GA) to supplement FAIP funding provided by the FAA. Currently, the State has no entitlement funds designated for Kansas airports in the KAIP. Rather, all KAIP funding is discretionary and annually awarded to Kansas airport projects through a competitive grant application process.

KDOT Aviation was created by an act of the State Legislature in 1975 by authorizing Kansas Statutes Annotated (KSA) 75-5010. Prior to 1975, State aviation-related functions were performed by the Kansas Secretary of Economic Development. In 1999, The Kansas Legislature approved House Bill (HB) 2071 known as the 1*999 Kansas Comprehensive Transportation Program* (CTP). That legislation authorized KSA 75-5061 to establish the *Public Use General Aviation Development Fund* in the State Treasury and authorized a total of $3.0 million per State fiscal year for airport assistance funding. The State fiscal year is July 1 through June 30. In 2010, the State Legislature approved HB 2650 called, T*ransportation Works for Kansas Program* (T-Works). That legislation increased annual KAIP funding to $5.0 million starting in FY 2014.

The main strategies of the KAIP are:

1. Preservation and enhancement of the Kansas airport system; and
2. Address only basic airport needs; and
3. Assist airport sponsors willing to commit to a significant local matching fund requirement.

The main objectives of the KAIP are:

1. Maintain within the Kansas system of airports a runway condition rating of Very Good which is a Pavement Condition Index (PCI) of 70 or greater; and
2. Minimize surface travel time to air ambulance service pick-up locations; and
3. Augment safety by improvements to taxiway, ramps, and lighting; and
4. Enhance airport and community economic development appeal.

RATIOS AND PROJECT ELIGIBILITY

Under the KAIP, the funding portions of State grant and local match vary from 50/50 to 95/5 depending on the type of project.

According to the *Kansas Airport Improvement Program: Program Guidance (August 2016)* Sponsor Participation ratios are as follows:

1. System Preservation Projects
    a. Infrastructure Improvements (90/10)
    b. Vertical Development (85/15)
2. Modernization Projects
    a. Geometric Improvement (90/10)
    b. Vertical Development (50/50)
3. Equipment and Facilities Projects
    a. Equipment (50/50)
    b. Facilities
        i. Navigational (90/10)
        ii. Non-Navigational (85/15)
4. Design/Planning Projects
    a. All planning grants (95/5)

The City must meet the following criteria in order for projects at the Abilene Center Municipal Airport to be eligible for KAIP grant funding

1. Projects must be the City's top priority airport need critical to the airport's ability to support the Abilene community.
2. Projects must address airport safety and/or preservation concerns.
3. Projects should focus on airport developmental needs identified in the *Kansas Airport System Plan 2016*.
4. Projects should be capable of completion within one year.
5. State funding is not used to leverage Federal assistance projects.
6. Eligible projects under the KAIP include: runway projects, airport planning projects (such as Airport Layout Plan (ALP), updates for new runways at non-NPIAS airports, and FAA Airports Geographic Information System (AGIS) aeronautical surveys), taxiway and ramp projects, lighting equipment, automated weather observation equipment and related internet interface, navigation equipment, communication equipment, credit/debit card readers for fueling systems.
7. City must commit to keeping the Airport open to public use for a minimum of ten years.
8. The maximum KAIP participation in any project is $800,000 with two exceptions:
    a. New runway construction projects are eligible for a maximum grant of $1,600,000.
    b. Reconstruction of an existing runway is eligible for a maximum grant of $1,200,000.

Application Process

KDOT Aviation solicits KAIP grant applications on an annual basis, but the City may submit a grant application at any time. The application deadline is typically September 30. Projects selected for award of funding are typically announced in February at the Annual Kansas Association of Airports meeting. The grant award process allows the airport sponsor (City) ample time to make financial arrangements for the local funding match and solicit public bids for the upcoming construction season. The City is encouraged to review proposed Airport projects with KDOT Aviation prior to submission of a grant application to the KAIP. KDOT Aviation may solicit out-of-cycle applications to meet urgent program or emergency needs. Certain types of critical projects with standard, defined scopes may be funded out-of-cycle if the KAIP budget allows. Examples include aeronautical surveys, Automated Weather Observing System (AWOS), and emergency repairs.

When the City completes an application for KAIP funding, the City must select a Project Category on the KAIP application that best fits the project proposed for the Airport. If the proposed Airport project involves a mix of Project Categories, the City must use a separate KAIP application form for each respective Project Category. The four (4) KAIP Project Categories are:

- System Preservation Projects - Includes all maintenance, repair and rehabilitation activities intended to keep existing landside and airside facilities in good, functioning condition. Routine pavement maintenance projects not requiring any changes in length, width or alignment will incorporate standard KDOT maintenance procedures and recommendations. Also includes maintenance, repair and rehabilitation activities intended to keep existing vertical development structures in good, functioning condition.
- Modernization Projects - Projects that create new facilities, increase the capacity of existing facilities, change the alignment, and resolve line of sight problems or clear obstructions are considered modernization. Modernization projects will comply with FAA design standards at *National Plan of Integrated Airport Systems* (NPIAS) airports. Utilization of engineering consultants for design and construction engineering is recommended. KDOT Aviation will coordinate with the FAA for compliance and certification when required.
- Equipment and Facilities Projects - This category consists of grounds maintenance and electrical equipment necessary to enhance safety and utility of the airport. Eligible electrical equipment would usually be off-the-shelf products that are FAA approved with installation in accordance with FAA guidelines. This category includes maintenance of existing equipment. Project examples are airfield lighting, Precision Approach Path Indicators (PAPIs), Automated Weather Observing System (AWOS), Ground Communication Outlets (GCOs), mowers, and snow removal equipment.
- Design and Planning Projects - Any project that evaluates or establishes priorities for the airport's continued use and development, including aeronautical surveys and feasibility studies. This category also includes project design efforts when required in special circumstances.

Evaluation Of Grant Applications

A Project Evaluation Team designated by the Secretary of KDOT and consists of members with aviation, construction and maintenance knowledge and expertise assess the KAIP grant applications. Projects are evaluated utilizing an objective priority system to numerically rank the application in the appropriate

categories. The Evaluation Team submits its recommendations to the Secretary for approval and grant issuance. Factors in the Priority Rating System used to evaluate KAIP projects are:

1. Safety
2. System Preservation
3. *Kansas Airport System Plan 2016* (KASP) recommendations
4. Geographic remoteness
5. Discretionary
    - Willingness of City to exceed minimum local match requirements
    - Previous project experience
    - Other considerations not falling under previous factors

LOCAL FUNDING SOURCES

The balance of project costs for The Abilene Municipal Airport, after consideration given to Federal and State grant funding, is normally funded through local resources. There are several alternatives for local financing of future development costs at the airport. Those include airport fee and profit revenues, direct funding from the City of Abilene General Fund and/or Capital Improvement Plan (CIP), general obligation and revenue bonds, private donations, facility leasehold income, cropland and pasture cash rent income, and business facility land lease income.

To help ensure that the Airport maximizes revenue potential in the future while remaining competitive, the City should periodically review rates and charges of aviation services (such as fuel prices, hangar and tie-down rentals, etc.) at other surrounding airports located in the Central and Eastern Kansas Region. Additionally, all new leases at the Airport should have inflation clauses allowing for periodic rate increases in-line with annual inflationary factors.

PROJECT COST SUMMARIES

The recommended improvements for the 20-year Capital Improvement Plan for the Abilene Municipal Airport are grouped and divided into three planning horizons: Short Term (0-5 Year Planning Period); Intermediate Term (5-10 Year Planning Period); and Long Term (10-20 Year Planning Period). Table 6E located on page 6-13 summarizes the cost estimates for each needed and anticipated airport development project.

The Short Term planning period covers airport projects of highest priority to the Abilene Community. When the City completes development of Short Term projects at the airport, it is then time to concentrate on, consider funding alternatives, and develop the Intermediate Term projects. Similarly, when the City accomplishes Intermediate Term Airport developments, it is time to focus work on planning, financing, and developing the Long Range projects identified in the Airport CIP.

Due to the conceptual nature of a Master Plan, implementation of capital projects should only occur after further refinement of their design and related costs through architectural and engineering analysis. Capital costs identified in this Chapter should only be reviewed as estimates of probable costs subject to further cost refinement by detailed design of the project coupled with related cost analysis. Nevertheless, the Airport project estimates are sufficiently accurate for prudent formulation of the

Airport CIP, related City cost and revenue planning, and development of the itemized CIP projects over the 20-year planning period.

Table 6E
Capital Improvement Plan - Abilene Municipal Airport (K78), Abilene, KS

Notes: Funding cost share formula with projects involving FAA funding is 90% FAA and 10% Local

Project	Description	Project Total	FAA Eligible	KDOT Eligible	Local Share
Short Term Horizen (0-5 Years) - 2021-2025					
1	**Obstruction Removal/Mitigation**	$400,000	$360,000	$360,000	$40,000
2	**Displace Runway 17 Threshold**	$85,000	$76,500	$76,500	$8,500
3	**Relocate North Apron Taxiway Connector**	$600,000	$540,000	$540,000	$60,000
	Short Term Horizon Sub Total	**$1,085,000**	**$976,500**	**$976,500**	**$108,500**
Intermediate Term Horizen (6-10 Years) - 2026-2030					
Project	**Description**	**Project Total**	**FAA Eligible**	**KDOT Eligible**	**Local Share**
4	**Construct Terminal Building**	$650,000	$585,000	$552,500	$65,000
5	**Expand Apron**	$400,000	$360,000	$360,000	$40,000
6	**Crackseal Runway 17/35**	$250,000	$225,000	$225,000	$25,000
	Intermediate Term Horizon Sub Total	**$1,300,000**	**$1,170,000**	**$1,137,500**	**$130,000**
Long Term Horizen (11-20 Years) - 2031-2040					
Project	**Description**	**Project Total**	**FAA Eligible**	**KDOT Eligible**	**Local Share**
7	**Rehabilitate Taxiway**	$300,000	$270,000	$270,000	$30,000
8	**Construct Building**	$760,000	$684,000	$380,000	$76,000
9	**Environmental Assessment***	$125,000	$112,500	$62,500	$12,500
10	**Land Acquisition***	$250,000	$225,000	$225,000	$25,000
	Long Term Horizon Sub Total	**$1,435,000**	**$1,291,500**	**$937,500**	**$143,500**
	20 Year Planning Horizon Total Cost	**$3,820,000**	**$3,438,000**	**$3,051,500**	**$382,000**

* At this time, extending RW 17-35 is not justified. For projects related to the runway extension to be eligible, justification will be required prior to grant eligibility.

ACIP data sheets were completed and submitted to the City for the projects listed in the Short Term Horizon for submittal to FAA in January 2020. The ACIP data sheets provide a cost breakdown for each project and are included in Appendix P.

IMPLEMENTING, MONITORING AND ADJUSTING

The best means of beginning the implementation of the Capital Improvement Plan recommendations contained in this Master Plan is to recognize first that planning is a continuous process that does not end with completion of the master plan. Rather, the ability to monitor continuously the existing and forecasted status of the Abilene Municipal Airport activity helps justify or denounce airport project recommendations. The basic issues upon which this Master Plan are formulated will remain valid for several years. FAA recommends that a community update its Airport Master Plan at least every ten years. As such, the primary goal is for the Airport to grow into a modern, top notch community facility that will best serve the air transportation needs of the Abilene community and surrounding region while evolving into a self-supporting economic generator for Abilene and the local community.

MATCH FUNDING SCENARIOS

At first glance, accomplishing a variety of aviation related projects over a 20-year period at the Abilene Municipal Airport may seem financially strenuous. As shown previously, the potential project list has a total cost of approximately $3.82 million and requires a total local match from the Abilene community of approximately $382,000 for the anticipated projects.

However, if the City makes it a priority to utilize all available FAA entitlements, this goal is attainable. In doing this, the City contributes on average $16,667 per year to leverage the $150,000 FAA grant entitlements. Assuming the City continues to make utilization of the grant a priority, that grant match will total $3,000,000 over the 20 year planning horizon with a local match of $500,010 for a total amount of $3,500,010. This would result in the completion of approximately 91.6% of the 20 year airport CIP projects being completed. However, the Airport currently has three year of 'banked' entitlements of $450,000 (See Table 6F below). This amount allows for funding the full CIP within the 20-year timeframe.

Table 6F

Available Non-Primary Entitlement Funds - Abilene Municipal Airport (K78), Abilene, KS

Notes: Balance Available as of July 2019.

FY	Available Non-Primary Entitlement (FAA 90%)	Local Share (Abilene 10%)	Total
2017	$150,000	$16,667	$168,684
2018	$150,000	$16,667	$168,685
2019	$150,000	$16,667	$168,686
Totals	**$450,000**	**$50,001**	**$506,055**

The additional investment results in an additional local share for three years at the $16,667 per year. Adding this to the $16,667 per year for the 20-year timeframe, the City match at an average of $16,667 per year for 23 years yields a total City investment of $383,341. The total Local Share amount that would be required to complete all of the projects listed in the Capital Improvement Plan is estimated to be

$382,000. Thus, utilizing the three years of entitlement that the Airport already has along with the next 20-years of entitlements, all of the projects listed on the CIP may be funded.

Since the FAA grant funding is competitive based, the usual likelihood of FAA funding all of the projects listed in the Capital Improvement budget within the desired timeframe is a low to medium probability. Since all projects listed in the Airport's CIP could be fully funded within the Aiprport's non-primary entitlement amount of $150,000 per year, it is highly likely that the listed projects will be funded as long as the eligibility requirements are met and the City maintains a fund readily available to maximize Federal dollars. Maintaining a local share fund to match the federal dollars will remove the large financial burden placed on the City when large capital improvement projects are undertaken.

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CHAPTER 7

FINANCIAL FEASIBILITY ANALYSIS

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FINANCIAL FEASIBILITY ANALYSIS

The Financial Feasibility Analysis detailed in this Chapter will assist the Airport in determining the City's capability to fund the Capital Improvement Program and to finance airport operations. The focus will be on projects expected to be completed in the short term. Due to the uncertainty of future funding sources and possible shifts in the importance of longer-term projects, this chapter will include a more general discussion of funding for medium and long term projects.

The level of effort necessary to conduct a financial feasibility analysis varies considerably based on the size of the airport. In general, items that are considered include funding sources for the CIP, a projection of revenues and expenses, and methods to enhance airport revenues.

SOURCES OF FUNDING

Airport development can be financed from several sources. These include Federal and State grants-in-aid, private financing or third party development, passenger facility charges, customer facility charges, bonds, or local funds. The following is a discussion of the funding sources that the Abilene Municipal Airport currently utilizes.

Federal Funding

The Abilene Municipal Airport is eligible for FAA funding through the FAA Airport Improvement Program (AIP), which provides entitlement funding to the Abilene Municipal Airport on an annual basis. Additional AIP funds, designated as discretionary funds, may also be available for eligible projects based on FAA's national priority system ratings and other factors. Although the AIP has been reauthorized several times and the funding formulas have been periodically revised to reflect changes in national priorities, the program has remained essentially the same. Abilene Municipal Airport, functioning as a public-use airport included in the NPIAS, may receive FAA AIP funding for eligible and justified projects.

Under the current funding structure, the Abilene Municipal Airport receives $150,000 per year in entitlement funds. Each year's funds may be banked for up to four years, and if not used in that time, the funds will return to the FAA program at a rate of $150,000 per year. For both entitlement and discretionary funds, the FAA uses a local match ratio of 90/10. To utilize FAA AIP funds, the airport sponsor must fund the local project cost, using a combination of the local funding sources discussed later in this section. This funding structure was used for the financial feasibility analysis for future projects later in this chapter.

State Funding

The Kansas Department of Transportation (KDOT) Division of Aviation also has a program in place to assist in airport development. The administration of these funds is established by KDOT. The KDOT grant process, including applications, project eligibility, and funding ratios is discussed in Chapter 6. These State funds cannot be used as local match funds when obtaining FAA AIP funds.

Local Funding

The other sources of funding for airport improvement are through local funding mechanisms. These funds cover matches for obtaining Federal or State funding, or 100% of projects that are not eligible for grant funding or the sponsor chooses to complete without funding assistance.

Bonds – A variety of bonds, such as general obligation bonds, revenue bonds, special facility revenue bonds, or industrial revenue bonds, can be issued to support development projects. Currently the Airport does not have bonds.

Fuel Sales – The Airport currently does not provide the fuel service at the Airport; thus this is not a funding source for the Airport. However, if the Airport was to start providing the fuel service, all profit from aviation fuel sales would go directly to the airport.

Hangar Rent - All profit from hangar leases/rent go directly to the airport.

Land Lease - All profit from land leases go directly to the airport.

Farm Lease – Airport owned property that is not required for aviation use could be leased to a local farmer. All profit from this type of lease would go directly to the airport. The Airport currently has a small area that is leased for farming purposes.

Donations – Cash or in-kind donations are always welcome and can go directly to the airport.

General City Funds – Money from the City's general fund can be placed into the Airport account every year to adequately fund all expenditures.

Mill Levy – The mill levy utilized by the City assesses a portion of the property taxes to the Airport.

AIRPORT FINANCIAL STRUCTURE

The Abilene Municipal Airport Budget is set forth yearly on a yearly basis and approved by the Abilene City Commission. The budget tracks revenue and expenditures throughout the year and compares it to the prior year actual and the originally budgeted amounts to anticipated revenues and expenditures. All information set forth in this section is derived from the Airport's budget and financial summaries for 2016 thru 2019 provided by the City.

Revenue Detail

The budget includes itemized entries for sources of revenue. Each of the items were evaluated and some combined to summarize what they represent below. Table 7A shows the Airport Revenue for the past 3 years and an estimated 2019 summary.

Tax Revenue – Includes the money received from the mill levy.

Rental Income – Includes the money received from tenants leasing hangar spaces and land leases for privately built hangars on Airport property.

Land Income - Includes the money received from tenants with land leases for private hangar spaces and/or crops grown on Airport property.

Fund Interest – Revenue from the interest on idle funds.

Miscellaneous Income– Income generated from miscellaneous sources.

KDOT – Funds received from the Kansas Department of Transportation, Division of Aviation, to fund a specific project.

FAA – Funds received in the form of a grant from the Federal Aviation Administration to fund a specific project.

Table 7A
Airport Budget - Revenue Detail

Line Item	2016	2017	2018	2019 (Estimate)
Taxes	$75,859	$69,115	$21,996	$17,469
Rentals*	$12,447	$14,846	$10,957	$19,000
Land Lease*	$2,540	$5,080		
Interest*	$17	$27		
Miscellaneous	$1,072	$81	$490	$50
Subtotal	$91,935	$89,150	$33,443	$36,519
KDOT	$0	$0	$172,111	$0
FAA	$38,989	$0		
Totals	**$130,924**	**$89,150**	**$205,554**	**$36,519**

* In 2018 these line items were removed and became one line titled "Contract Payments".

Revenue Discussion

There are numerous observations and discussion items regarding the Airport Budget. The following are some of the more important items for discussion.

- Potential for Revenue from Fuel Sales.
  - The Airport currently does not provide the fuel service at the Airport. However, if the Airport was to start providing the fuel service, all profit from aviation fuel sales would go directly to the airport. This would also allow the City to more closely monitor fuel pricing to be more competitive with surrounding Airports. This, in turn, could bring more transient traffic to the Airport and increase operations.

- Rental/lease rates have not increased in at least the past five years. A rate increase after evaluation of surrounding Airport rates may be appropriate and is a potential revenue increase source.
    - A T-Hangar Rental Rate Study completed in 2011 by Roger Zalneraities for the City of Lawrence indicated the range for T-Hangar rental in the Lawrence, KS area was $65 to $538 per month. The lower cost rentals were no-ammenity, older/smaller, and some did not have doors. The higher rate rentals were closer to the City of Kansas City, were newer/larger, and had electric doors. Rates are also reflective of the size of Airport.

Expenditure Detail

The Expenditures at the Airport fall into four separate categories: Commodities, Contract Services, Capital Outlay, and Debt Service. Each of these four categories is examined below and broken down as shown in the Airport budget. The goal is to have the total Revenue equal or exceed the Expenditure totals.

Commodities

Commodities are any goods or service bought for the Airport. These include:

Miscellaneous – Miscellaneous expenditures

Contract Services

Contract Services are any service to maintain the Airport that requires a contract or agreement with another party. These include:

Utilities – Electrical, Water, and Gas Utilities

Insurance & Bonds – Insurance and bonds for the Airport

Maintain Runway & Grounds – Routine Maintenance of the runway and Airport grounds

Maintenance & Repair Equipment – Routine maintenance and repair of Airport equipment

Other Services – Miscellaneous services

Contract Operations – Other services contracted at the Airport

Contract Mowing – Mowing of the Airport property

Capital Outlay

Capital Outlay, also called capital expenditure, is money or the equivalent that is spent to purchase something for the Airport or improve upon something that is already held at the Airport. These include:

Capital Equipment – Equipment purchases for the Airport

Federal or State Grant – Grants Awarded to fund projects at the Airport

Debt Service

Debt Service is the cash required to cover the repayment of interest and principal on a debt for a particular period. This includes:

Interest Expense – Interest on existing debt

Lease-Purchase – Land purchased for the airport

Expenditure Discussion

There are numerous observations and discussions items regarding the Airport's expenditures. The following are some of the more important items for discussion.

- Utilities – The airport has done well in estimating the amount to budget for utility and insurance costs at the airport.

- Operations– The amount the Airport has paid for Operations has continued to increase over the last three years. The airport has underestimated the amount required in this budget category for 2019 unless measures have been recently taken to reduce this amount of the expenditures in this category.

Cash Flow Discussion

The airport has maintained a consistent positive cash flow. The typical general aviation airport has a negative cash flow that is compensated with transfers from the City general fund. The City of Abilene has a benefit to use the existing mill levy in addition to the City's general fund to budget for Airport expenditures and has been able to maintain a positive Airport cash flow covering all expenditures for the last three years budgeted at the beginning of the year. Through careful management of the Airport, the actual amount of Revenue to the airport has been more than what has been spent each year.

Table 7B Airport Budget - Expenditures Detail				
Line Item	**2016**	**2017**	**2018**	**2019 (Estimate)**
Commodities				
Miscellaneous	$0	$0	$0	$0
Contract Services				
Personnel	N/A	$0	$0	$0
Contract Services / Contractual	$0	$7,656	$7,052	$5,500
Service and Supplies / Operations	$24,487	$32,815	$47,409	$33,100
Capital Outlay				
Capital Outlay	$32,834	$42,101	$149,830	$10,000
Transfer to Equipment Reserve	N/A	N/A	N/A	$1,000
Totals	**$57,321**	**$82,572**	**$204,291**	**$49,600**

This has been possible, in part, because the City has anticipated and budgeted sufficient funds to maintain and improve the airport. A large part of this budgeting process is the City's mill levy.

A mill levy is a tax applied to property based on its assessed value. The tax rate is expressed in mills and equal to one dollar per $1,000 dollars of assessed value. The mill levy is calculated by careful budgeting methods to determine how much revenue the City needs for the upcoming year. The 2018 mill levy was 49.332 for the City of Abilene. Only a small portion of each years mill levy is allocated towards the Airport's budget.

Table 7C Airport Budget - Revenue & Expenditure Summary				
Line Item	**2016**	**2017**	**2018**	**2019 (Estimate)**
Revenue Total	$130,924	$89,150	$205,554	$36,519
Expenditure Total	$57,321	$82,572	$204,291	$49,600
Balance	**$73,603**	**$6,578**	**$1,263**	**($13,081)**

MATCH FUNDING SCENARIOS

As mentioned at the beginning of the chapter, this analysis will focus on the short term horizon CIP to determine the potential funding scenarios to implement the CIP. As shown in chapter 6, the potential project list for the short term horizon has a total cost of approximately $1,085,000 and requires a total local match from the Abilene community of approximately $108,500.

If the City makes it a priority to utilize all available FAA entitlements as discussed on page 6-14, implementing the projects listed for the short term is feasible. In doing this, the City needs to budget for the local share amount and contribute on average $16,667 per year to leverage the $150,000 FAA grant amounts per year. Assuming the City continues to make utilization of the grant a priority, these entitlement grants plus local share will total $833,335 over the 5 year, short term, planning horizon. Adding the three years of banked entitlement grants plus local share totals $1,333,336 ($500,001 + $833,335). This would result in the completion of 100% of the 5-year airport CIP projects listed in Chapter 6, with $248,336 remaining for the next project or almost 2 years of entitlements remaining.

In addition to the FAA entitlement grants, there are also FAA discretionary funds and Kansas Airport Improvement Plan grants available on a competitive basis. The projects in the 5-year CIP planning horizon are eligible for these grants. If the City would accelerate the project schedules or need to complete an additional project, these additional grant resources could be utilized. However, as the FAA discretionary and Kansas KAIP funding is competitive, a project application would need to be submitted with a long lead time to be able to compete for those additional funds. It is more reasonable to fund projects with the Airport's entitlements at this time since there is ample funding available for the anticipated up-coming projects.

The recommendation of this master plan is that the City maintain the current budget and continue to plan for the local share required to match the FAA entitlement funding per year for the anticipated capital improvement projects at the airport. Having these funds readily available will help to maximize Federal dollars when they are available, and remove the large financial burden placed on the City when these large capital improvement projects are undertaken.

For the intermediate and long term projects, the remainder of the CIP would be funded by continuing to invest $16,667 per year for matching entitlement funds.

IMPLEMENTING, MONITORING AND ADJUSTING

The best means of beginning the implementation of the Capital Improvement Plan recommendations contained in this Master Plan is to recognize first that planning is a continuous process that does not end with the completion of the master planning process. Rather, the ability to monitor continuously the existing and forecasted status of Abilene Municipal Airport activity helps justify or denounce airport project recommendations in this Master Plan. The basic issues upon which this Master Plan are formulated will remain valid for several years. FAA recommends that a community update its Airport Master Plan at least every ten years. As such, the primary goal is for the Airport to grow into a modern, top-notch community facility that will best serve the air transportation needs of the Abilene community and the surrounding region while evolving into a self-supporting economic generator for Abilene and the local community.

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APPENDIX A

ACRONYMS & GLOSSARY OF AVIATION TERMS

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ACRONYMS AND GLOSSARY OF AVIATION TERMS

AC — advisory circular

ACARS — aircraft communications addressing and reporting system

ACAS — airborne collision avoidance system

AD — airworthiness directive

ADF — automatic direction finder

ADS — automatic dependent surveillance

ADS-B — automatic dependent surveillance-broadcast

AER — approach end of runway

AFCS — automatic flight control system

A/FD — airport/facility directory

AFM — airplane flight manual or aircraft flight manual

AFSS — Automated Flight Service Station

AGL — above ground level

AIM — aeronautical information manual

AIP — aeronautical information publication

AIS — airmen's information system

ALAR — approach and landing accident reduction

AMASS — airport movement area safety system [delete term]

ANP — actual navigation performance

ANR — advanced navigation route

AOA — airport operating area

AOCC — airline operations control center

AOPA — Aircraft Owners and Pilots Association

AP — autopilot system

APC — auxiliary performance computer

APV — approach with vertical guidance

ARFF — aircraft rescue and fire fighting

ARINC — aeronautical radio incorporated

A-RNAV — advanced area navigation

ARSR — air route surveillance radar

ARTCC — Air Route Traffic Control Center

ARTS — Automated Radar Terminal System

ASDA — accelerate-stop distance available

ASDAR — aircraft to satellite data relay

ASDE-3 — Airport Surface Detection Equipment-3

ASDE-X — Airport Surface Detection Equipment-X

ASOS — automated surface observing system

ASR — airport surveillance radar ATC — air traffic control

ATCRBS — air traffic control radar beacon system

ATCS — Air Traffic Control Specialist

ATCSCC — Air Traffic Control System Command Center

ATC-TFM — air traffic control-traffic flow management

ATCT — airport traffic control tower

ATD — along-track distance

ATIS — automatic terminal information service

ATM — air traffic management

ATS — air traffic service

ATT — attitude retention system

AVN — Office of Aviation System Standards

AWOS — automated weather observing system

AWSS — automated weather sensor system

Baro-VNAV — barometric vertical navigation

BRITE — bright radar indicator tower equipment

B-RNAV — European Basic RNAV

CAA — Civil Aeronautics Administration

CAASD — Center for Advanced Aviation Systems Development

CARF — central altitude reservation function

CAT — category

CDI — course deviation indicator

CDM — collaborative decision making

CDTI — cockpit display of traffic information

CDU — control display unit

CENRAP — Center Radar ARTS Processing

CFIT — controlled flight into terrain

CFR — Code of Federal Regulations

CGD — combined graphic display

CIP — Capital Investment Plan

CNF — computer navigation fix

CNS — communication, navigation, and surveillance

COP — changeover point

COTS — commercial off the shelf

CPDLC — controller pilot data link communications

CRC — cyclic redundancy check

CRCT — collaborative routing coordination tool

CRM — crewmember resource management

CRT — cathode-ray tube

CTAF — common traffic advisory frequency

CTD — controlled time of departure

CVFP — charted visual flight procedure

DA — density altitude, decision altitude

D-ATIS — digital automatic terminal information service

DACS — digital aeronautical chart supplement

DBRITE — digital bright radar indicator tower equipment

DER — departure end of the runway

DH — decision height

DME — distance measuring equipment

DOD — Department of Defense

DOT — Department of Transportation

DPs — departure procedures

DSR — display system replacement

DRVSM — domestic reduced vertical separation minimums

DUATS — direct user access terminal system

DVA — diverse vector area

EDCT — expect departure clearance time

EFB — electronic flight bag

EFC — expect further clearance

EFIS — electronic flight information system

EGPWS — enhanced ground proximity warning systems

EICAS — Engine indicating and crew alerting system

EMS — emergency medical service

EPE — estimated position error

ER-OPS — extended range operations

ETA — estimated time of arrival

EWINS — enhanced weather information system

FAA — Federal Aviation Administration

FAF — final approach fix

FAP — final approach point

FATO – Final Approach and Takeoff Area

FB — fly-by

FBWP — fly-by waypoint

FD — winds and temperatures aloft forecast

FD — flight director

FDC NOTAM — Flight Data Center Notice to Airmen

FDP — flight data processing

FIR — flight information region

FIS — flight information system

FIS-B — flight information service-broadcast

FISDL — flight information services data link

FL — flight level

FMC — flight management computer

FMS — flight management system

FO — fly-over

FOM — flight operations manual

FOWP — fly-over waypoint

FPM — feet per minute

FSDO — Flight Standards District Office

FSS — Flight Service Station

FTE — flight technical error

GA — general aviation

GAMA — General Aviation Manufacturer's Association

GBT — ground-based transmitter

GCA — ground controlled approach

GCO — ground communication outlet

GDP — ground delay programs

GDPE — ground delay program enhancements

GLS — Global Navigation Satellite System Landing System

GNE — gross navigation error

GNSS — Global Navigation Satellite System

GPS — Global Positioning System

GPWS — ground proximity warning system

G/S — glide slope

GS — groundspeed

GWS — graphical weather service

HAA — height above airport

HAR — High Altitude Redesign

HAT — height above touchdown

HDD — head-down display

HEMS — helicopter emergency medical service

HF — high frequency

HFDL — high frequency data link

HGS — head-up guidance system

HITS — highway in the sky

HOCSR — host/oceanic computer system replacement

HSI — horizontal situation indicator

HSAC — Helicopter Safety Advisory Council

HUD — head-up display

IAF — initial approach fix

IAP — instrument approach procedure

IAS — indicated air speed

ICA — initial climb area

ICAO — International Civil Aviation Organization

IF — intermediate fix

IFR — instrument flight rules

ILS — instrument landing system

IMC — instrument meteorological conditions

INS — inertial navigation system

IOC — initial operational capability

IPV — instrument procedure with vertical guidance (this term has been renamed APV)

IRU – Inertial Reference Unit

KIAS — knots indicated airspeed

LAAS — Local Area Augmentation System

LAHSO — land and hold short operations

LDA — localizer type directional aid, landing distance available

LF — low frequency

LNAV — lateral navigation

LOA — letter of agreement/letter of authorization

LOC — localizer

LOM — locator outer marker

LPV — See glossary

LTP — landing threshold point

MAA — maximum authorized altitude

MAHWP — missed approach holding waypoint

MAMS — military airspace management system

MAP — missed approach point

MAP — manifold absolute pressure

MASPS — minimum aviation system performance specification

MAWP — missed approach waypoint

MCA — minimum crossing altitude

McTMA — multi-center traffic management advisor

MDA — minimum descent altitude

MDH — minimum descent height

MEA — minimum en route altitude

MEL — minimum equipment list

METAR — aviation routine weather report

MFD — multifunction display

MIA — minimum IFR altitude

MLS — microwave landing system

MNPS — minimum navigation performance specifications

MOA — military operations area

MOCA — minimum obstruction clearance altitude

MOPS — minimum operational performance standards

MORA — minimum off route altitude

MRA — minimum reception altitude

MSA — minimum safe altitude

MSAW — minimum safe altitude warning

MSL — mean sea level

MTA — minimum turning altitude

MVA — minimum vectoring altitude

NA — not authorized

NACO — National Aeronautical Charting Office

NAR — National Airspace Redesign

NAS — National Airspace System

NASA — National Aeronautics and Space Administration

NASSI — National Airspace System status information

NAT — North Atlantic

NATCA — National Air Traffic Controllers Association

NAT/OPS — North Atlantic Operation

NAVAID — navigational aid

NBCAP — National Beacon Code Allocation Plan

ND — navigation displays

NDB — non-directional beacon

NFDC — National Flight Data Center

NFPO — National Flight Procedures Office

NGA — National Geospatial-Intelligence Agency

NIMA — National Imagery and Mapping Agency

NM — nautical mile

NOAA — National Oceanic and Atmospheric Administration

NOPAC — North Pacific

NOTAM — Notice to Airmen

NOTAM D — Distant NOTAM

NOTAM L — Local NOTAM

NOZ — normal operating zone

NPA — non-precision approach

NPRM — Notice of Proposed Rulemaking

NRP — national route program

NRR — non-restrictive routing

NRS — National Reference System

NSE — navigation system error

NTAP — Notice to Airmen Publication

NTSB — National Transportation Safety Board

NTZ — no transgression zone

NWS — National Weather Service

OCS — obstacle clearance surface

ODP — obstacle departure procedure

OEP — Operational Evolution Plan

OpsSpecs — operations specifications

OROCA — off-route obstruction clearance altitude

PA — precision approach

PAR — precision approach radar

PARC — performance-based operations aviation rulemaking committee

PCG — positive course guidance

PDC — pre-departure clearance

PDR — preferential departure route **PF** — pilot flying

PFD — primary flight display

pFAST — passive final approach spacing tool

PIC — pilot in command PinS — Point-in-Space

PIREP — pilot weather report

PM — pilot monitoring

POH — pilot's operating handbook

POI — principle operations inspector

PRM — precision runway monitor

P-RNAV — European Precision RNAV

PT — procedure turn

PTP — point-to-point

QFE — transition height

QNE — transition level

QNH — transition altitude

RA — resolution advisory, radio altitude

RAIM — receiver autonomous integrity monitoring

RCO — remote communications outlet

RDOF — radio failure

RJ — regional jet

RNAV — area navigation

RNP — required navigation performance

ROC — required obstacle clearance

RSP — runway safety program

RVR — runway visual range

RVSM — reduced vertical separation minimums

RVV — runway visibility value

RWY — runway

SAAAR — Special Aircraft and Aircrew Authorization Required

SAAR — special aircraft and air-crew requirements

SAMS — special use airspace management system

SAS — stability augmentation sys-tem

SATNAV — satellite navigation

SDF — simplified directional facility

SER — start end of runway

SIAP — standard instrument approach procedure

SID — standard instrument departure

SIGMET — significant meteorological information

SM — statute mile

SMA — surface movement advisor

SMGCS — surface movement guidance and control system

SMS — surface management system

SOIA — simultaneous offset instrument approaches

SOP — standard operating procedure

SPECI — non-routine (special) aviation weather report

SSV — standard service volume

STAR — standard terminal arrival

STARS — standard terminal automation replacement system

STC — supplemental type certificate

STMP — special traffic management program

SUA — special use airspace

SUA/ISE — special use airspace/inflight service enhancement

SVFR — special visual flight rules

SWAP — severe weather avoidance plan

TA — traffic advisory

TAA — terminal arrival area

TACAN — tactical air navigation

TAF — terminal aerodrome fore-cast

TAS — true air speed

TAWS — terrain awareness and warning systems

TCAS — traffic alert and collision avoidance system

TCH — threshold crossing height

TDLS — terminal data link system

TDZ — touchdown zone

TDZE — touchdown zone elevation

TEC — tower en route control

TERPS — U.S. Standard for Terminal Instrument Procedures TFM — traffic flow management

TIS — traffic information service

TIS-B — traffic information service-broadcast

TLOF – Touchdown and Lift-Off Area

TM — traffic management

TMA — traffic management advisor

TMU — traffic management unit

TOC — top of climb

TOD — top of descent

TODA — takeoff distance available

TOGA — take-off/go around

TORA — takeoff runway available

TPP — terminal procedures publication

TRACAB — see glossary.

TRACON — terminal radar approach control

TSE — total navigation system error

TSO — technical standard order

UAT — universal access transceiver

UHF — ultra high frequency

URET — user request evaluation tool

US — United States

USAF — United States Air Force **VCOA** — visual climb over airport **VDP** — visual descent point

VFR — visual flight rules

VGSI — visual glide slope indicator

VHF — very high frequency

VLJ — very light jet

VMC — visual meteorological conditions

VMINI — minimum speed–IFR.

VNAV — vertical navigation

VNEI — never exceed speed-IFR.

VOR — very high frequency omnidirectional range

VORTAC — very high frequency omnidirectional range/tactical air navigation

VPA — vertical path angle

VREF — reference landing speed

VSO — stalling speed or the mini-mum steady flight speed in the landing configuration

WAAS — Wide Area Augmentation System

WAC — World Aeronautical Chart

WP — waypoint

Abeam Fix – A fix, NAVAID, point, or object positioned approximately 90 degrees to the right or left of the aircraft track along a route of flight. Abeam indicates a general position rather than a precise point.

Accelerate-Stop Distance Available (ASDA) – The runway plus stop way length declared available and suitable for the acceleration and deceleration of an air-plane aborting a takeoff.

Aircraft Approach Category – A grouping of aircraft based on reference landing speed (VREF), if specified, or if VREF is not specified, 1.3 VSO (the stalling speed or minimum steady flight speed in the landing configuration) at the maximum certificated landing weight.

Airport Diagram – A full-page depiction of the airport that includes the same features of the airport sketch plus additional details such as taxiway identifiers, airport latitude and longitude, and building

identification. Airport diagrams are located in the U.S. Terminal Procedures booklet following the instrument approach charts for a particular airport.

Airport/Facility Directory (A/FD) – Regional book-lets published by the National Aeronautical Charting Office (NACO) that provide textual information about all airports, both VFR and IFR. The A/FD includes runway length and width, runway surface, load bearing capacity, runway slope, airport services, and hazards such as birds and reduced visibility.

Airport Sketch – Depicts the runways and their length, width, and slope, the touchdown zone elevation, the lighting system installed on the end of the runway, and taxiways. Airport sketches are located on the lower left or right portion of the instrument approach chart.

Air Route Traffic Control Center (ARTCC) – A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight

Air Traffic Service (ATS) – Air traffic service is an ICAO generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service, or aerodrome control service).

Approach End of Runway (AER) – The first portion of the runway available for landing. If the runway threshold is displaced, use the displaced threshold latitude/longitude as the AER.

Approach Fix – From a database coding standpoint, an approach fix is considered to be an identifiable point in space from the intermediate fix (IF) inbound. A fix located between the initial approach fix (IAF) and the IF is considered to be associated with the approach transition or feeder route.

Approach Gate –An imaginary point used by ATC to vector aircraft to the final approach course. The approach gate is established along the final approach course 1 NM from the final approach fix (FAF) on the side away from the airport and is located no closer than 5 NM from the landing threshold.

Area Navigation (RNAV) – A method of navigation that permits aircraft operations on any desired course within the coverage of station referenced navigation signals or within the limits of self-contained system capability.

Automated Surface Observing System (ASOS)/Automated Weather Sensor System (AWSS) – The ASOS/AWSS is the primary surface weather observing system of the U.S.

Automated Surface Observing System (ASOS) – A weather observing system that provides minute-by-minute weather observations such as temperature, dew point, wind, altimeter setting, visibility, sky condition, and precipitation. Some ASOS stations include a precipitation discriminator which can differentiate between liquid and frozen precipitation.

Automated Weather Observing System (AWOS) – A suite of sensors which measure, collect, and disseminate weather data. AWOS stations provide a minute-by-minute update of weather parameters such as wind speed and direction, temperature and dew point, visibility, cloud heights and types,

precipitation, and barometric pressure. A variety of AWOS system types are available (from AWOS 1 to AWOS 3), each of which includes a different sensor array.

Automated Weather Sensor System (AWSS) – The AWSS is part of the Aviation Surface Weather Observation Network suite of programs and provides pilots and other users with weather information through the Automated Surface Observing System. The AWSS sensor suite automatically collects, measures, processes, and broadcasts surface weather data.

Automated Weather System – Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS), Automated Weather Sensor System (AWSS) and Automated Weather Observation System (AWOS).

Automatic Dependent Surveillance-Broadcast (ADS-B) – A surveillance system that continuously broadcasts GPS position information, aircraft identification, altitude, velocity vector, and direction to all other air-craft and air traffic control facilities within a specific area. Automatic dependent surveillance-broadcast (ADS-B) information will be displayed in the cockpit via a cockpit display of traffic information (CDTI) unit, providing the pilot with greater situational awareness. ADS-B transmissions will also provide controllers with a more complete picture of traffic and will update that information more frequently than other surveillance equipment.

Automatic Terminal Information Service (ATIS) – A recorded broadcast available at most airports with an operating control tower that includes crucial information about runways and instrument approaches in use, specific outages, and current weather conditions, including visibility.

Center Radar ARTS Presentation/Processing (CENRAP) – CENRAP was developed to provide an alternative to a non-radar environment at terminal facilities should an ASR fail or malfunction. CENRAP sends aircraft radar beacon target information to the ASR terminal facility equipped with ARTS.

Changeover Point (COP) – A COP indicates the point where a frequency change is necessary between navigation aids when other than the midpoint on an airway, to receive course guidance from the facility ahead of the aircraft instead of the one behind. These COPs divide an airway or route segment and ensure continuous reception of navigational signals at the prescribed minimum en route IFR altitude.

Charted Visual Flight Procedure (CVFP) – A CVFP may be established at some towered airports for environmental or noise considerations, as well as when necessary for the safety and efficiency of air traffic operations. Designed primarily for turbojet aircraft, CVFPs depict prominent landmarks, courses, and recommended altitudes to specific runways.

Cockpit display of traffic information (CDTI) – The display and user interface for information about air traffic within approximately 80 miles. It will typically combine and show traffic data from TCAS, TIS-B, and ADS-B. Depending on features, the display may also show terrain, weather, and navigation information.

Collision Hazard – A condition, event, or circumstance that could induce an occurrence of a collision or surface accident or incident.

Columns - See Database Columns

Contact Approach – An approach where an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least one mile flight visibility, and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least one statute mile.

Controlled Flight Into Terrain (CFIT) – A situation where a mechanically normally functioning airplane is inadvertently flown into the ground, water, or an obstacle. There are two basic causes of CFIT accidents; both involve flight crew situational awareness. One definition of situational awareness is an accurate perception by pilots of the factors and conditions currently affecting the safe operation of the aircraft and the crew. The causes of CFIT are the flight crews' lack of vertical position awareness or their lack of horizontal position awareness in relation to terrain and obstacles.

Database Columns – The spaces for data entry on each record. One column can accommodate one character.

Database Field – The collection of characters needed to define one item of information.

Database Identifier – A specific geographic point in space identified on an aeronautical chart and in a navigation database, officially designated by the controlling state authority or derived by Jeppesen. It has no ATC function and should not be used in filing flight plans nor used when communicating with ATC.

Database Record – A single line of computer data made up of the fields necessary to define fully a single useful piece of data.

Decision Altitude (DA) –A specified altitude in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established. The term "Decision Altitude (DA)" is referenced to mean sea level and the term "Decision Height (DH)" is referenced to the threshold elevation. Even though DH is charted as an altitude above MSL, the U.S. has adopted the term "DA" as a step toward harmonization of the United States and international terminology. At some point, DA will be published for all future instrument approach procedures with vertical guidance.

Decision Height (DH) – See Decision Altitude

Departure End of Runway (DER) – The end of run-way available for the ground run of an aircraft departure. The end of the runway that is opposite the landing threshold, sometimes referred to as the stop end of the runway.

Descend Via – A descend via clearance instructs you to follow the altitudes published on a STAR. You are not authorized to leave your last assigned altitude unless specifically cleared to do so. If ATC amends the

altitude or route to one that is different from the published procedure, the rest of the charted descent procedure is canceled. ATC will assign you any further route, altitude, or airspeed clearances, as necessary.

Digital ATIS (D-ATIS) – An alternative method of receiving ATIS reports by aircraft equipped with datalink services capable of receiving information in the cockpit over their Aircraft Communications Addressing and Reporting System (ACARS) unit.

Diverse Vector Area (DVA) – An airport may establish a diverse vector area if it is necessary to vector aircraft below the minimum vectoring altitude to assist in the efficient flow of departing traffic. DVA design requirements are outlined in TERPS and allow for the vectoring of aircraft immediately off the departure end of the runway below the MVA.

Dynamic Magnetic Variation – A field which is simply a computer model calculated value instead of a measured value contained in the record for a waypoint.

Electronic Flight Bag (EFB) – An electronic display system intended primarily for cockpit or cabin use. EFB devices can display a variety of aviation data or perform basic calculations (e.g., performance data, fuel calculations, etc.). In the past, some of these functions were traditionally accomplished using paper references or were based on data provided to the flight crew by an airline's "flight dispatch" function. The scope of the EFB system functionality may also include various other hosted databases and applications. Physical EFB displays may use various technologies, formats, and forms of communication. These devices are sometimes referred to as auxiliary performance computers (APC) or laptop auxiliary performance computers (LAPC).

Ellipsoid of Revolution – The surface that results when an ellipse is rotated about one of its axes.

En Route Obstacle Clearance Areas – Obstacle clearance areas for en route planning are identified as primary, secondary, and turning areas, and they are designed to provide obstacle clearance route protection width for airways and routes.

Expanded Service Volume – When ATC or a procedures specialist requires the use of a NAVAID beyond the limitations specified for standard service volume, an expanded service volume (ESV) may be established. See standard service volume.

Feeder Route – A feeder route is a route depicted on IAP charts to designate courses for aircraft to proceed from the en route structure to the IAF. Feeder routes, also referred to as approach transitions, technically are not considered approach segments but are an integral part of many IAPs.

Field - See Database Field

Final Approach and Takeoff Area (FATO) – The FATO is a defined heliport area over which the final approach to a hover or a departure is made. The touchdown and lift-off area (TLOF) where the helicopter is permitted to land is normally centered in the FATO. A safety area is provided around the FATO.

Fix – A geographical position determined by visual reference to the surface, by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device. Note: Fix is a generic name for a geographical position and is referred to as a fix, waypoint, intersection, reporting point, etc.

Flight Information Region (FIR) – A FIR is an air-space of defined dimensions within which Flight Information Service and Alerting Service are provided. Flight Information Service (FIS) is a service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Alerting Service is a service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

Flight Level (FL) – A flight level is a level of constant atmospheric pressure related to a reference datum of 29.92 in. Hg. Each flight level is stated in three digits that represents hundreds of feet. For example, FL 250 represents an altimeter indication of 25,000 feet.

Floating Waypoints – Floating waypoints represent airspace fixes at a point in space not directly associated with a conventional airway. In many cases they may be established for such purposes as ATC metering fixes, holding points, RNAV-direct routing, gateway way-points, STAR origination points leaving the en route structure, and SID terminating points joining the en route structure.

Fly-By (FB) Waypoint – A waypoint that requires the use of turn anticipation to avoid overshooting the next flight segment.

Fly-Over (FO) Waypoint – A waypoint that precludes any turn until the waypoint is overflown, and is followed by either an intercept maneuver of the next flight segment or direct flight to the next waypoint.

Four Corner Post Configuration – An arrangement of air traffic pathways in a terminal area that brings incoming flights over fixes at four corners of the traffic area, while outbound flights depart between the fixes, thus minimizing conflicts between arriving and departing traffic.

Gateway Fix – A navigational aid or fix where an aircraft transitions between the domestic route structure and the oceanic route airspace.

Geodetic Datum – The reference plane from which geodetic calculations are made. Or, according to ICAO Annex 15, the numerical or geometrical quantity or set of such quantities (mathematical model) that serves as a reference for computing other quantities in a specific geographic region such as the latitude and longitude of a point.

Glide path Angle (GPA) – The angular displacement of the vertical guidance path from a horizontal plane that passes through the reference datum point (RDP). This angle is published on approach charts (e.g., 3.00º, 3.20º, etc.). GPA is sometimes referred to as vertical path angle (VPA).

Global Navigation Satellite System (GNSS) – An umbrella term adopted by the International Civil Aviation Organization (ICAO) to encompass any independent satellite navigation system used by a pilot to perform onboard position determinations from the satellite data.

Gross Navigation Error (GNE) – In the North Atlantic area of operations, a gross navigation error is a lateral separation of more than 25 NM from the centerline of an aircraft's cleared route, which generates an Oceanic Navigation Error Report. This report is also generated by a vertical separation if you are more than 300 feet off your assigned flight level.

Ground Communication Outlet (GCO) – An unstaffed, remotely controlled ground/ground communications facility. Pilots at uncontrolled airports may contact ATC and AFSS via Very High Frequency (VHF) radio to a telephone connection. This lets pilots obtain an instrument clearance or close a VFR/IFR flight plan.

Head-Up Display (HUD) – See Head-Up Guidance System (HGS)

Head-Up Guidance System (HGS) – A system which projects critical flight data on a display positioned between the pilot and the windscreen. In addition to showing primary flight information, the HUD computes an extremely accurate instrument approach and landing guidance solution, and displays the result as a guidance cue for head-up viewing by the pilot.

Height Above Touchdown (HAT) – The height of the DA above touchdown zone elevation (TDZE).

Highway in the Sky (HITS) – A graphically intuitive pilot interface system that provides an aircraft operator with all of the attitude and guidance inputs required to safely fly an aircraft in close conformance to air traffic procedures.

Initial Climb Area (ICA) – An area beginning at the departure end of runway (DER) to provide unrestricted climb to at least 400 feet above DER elevation.

Instrument Approach Waypoint – Fixes used in defining RNAV IAPs, including the feeder waypoint (FWP), the initial approach waypoint (IAWP), the intermediate waypoint (IWP), the final approach waypoint (FAWP), the RWY WP, and the APT WP, when required.

Instrument Landing System (ILS) – A precision instrument approach system that normally consists of the following electronic components and visual aids; localizer, glide slope, outer marker, middle marker, and approach lights.

Instrument Procedure with Vertical Guidance (IPV) – Satellite or Flight Management System (FMS) lateral navigation (LNAV) with computed positive vertical guidance based on barometric or satellite elevation. This term has been renamed APV.

International Civil Aviation Organization (ICAO) – ICAO is a specialized agency of the United Nations whose objective is to develop standard principles and techniques of international air navigation and to pro-mote development of civil aviation.

Intersection – Typically, the point at which two VOR radial position lines cross on a route, usually intersecting at a good angle for positive indication of position, resulting in a VOR/VOR fix.

Landing Distance Available (LDA) – ICAO defines LDA as the length of runway, which is declared available and suitable for the ground run of an airplane landing.

Lateral Navigation (LNAV) – Azimuth navigation, without positive vertical guidance. This type of navigation is associated with non-precision approach procedures or en route.

Local Area Augmentation System (LAAS) – LAAS further increases the accuracy of GPS and improves signal integrity warnings.

Localizer Performance with Vertical Guidance (LPV) – LPV is one of the four lines of approach minimums found on an RNAV (GPS) approach chart. Lateral guidance accuracy is equivalent to a localizer. The HAT is published as a DA since it uses an electronic glide path that is not dependent on any ground equipment or barometric aiding and may be as low as 200 feet and 1/2 SM visibility depending on the airport terrain and infrastructure. WAAS avionics approved for LPV is required. Baro-VNAV is not authorized to fly the LPV line of minimums on a RNAV (GPS) procedure since it uses an internally generated descent path that is subject to cold temperature effects and incorrect altimeter settings.

Loss of Separation – An occurrence or operation that results in less than prescribed separation between aircraft, or between an aircraft and a vehicle, pedestrian, or object.

LPV – See Localizer Performance with Vertical Guidance

Magnetic Variation – The difference in degrees between the measured values of true north and magnetic north at that location.

Maximum Authorized Altitude (MAA) – An MAA is a published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, RNAV low or high route, or other direct route for which an MEA is designated at which adequate reception of navigation signals is assured.

Metering Fix – A fix along an established route over which aircraft will be metered prior to entering terminal airspace. Normally, this fix should be established at a distance from the airport which will facilitate a profile descent 10,000 feet above airport elevation (AAE) or above.

Mid-RVR – The RVR readout values obtained from sensors located midfield of the runway.

Mileage Break – A point on a route where the leg segment mileage ends, and a new leg segment mileage begins, often at a route turning point.

Military Airspace Management System (MAMS) – A Department of Defense system to collect and disseminate information on the current status of special use airspace. This information is provided to the Special Use Airspace Management System (SAMS). The electronic interface also provides SUA schedules and historical activation and utilization data.

Minimum Crossing Altitude (MCA) – An MCA is the lowest altitude at certain fixes at which the aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude. MCAs are

established in all cases where obstacles intervene to prevent pilots from maintaining obstacle clearance during a normal climb to a higher MEA after passing a point beyond which the higher MEA applies.

Minimum Descent Altitude (MDA) – The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

Minimum En Route Altitude (MEA) – The MEA is the lowest published altitude between radio fixes that assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment, RNAV low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.

Minimum IFR Altitude (MIA) – Minimum altitudes for IFR operations are prescribed in Part 91. These MIAs are published on NACO charts and prescribed in Part 95 for airways and routes, and in Part 97 for standard instrument approach procedures.

Minimum Navigation Performance Specifications (MNPS) – A set of standards which require aircraft to have a minimum navigation performance capability in order to operate in MNPS designated airspace. In addition, aircraft must be certified by their State of Registry for MNPS operation. Under certain conditions, non-MNPS aircraft can operate in MNPS airspace, however, standard oceanic separation minima is provided between the non-MNPS aircraft and other traffic.

Minimum Obstruction Clearance Altitude (MOCA) – The MOCA is the lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments that meets obstacle clearance requirements for the entire route segment. This altitude also assures acceptable navigational signal coverage only within 22 NM of a VOR.

Minimum Reception Altitude (MRA) – An MRA is determined by FAA flight inspection traversing an entire route of flight to establish the minimum altitude the navigation signal can be received for the route and for off-course NAVAID facilities that determine a fix. When the MRA at the fix is higher than the MEA, an MRA is established for the fix, and is the lowest altitude at which an intersection can be determined.

Minimum Safe Altitudes (MSA) – MSAs are published for emergency use on IAP charts. For conventional navigation systems, the MSA is normally based on the primary omnidirectional facility on which the IAP is predicated. For RNAV approaches, the MSA is based on the runway waypoint (RWY WP) for straight-in approaches, or the airport waypoint (APT WP) for circling approaches. For GPS approaches, the MSA center will be the Missed Approach Waypoint (MAWP).

Minimum Vectoring Altitude (MVA) – Minimum vectoring altitude charts are developed for areas where there are numerous minimum vectoring altitudes due to variable terrain features or man-made obstacles. MVAs are established for use by ATC when radar ATC is exercised.

Missed Approach Holding Waypoint (MAHWP) – An approach waypoint sequenced during the holding portion of the missed approach procedure that is usually a fly-over waypoint, rather than a fly-by waypoint.

Missed Approach Waypoint (MAWP) – An approach waypoint sequenced during the missed approach procedure that is usually a fly-over waypoint, rather than a fly-by waypoint.

National Airspace System (NAS) – Consists of a complex collection of facilities, systems, equipment, procedures, and airports operated by thousands of people to provide a safe and efficient flying environment.

Navigational Gap – A navigational course guidance gap, referred to as an MEA gap, describes a distance along an airway or route segment where a gap in navigational signal coverage exists. The navigational gap may not exceed a specific distance that varies directly with altitude.

Non-directional Radio Beacon (NDB) – An L/MF or UHF radio beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the ILS marker, it is normally called a compass locator.

Non-RNAV DP – A DP whose ground track is based on ground-based NAVAIDS and/or dead reckoning navigation.

Obstacle Clearance Surface (OCS) – An inclined or level surface associated with a defined area for obstruction evaluation.

Obstacle Departure Procedure (ODP) – A procedure that provides obstacle clearance. ODPs do not include ATC related climb requirements. In fact, the primary emphasis of ODP design is to use the least onerous route of flight to the en route structure while attempting to accommodate typical departure routes.

Obstacle Identification Surface (OIS) – The design of a departure procedure is based on TERPS, a living document that is updated frequently. Departure design criteria assumes an initial climb of 200 feet per NM after crossing the departure end of the runway (DER) at a height of at least 35 feet above the ground. Assuming a 200 feet per NM climb, the departure is structured to provide at least 48 feet per NM of clearance above objects that do not penetrate the obstacle slope. The slope, known as the obstacle identification slope (OIS), is based on a 40 to 1 ratio, which is the equivalent of a 152-foot per NM slope.

Off-Airway Routes – The FAA prescribes altitudes governing the operation of aircraft under IFR for off-airway routes in a similar manner to those on federal airways, jet routes, area navigation low or high altitude routes, and other direct routes for which an MEA is designated.

Off-Route Obstruction Clearance Altitude (OROCA) – An off-route altitude that provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

Operations Specifications (OpsSpecs) – A published document providing the conditions under which an air carrier and operator for compensation or hire must operate in order to retain approval from the FAA.

Pilot Briefing Information – The current format for charted IAPs issued by NACO. The information is presented in a logical order facilitating pilot briefing of the procedures. Charts include formatted information required for quick pilot or flight crew reference located at the top of the chart.

Point-in-Space (PinS) Approach – An approach normally developed to heliports that do not meet the IFR heliport design standards but meet the standards for a VFR heliport. A helicopter PinS approach can be developed using conventional NAVAIDs or RNAV systems. These procedures have either a VFR or visual segment between the MAP and the landing area. The procedure will specify a course and distance from the MAP to the heliport(s) and include a note to proceed VFR or visually from the MAP to the heliport, or conduct the missed approach.

Positive Course Guidance (PCG) – A continuous display of navigational data that enables an aircraft to be flown along a specific course line, e.g., radar vector, RNAV, ground-based NAVAID.

Precision Runway Monitor (PRM) – Provides air traffic controllers with high precision secondary surveillance data for aircraft on final approach to parallel runways that have extended centerlines separated by less than 4,300 feet. High resolution color monitoring displays (FMA) are required to present surveillance track data to controllers along with detailed maps depicting approaches and a no transgression zone.

Preferential Departure Route (PDR) – A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an instrument Departure Procedure (DP) or a Preferred IFR Route.

Preferred IFR Routes – A system of preferred IFR routes guides you in planning your route of flight to minimize route changes during the operational phase of flight, and to aid in the efficient orderly management of air traffic using federal airways.

Principal Operations Inspector (POI) – Scheduled air carriers and operators for compensation or hire are assigned a principal operations inspector (POI) who works directly with the company and coordinates FAA operating approval.

Record – See Database Record

Reduced Vertical Separation Minimums (RVSM) – RVSM airspace is where air traffic control separates aircraft by a minimum of 1,000 feet vertically between flight level (FL) 290 and FL 410 inclusive. RVSM airspace is special qualification airspace; the operator and the aircraft used by the operator must be approved by the Administrator. Air traffic control notifies operators of RVSM by providing route planning information.

Reference Landing Speed (VREF) – The speed of the airplane, in a specified landing configuration, at the point where it descends through the 50-foot height in the determination of the landing distance.

Remote Communications Outlet (RCO) – An unmanned communications facility remotely controlled by air traffic personnel. RCOs serve FSSs and may be UHF or VHF. RCOs extend the communication range of the air traffic facility. RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging IFR cancellations or departure/landing times.

Reporting Point – A geographical location in relation to which the position of an aircraft is reported. (See Compulsory Reporting Points)

Required Navigation Performance (RNP) – RNP is a statement of the navigation performance necessary for operation within a defined airspace. On-board monitoring and alerting is required.

RNAV DP – A DP developed for RNAV-equipped aircraft whose ground track is based on satellite or DME/DME navigation systems.

Roll-out RVR – The RVR readout values obtained from sensors located nearest the rollout end of the runway.

Runway Heading – The magnetic direction that corresponds with the runway centerline extended, not the painted runway numbers on the runway. Pilots cleared to "fly or maintain runway heading" are expected to fly or maintain the published heading that corresponds with the extended centerline of the departure runway (until otherwise instructed by ATC), and are not to apply drift correction; e.g., RWY 4, actual magnetic heading of the runway centerline 044.22º, fly 044º.

Runway Hotspots – Locations on a particular airport that historically have hazardous intersections. Hot spots alert pilots to the fact that there may be a lack of visibility at certain points or the tower may be unable to see that particular intersection. Whatever the reason, pilots need to be aware that these hazardous intersections exist and they should be increasingly vigilant when approaching and taxiing through these intersections. Pilots are typically notified of these areas by a Letter to Airmen or by accessing the FAA Office of Runway Safety.

Runway **Incursion – an occurrence at an airport involving an aircraft, vehicle, person, or object on the** ground that creates a collision hazard or results in a loss of separation with an aircraft that is taking off, intending to take off, landing, or intending to land.

Runway Safety Program (RSP) – Designed to create and execute a plan of action that reduces the number of runway incursions at the nation's airports.

Runway Visual Range (RVR) – An estimate of the maximum distance at which the runway, or the specified lights or markers delineating it, can be seen from a position above a specific point on the runway centerline. RVR is normally determined by visibility sensors or transmissometers located alongside and higher than the centerline of the runway. RVR is reported in hundreds of feet.

Runway Visibility Value (RVV) – The visibility determined for a particular runway by a transmissometer. A meter provides a continuous indication of the visibility (reported in miles or fractions

of miles) for the runway. RVV is used in lieu of prevailing visibility in determining minimums for a particular runway.

Significant Point – [ICAO Annex 11] A specified geo-graphical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes.

Special Instrument Approach Procedure – A procedure approved by the FAA for individual operators, but not published in FAR 97 for public use.

Special Use Airspace Management System (SAMS) – A joint FAA and military program designed to improve civilian access to special use airspace by providing information on whether the airspace is active or scheduled to be active. The information is available to authorized users via an Internet website.

Standard Instrument Departure (SID) – An ATC requested and developed departure route designed to increase capacity of terminal airspace, effectively control the flow of traffic with minimal communication, and reduce environmental impact through noise abatement procedures.

Standard Service Volume – Most air navigation radio aids which provide positive course guidance have a designated standard service volume (SSV). The SSV defines the reception limits of unrestricted NAVAIDS which are usable for random/unpublished route navigation. Standard service volume limitations do not apply to published IFR routes or procedures. See the AIM for the SSV for specific NAVAID types.

Standard Terminal Arrival (STAR) – Provides a common method for departing the en route structure and navigating to your destination. A STAR is a pre-planned instrument flight rule ATC arrival procedure published for pilot use in graphic and textual form to simplify clearance delivery procedures. STARs provide you with a transition from the en route structure to an outer fix or an instrument approach fix or arrival way-point in the terminal area, and they usually terminate with an instrument or visual approach procedure.

Standardized Taxi Routes – Coded taxi routes that follow typical taxiway traffic patterns to move aircraft between gates and runways. ATC issues clearances using these coded routes to reduce radio communication and eliminate taxi instruction misinterpretation.

STAR Transition – A published segment used to connect one or more en route airways, jet routes, or RNAV routes to the basic STAR procedure. It is one of several routes that bring traffic from different directions into one STAR. NACO publishes STARs for airports with procedures authorized by the FAA, and these STARs are included at the front of each Terminal Procedures Publication regional booklet.

Start End of Runway (SER) – The beginning of the takeoff runway available.

Station Declination – The angular difference between true north and the zero radial of a VOR at the time the VOR was last site checked.

Surface Incident – An event during which authorized or unauthorized/unapproved movement occurs in the movement area or an occurrence in the movement area associated with the operation of an aircraft that affects or could affect the safety of flight.

Surface Movement Guidance Control System (SMGCS) – Facilitates the safe movement of aircraft and vehicles at airports where scheduled air carriers are conducting authorized operations. The SMGCS low visibility taxi plan includes the improvement of taxiway and runway signs, markings, and lighting, as well as the creation of SMGCS low visibility taxi route charts.

Synthetic Vision – A visual display of terrain, obstructions, runways, and other surface features that creates a virtual view of what the pilot would see out the window. This tool could be used to supplement normal vision in low visibility conditions, as well as to increase situational awareness in IMC.

Takeoff Distance Available (TODA) – ICAO defines TODA as the length of the takeoff runway available plus the length of the clearway, if provided.

Takeoff Runway Available (TORA) – ICAO defines TORA as the length of runway declared available and suitable for the ground run of an airplane takeoff.

Tangent Point (TP) –The point on the VOR/DME RNAV route centerline from which a line perpendicular to the route centerline would pass through the reference facility.

Terminal Arrival Area (TAA) – TAAs are the method by which aircraft are transitioned from the RNAV en route structure to the terminal area with minimal ATC interaction. The TAA consists of a designated volume of airspace designed to allow aircraft to enter a protected area, offering guaranteed obstacle clearance where the initial approach course is intercepted based on the location of the aircraft relative to the airport.

Threshold – The beginning of the part of the runway usable for landing.

Top of Climb (TOC) – An identifiable waypoint representing the point at which cruise altitude is first reached. TOC is calculated based on your current aircraft altitude, climb speed, and cruise altitude. There can only be one TOC waypoint at a time.

Top of Descent (TOD) – Generally utilized in flight management systems, top of descent is an identifiable waypoint representing the point at which descent is first initiated from cruise altitude. TOD is generally calculated using the destination elevation (if available) and the descent speed schedule.

Touchdown and Lift-Off Area (TLOF) – The TLOF is a load bearing, usually paved area at a heliport where the helicopter is permitted to land. The TLOF can be located at ground or rooftop level, or on an elevated structure. The TLOF is normally centered in the FATO.

Touchdown RVR – The RVR visibility readout values obtained from sensors serving the runway touchdown zone.

Touchdown Zone Elevation (TDZE) – The highest elevation in the first 3,000 feet of the landing surface.

Tower En Route Control (TEC) – The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite air traffic and reduces air traffic control and pilot communication requirements.

TRACAB – A new type of air traffic facility that consists of a radar approach control facility located in the tower cab of the primary airport, as opposed to a separate room.

Traffic Information Service-Broadcast (TIS-B) – An air traffic surveillance system that combines all available traffic information on a single display.

Traffic Management Advisor (TMA) – A software suite that helps air traffic controllers to sequence arriving air traffic.

Transition Altitude (QNH) – The altitude in the vicinity of an airport at or below which the vertical position of an aircraft is controlled by reference to altitudes (MSL).

Transition Height (QFE) – Transition height is the height in the vicinity of an airport at or below which the vertical position of an aircraft is expressed in height above the airport reference datum.

Transition Layer – Transition layer is the airspace between the transition altitude and the transition level. Aircraft descending through the transition layer will set altimeters to local station pressure, while departing aircraft climbing through the transition layer will be using standard altimeter setting (QNE) of 29.92 inches of Mercury, 1013.2 millibars, or 1013.2 hectopascals.

Transition Level (QNE) – The lowest flight level available for use above the transition altitude.

Turn Anticipation – The capability of RNAV systems to determine the point along a course, prior to a turn WP, where a turn should be initiated to provide a smooth path to intercept the succeeding course, and to enunciate the information to the pilot.

Turn WP [Turning Point] –A WP which identifies a change from one course to another.

User-defined Waypoint – User-defined waypoints typically are created by pilots for use in their own random RNAV direct navigation. They are newly established, unpublished airspace fixes that are designated geographic locations/positions that help provide positive course guidance for navigation and a means of checking progress on a flight. They may or may not be actually plotted by the pilot on enroute charts, but would normally be communicated to ATC in terms of bearing and distance or latitude/longitude. An example of user-defined waypoints typically includes those derived from database-driven area navigation (RNAV) systems whereby latitude/longitude coordinate-based waypoints are generated by various means including keyboard input, and even electronic map mode functions used to establish waypoints with a cursor on the display. Another example is an offset phantom waypoint, which is a point in space formed by a bearing and distance from NAVAIDs such as VORs, VORTACs, and TACANs, using a variety of navigation systems.

User Request Evaluation Tool (URET) – The URET helps provide enhanced, automated flight data management. URET is an automated tool provided at each radar position in selected en route facilities. It

uses flight and radar data to determine present and future trajectories for all active and proposed aircraft flights. A graphic plan display depicts aircraft, traffic, and notification of predicted conflicts. Graphic routes for current plans and trial plans are displayed upon controller request. URET can generate a predicted conflict of two aircraft, or between aircraft and airspace.

Vertical Navigation (VNAV) – Traditionally, the only way to get glide path information during an approach was to use a ground-based NAVAID, but modern area navigation systems allow flight crews to display an internally generated descent path that allows a constant rate descent to minimums during approaches that would otherwise include multiple level-offs.

Vertical Navigation Planning – Included within certain STARs is information provided to help you reduce the amount of low altitude flying time for high performance aircraft, like jets and turboprops. An expected altitude is given for a key fix along the route. By knowing an intermediate altitude in advance when flying a high performance aircraft, you can plan the power or thrust settings and aircraft configurations that result in the most efficient descent, in terms of time, fuel requirements, and engine wear.

Visual Approach – A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually to the airport of intended landing; it is not an IAP. Also, there is no missed approach segment. When it is operationally beneficial, ATC may authorize pilots to conduct a visual approach to the airport in lieu of the published IAP. A visual approach can be initiated by a pilot or the controller.

Visual Climb Over the Airport (VCOA) – An option to allow an aircraft to climb over the airport with visual reference to obstacles to attain a suitable altitude from which to proceed with an IFR departure.

Waypoint (WP) – A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

Wide Area Augmentation System (WAAS) – A method of navigation based on GPS. Ground correction stations transmit position corrections that enhance system accuracy and add vertical navigation (VNAV) features.

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APPENDIX B

KANSAS AIRPORT SYSTEM PLAN 2016 (KASP) - EXECUTIVE SUMMARY

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KANSAS AVIATION SYSTEM PLAN

KANSAS DEPARTMENT OF TRANSPORTATION
DIVISION OF AVIATION

Prepared by

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In association with

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Division of Aviation

Kansas Statewide Aviation System Plan

prepared for

Kansas Department of Transportation
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SECTION 1 EXECUTIVE SUMMARY

The Kansas Aviation System Plan (KASP) was completed by the Kansas Department of Transportation (KDOT) Division of Aviation, and is an update of a previous plan completed in 2008. The KASP works in concert with other important planning efforts that include the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS), KDOT's Long Range Transportation Plan (LRTP), and Kansas Airport Improvement Program (KAIP), plus individual airport capital improvement programs, layout plans, and master plans. The following are the primary objectives of the KASP process:

- Determine those system airports that are most essential to Kansas transportation needs and economic objectives;
- Identify projects that have the greatest potential to improve the performance of the Kansas airport system, and;
- Demonstrate how investment improves the performance of the Kansas airport system relative to established performance measures and benchmarks.

This document explains the airport system planning process and how it achieves the listed objectives. Additionally, much of this information has been incorporated into the Kansas Aviation Portal, a web-based tool that makes use of an airspace awareness tool and additional data layers – including pavement conditions, economic impact, and other useful information – to increase awareness of airports in Kansas. Access to the Kansas Aviation Portal is available at http://ksaviationportal.ksdot.org.

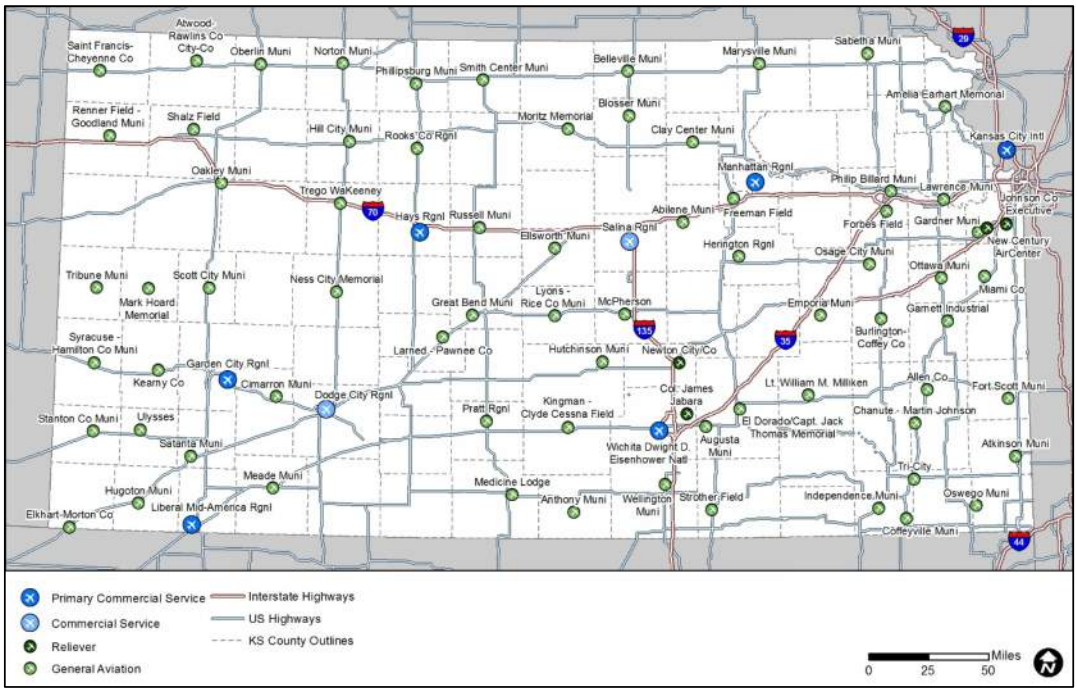
1.1 KASP OVERVIEW

The KASP accomplishes the three objectives listed above through a methodical process that starts with the goals of KDOT Aviation and determines how to evaluate those goals. The information needed to assess the goals is gathered during the inventory process. Once the inventory is completed, that data is used to develop forecasts of aviation activity, analyze the roles each airport performs in the system, and conduct an evaluation of the system and each individual airport. Based on these analyses, recommendations are made that are intended to improve the performance of the airport system. A cost estimate is developed as the last step of the process.

The recommendations and cost estimates presented in this document were developed at the system planning level, and are not meant to replace detailed engineering studies or to supersede planning or engineering work done as a result of individual airport master plans. Rather, this system plan is intended to complement those studies, providing additional support for projects at the system level.

Throughout the system planning process, the project team coordinated closely with KDOT Aviation, taking into account their input and comments. More details of each step in the process are outlined in the following subsections. The KASP is focused on the 80 NPIAS airports located in Kansas, shown in Figure 1-1.

Figure 1-1 Kansas NPIAS Airports



Source: CDM Smith, 2016

1.2 SYSTEM GOALS AND PERFORMANCE MEASURES

Goals and performance measures from the last KASP were reviewed. Recommendations were made to streamline or eliminate a number of the performance measures. However, the KASP is still based upon the following five overarching system goals:

Goal: Preserve the Aviation System (seven performance measures) - A well-maintained airport system promotes safety and mobility. Actions aimed at preserving the existing airport system help to maximize previous investment in the airport system.

Goal: Provide a Modern Network of Airports (three performance measures) - Modern airport facilities are key to satisfying the needs of an aviation market, particularly for customers using aircraft that are technologically sophisticated and demanding.

Goal: Provide a Network of Airports that is Accessible by the Air and the Ground (eight performance measures) - An effective airport system serves the largest number of residents, businesses, services, and attractions as is feasible. Convenient access to a state's airport system should be provided from both the ground and air.

Goal: Support Local and Statewide Economic Growth (three performance measures) - Airports are important to business attraction and retention. Companies often consider proximity to commercial and/or general aviation airports when selecting a business location.

Goal: Support the Promotion of Aviation Education (three performance measures) - Supporting aviation education is important to both the present and future of aviation in Kansas.

More details on the System Goals and Performance Measures are available in Section 2 of this report.

1.3 SYSTEM INVENTORY

The KASP inventory effort identified current facilities and conditions at Kansas system airports, while updating data collected during the 2008 KASP inventory effort. The inventory process and the data collected provided a sturdy foundation for understanding the existing system's conditions, while also providing a solid footing for subsequent analysis within the KASP.

To collect inventory data, a questionnaire was sent to each of the state's 80 NPIAS airports. The questionnaire gathered data on general airport information, airside facilities, landside facilities, airport services, airport activity, and other pertinent information such as airport documents and community outreach activities. More details on the System Inventory are available in Section 3 of this report.

1.4 FORECAST OF AVIATION DEMAND

Forecasts of based aircraft and general aviation operations were developed for each airport from a system level perspective. Several forecasts of based aircraft and general aviation operations were developed and compared for purposes of selecting a preferred forecast. Forecasts of commercial service operations and enplanements were obtained from recent master plans or, if a master plan was not available, from the FAA Terminal Area Forecast. They reflect conditions at the time of their evaluation; subsequent changes in airline activities or operators impacting passenger use will not necessarily be reflected in individual airport reports. A summary of aviation forecasts is provided in Table 1-1.

Table 1-1 Summary of Aviation Forecasts

	2014	2019	2024	2034	Average Annual Growth Rate 2014 to 2034
Based Aircraft	2,403	2,472	2,544	2,698	0.6%
General Aviation Operations	1,328,141	1,347,463	1,367,520	1,415,948	0.3%
Commercial Service Operations	84,605	87,674	90,324	101,490	0.9%
Total Operations	1,412,746	1,435,137	1,457,844	1,517,438	0.4%
Enplanements	862,650	908,164	993,054	1,154,151	1.5%

Source: CDM Smith, Airport Master Plans, and FAA TAF. 2015.

More details on the Forecast of Aviation Demand are available in Section 4 of this report.

1.5 AIRPORT ROLE ANALYSIS

Airport roles were determined using a methodology that was based on the process that was used in the previous system plan. Commercial service airports were identified as per the NPIAS. General aviation airports were assigned roles by scoring each airport in the following categories:

- Primary runway length
- Total based aircraft
- Percent of itinerant operations
- Airport approach type
- Fuel facilities
- ASOS/AWOS presence
- Based jet aircraft
- Population served
- Employment served
- Geographic area served
- Industry groups served
- Gross Regional Product
- Retail sales

Scores for the 14 categories were added together for each airport and the airports ranked by total score. Airport roles of Regional Airport, Business Airport, Community Airport, and Basic Airport were assigned in decreasing order of scores. The following describes these roles:

- **Commercial Service Airports:** Airports that accommodate scheduled national or regional commercial air carrier service. Unlike the other roles, Commercial Service Airports were identified using the National Plan of Integrated Airport Systems (NPIAS) definition of any airport with scheduled commercial airline service that enplanes 2,500 passengers or more annually.

- **Regional Airports:** Airports that accommodate regional economic activities, connect the state and national economies, and serve all types of general aviation aircraft.
- **Business Airports:** Airports that accommodate local business activities and general aviation users.
- **Community Airports:** Airports that serve a supplemental role in local economies, primarily serving smaller business, recreational, and personal flying.
- **Basic Airports:** Airports that serve a limited role in the local economy, primarily serving recreational and personal flying.

The results were compared to the airport roles from the 2008 Study and only those airports that experienced a significant shift were identified as having a role change. These airports are shown in Table 1-2. The number of Kansas NPIAS Airports in each airport role is detailed in Table 1-3.

Table 1-2 Airport Role Changes from the 2008 KASP

Associated City	Airport	Kansas Airport System Role in 2008	Recommended Airport System Role
Atchison	Amelia Earhart	Business	Community
Great Bend	Great Bend Municipal	Commercial Service	Regional
Olathe	Johnson County Executive	Business	Regional
Osage City	Osage City Municipal	Business	Community
Stockton	Rooks County Regional	Community	Business
Topeka	Topeka Regional	Commercial Service	Regional

Source: CDM Smith. 2015.

Table 1-3 Number of Kansas NPIAS Airports per Airport Role

State System Role	Number of Airports
Commercial Service	7
Regional	17
Business	33
Community	22
Basic	1

Source: CDM Smith, 2015

More details on the Airport Role Analysis are available in Section 5 of this report.

1.6 SYSTEM EVALUATION

Previously identified goals for the system were also used to guide the process to establish current system performance. The system evaluation focused on determining where the system is currently

adequate, where the system is deficient, and where duplications or surpluses in the system exist. Table 1-4 details benchmarks and current performance for each performance measure.

Table 1-4 System Evaluation Summary

Performance Measure	Benchmark	Performance
GOAL: PRESERVE THE AVIATION SYSTEM		
NPIAS Airports with primary runways meeting a minimum pavement condition index (PCI)	100% of primary runways to have a PCI of 70 or higher	Commercial Service: 42.9% Regional: 76.5% Business: 75.8% Community: 54.5% Basic: 100%
NPIAS Airports with clear approaches to the primary runway	100% of primary runway approaches to have clear obstructions	Commercial Service: 71.4% Regional: 47.1% Business: 21.2% Community: 9.1% Basic: 100%
NPIAS Airports with an adopted emergency response plan	100% of Commercial Service, Regional, and Business Airports	Commercial Service: 100% Regional: 47.1% Business: 0.0%
NPIAS Airports with an adopted wildlife management plan	100% of Commercial Service and Regional Airports	Commercial Service: 42.9% Regional: 17.6%
NPIAS Airports with an adopted security plan	100% of Commercial Service, Regional, Business, and Community Airports	Commercial Service: 71.4% Regional: 64.7% Business: 9.1% Community: 4.5%
NPIAS Airports with an adopted snow removal plan	100% of Commercial Service, Regional, Business, and Community Airports	Commercial Service: 100% Regional: 100% Business: 90.9% Community: 77.3%
NPIAS Airports meeting minimum facility and service objectives	100% of airports to meet benchmarks for their airport role	Performance varies by benchmark
GOAL: PROVIDE A MODERN NETWORK OF AIRPORTS		
NPIAS Airports within 50 nautical miles (NM) of an alternate airport with a precision or near-precision APV approach	95% of study airports	98.8% of study airports
NPIAS Airports with 24 access to aircraft fuel	100% of Commercial Service and Regional Airports	Commercial Service: 100% Regional: 100%
NPIAS Airports with jet fuel	100% of Commercial Service and Regional Airports	Commercial Service: 100% Regional: 94.1%

Performance Measure	Benchmark	Performance
GOAL: PROVIDE A NETWORK OF AIRPORTS ACCESSIBLE BY AIR AND GROUND		
Population and area within 90 minutes of a NPIAS Commercial Service airport	Population: 75% Area: 50%	Population: 55.6% (89.5% with MCI) Area: 58.3% (64.6% with MCI)
Population and area within 45 minutes of a NPIAS Commercial Service or Regional airport	Population: 90% Area: 70%	Population: 87.5% (87.7% with MCI) Area: 40.2% (40.3% with MCI)
Population and area within 30 minutes of a NPIAS airport	Population: 95% Area: 70%	Population: 91.4% Area: 54.9%
Population and area within 30 minutes of a NPIAS airport capable of supporting air ambulance service	Population: 94% Area: 72%	Population: 81.3% Area: 28.6%
Hospitals within 30 minutes of a NPIAS airport	100% of hospitals	85.4% of hospitals
Population and area within 30 minutes of a NPIAS airport capable of supporting physician flown aircraft	Population: 97% Area: 81%	Population: 88.0% Area: 44.7%
Population and area within 30 minutes of a NPIAS airport with an instrument approach	Population: 95% Area: 90%	Population: 89.3% Area: 47.4%
Population and area within 30 nautical miles of a NPIAS airport with on-site weather reporting	Population: 100% Area: 100%	Population: 99.1% Area: 96.7%
GOAL: SUPPORT LOCAL AND STATEWIDE ECONOMIC GROWTH		
Population and area within 45 minutes of a NPIAS airport with a 5,000 foot, or greater runway	Population: 95% Area: 65%	Population: 92.8% Area: 58.5%
Airports with available ground transportation	100% of Commercial Service, Regional, Business, and Community Airports	Commercial Service: 100% Regional: 94.1% Business: 84.8% Community: 31.8%
Population and area within 45 minutes of a NPIAS airport meeting business user needs	Population: 91% Area: 56%	Population: 91.1% Area: 49.2%
GOAL: SUPPORT THE PROMOTION OF AVIATION EDUCATION		
NPIAS Airports with community outreach programs	Informational - no benchmark	Commercial Service: 57.1% Regional: 76.5%

Performance Measure	Benchmark	Performance
		Business: 45.5% Community: 27.3% Basic: 0.0%
NPIAS Airports supporting flight training	Informational - no benchmark	Commercial Service: 100% Regional: 94.1% Business: 93.9% Community: 72.7% Basic: 100%
Airports supporting airframe and powerplant (A&P) programs	Informational - no benchmark	1 airport: Col. James Jabara

Source: CDM Smith, 2015

1.7 SYSTEM RECOMMENDATIONS

Many of the above performance measures are provided strictly for informational purposes, and do not have associated recommendations. Some of these informational performance measures were analyzed within the future system, that being the system that would exist if all facility and service benchmarks were met. For example, if the twelve airports recommended to install an instrument approach met this benchmark, 30 minute drive time coverage of these airports would increase from 89.3 percent to 91.2 percent of the state's total population.

The other performance measures, those considered to be action-oriented, resulted in airport-specific recommendations. The most significant airport recommendations are a result of the facility and service benchmarks, part of the Preservation Goal. Table 1-5 lists these benchmarks for each airport role.

Table 1-5 Facility and Service Benchmarks by Airport Role

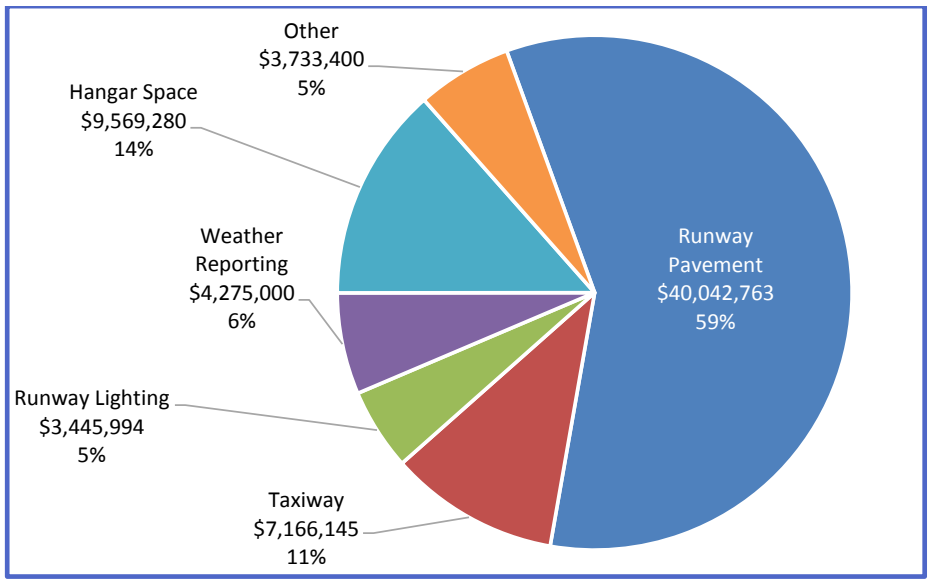
Facility and Service Benchmark Category	Commercial Service	Regional	Business	Community	Basic
Runway Length (feet)	5,500	5,000	4,000	3,200	N/A*
Runway Width (feet)	100	100	75	60	N/A*
Runway Surface	Paved	Paved	Paved	Paved	N/A*
Taxiway Type	Full Parallel	Full Parallel	Turnarounds	Turnarounds	N/A*
Best IAP	Precision	APV	Any IAP	Any IAP	N/A*
Rotating Beacon	Yes	Yes	Yes	N/A*	N/A*
Wind Sock	Lighted Wind Sock	Lighted Wind Sock	Lighted Wind Sock	Wind Sock*	Wind Sock

Facility and Service Benchmark Category	Commercial Service	Regional	Business	Community	Basic
VGSI	PAPI or VASI	PAPI or VASI	PAPI or VASI	N/A*	N/A*
Runway Lighting	MIRL	MIRL	MIRL	MIRL	N/A*
ALS or REILs	ALS	ALS or REILs	ALS or REILS	N/A*	N/A*
Weather Reporting	Automated	Automated	Automated	Automated	N/A*
Restroom	Yes	Yes	Yes	Yes	N/A*
Link to Ground Transportation	Yes	Yes	Yes	Yes	N/A*
Fuel	AvGas, Jet A, 24/7 Fuel	AvGas, Jet A, 24/7 Fuel	AvGas	N/A*	N/A*
Terminal	Terminal	Terminal	Terminal	N/A*	N/A*
Hangar Capacity	100% of Based Aircraft	100% of Based Aircraft	100% of Based Aircraft	100% of Based Aircraft	N/A*
Apron Capacity (square feet)	10,000	10,000	10,000	10,000	N/A*

**Not an Objective for KASP/KAIP project planning, but beacons are required by AC 150/5300-13A with runway edge lighting, and wind socks should be lighted at airports with runway lighting (per FAA).*
Source: CDM Smith, FAA, KDOT Aviation

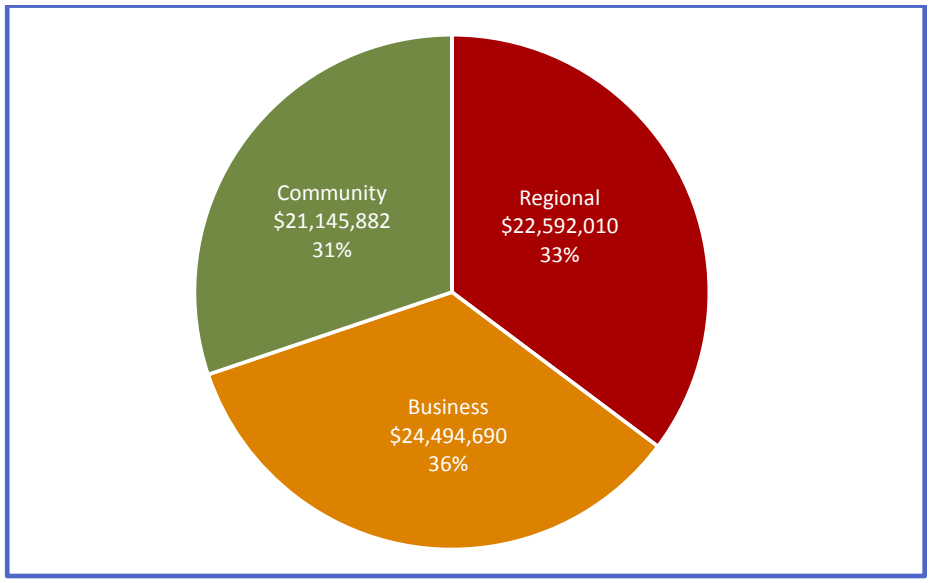
For each deficiency found, a recommendation was made. In total, 154 recommendations were made at 50 NPIAS airports in Kansas based on facility and service benchmarks. Cost estimates were made for these recommendations, with all costs related to facility and service benchmarks totaling over $67 million. Figure 1-2 summarizes costs by project type, with more than half of the estimated project costs going to airport pavement improvements. Figure 1-3 summarizes costs by airport role, showing that costs are split evenly between the Regional, Community, and Business roles.

Figure 1-2 Estimated Costs by Project Type



Source: CDM Smith, 2015

Figure 1-3 Estimated Costs by Airport Role



Source: CDM Smith, 2015

APPENDIX C

ABILENE MUNICIPAL AIRPORT KASP REPORT SUMMARY

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KANSAS AVIATION SYSTEM PLAN

ABILENE MUNICIPAL AIRPORT
ABILINE
K78

Prepared by

BURNS McDONNELL

CDM Smith

In association with

Kansas Department of Transportation
Division of Aviation

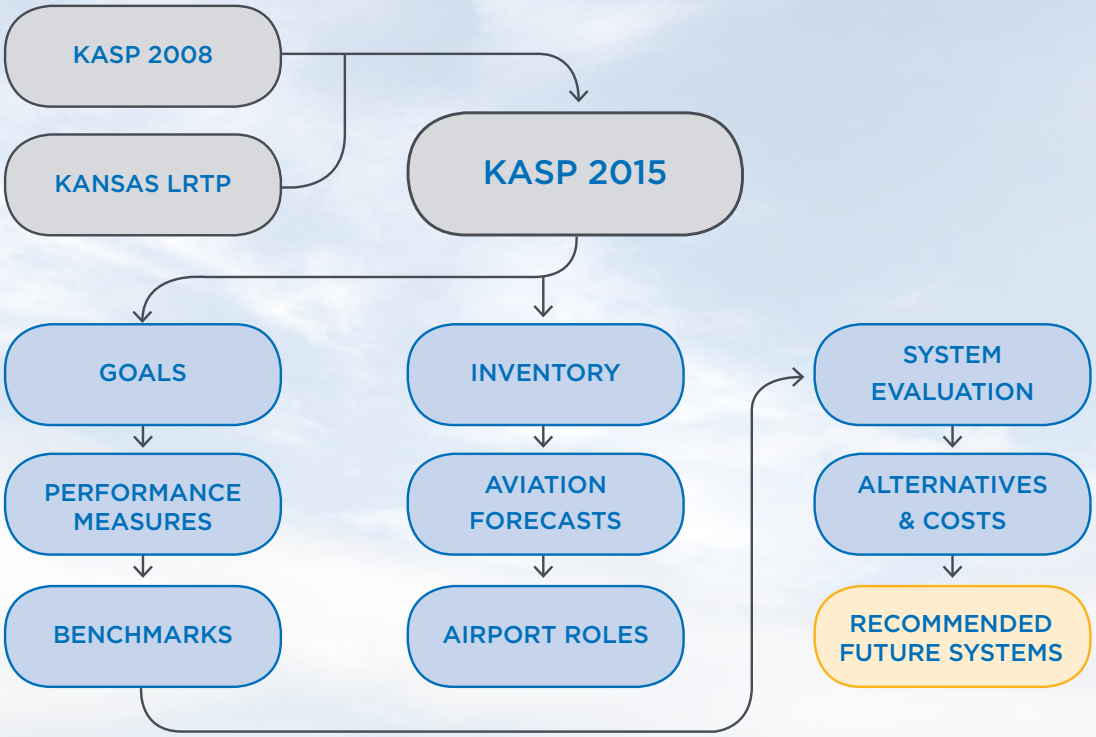
KASP OVERVIEW

The Kansas Aviation System Plan (KASP) is an update of a previous plan completed in 2008, and works in concert with other important planning documents that include the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS), KDOT's Long Range Transportation Plan (LRTP), and individual airport capital improvement programs, layout plans, and master plans.

The KASP has three primary objectives:

1. Determine those system airports that are most essential to Kansas transportation needs and economic objectives
2. Identify projects that have the greatest potential to improve the performance of the Kansas airport system
3. Demonstrate how investment improves the performance of the Kansas airport system relative to established measures and benchmarks

KASP PROCESS OVERVIEW:



BURNS McDONNELL CDM Smith

2

GOALS, STRATIFICATION AND FORECASTS

KASP ROLE
Business

FEDERAL ROLE
GA

NPIAS
Yes

OWNERSHIP
Public

The previous KASP identified and adopted five goals using the LRTP and input from KDOT Division of Aviation. Because each of these goals remains important for the future of the Kansas airport system, they remain the five main goals of the KASP.

These goals are as follows:

- Preserve the aviation system
- Provide a modern network of airports
- Provide a network of airports that is accessible by air and ground
- Support local and statewide economic growth
- Support the promotion of aviation education

The KASP evaluates system adequacies and deficiencies using their goals, associated performance measures, and benchmarks.

STRATIFICATION

Airport roles were determined using the same methodology that was used in the previous system plan. Commercial service airports were identified as per the NPIAS. General aviation airports were assigned roles by scoring each airport in the following categories:

- Primary runway length
- Total based aircraft
- Percent of itinerant operations
- Airport approach type
- Fuel facilities
- ASOS/AWOS presence
- Based jet aircraft
- Population served
- Employment served
- Geographic area served
- Industry groups served
- Gross Regional Product
- Retail sales
- Registered pilots served

FORECASTS

Scores for the 14 categories were added together for each airport and the airports ranked by total score. Airport roles of Regional Airport, Business Airport, Community Airport, and Basic Airport were assigned in decreasing order of scores. The results were compared to the previous study and only those airports that experienced a significant shift were identified as having a role change.

Forecasts of based aircraft and general aviation operations were developed for each airport from the system level. Several forecasts of based aircraft and general aviation operations were developed and compared for purposes of selecting a preferred forecast. Forecasts of commercial service operations and enplanements were obtained from recent master plans or, if a master plan was not available, from the FAA Terminal Area Forecast.

FORECAST SUMMARY:

	2014	2019	2024	2034
BASED AIRCRAFT	19	19	19	20
ANNUAL OPERATIONS	37,500	37,500	37,500	39,470

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3

AIRPORT PERFORMANCE AND RECOMMENDATIONS

System goals were used to guide the process to establish current system performance. The system evaluation focused on determining where the system is currently adequate, where the system is deficient, and where duplications or surpluses in the system exist. This evaluation analyzes the extent to which individual airports best serve their respective markets, and makes recommendations for improvements to airport facilities and services. The following table details facility and service benchmark performance, recommendations, and planning-level cost estimates for **Abilene Municipal Airport.**

PERFORMANCE	EXISTING	SYSTEM OBJECTIVE	RECOMMENDATION	ESTIMATED COST
AIRSIDE FACILITIES				
Primary Runway Length (Feet)	4,100	4,000	Maintain Standard	$0
Primary Runway Width (Feet)	75	75	Maintain Standard	$0
Primary Runway Surface	Asphalt	Paved	Maintain Standard	$0
Taxiway Type	Full Parallel	Turnarounds	Maintain Standard	$0
Best IAP	APV	Any IAP	Maintain Standard	$0
Rotating Beacon	Yes	Yes	Maintain Standard	$0
Wind Sock	Lighted Wind Sock	Lighted Wind Sock	Maintain Standard	$0
VGSI	PAPI	PAPI or VASI	Maintain Standard	$0
Runway Lighting	MIRL	MIRL	Maintain Standard	$0
ALS or REILs	REILs	ALS or REILs	Maintain Standard	$0
Weather Reporting	AWOS-3	Automated	Maintain Standard	$0
LANDSIDE FACILITIES				
Terminal	Yes	Yes	Maintain Standard	$0
Restroom	Yes	Yes	Maintain Standard	N/A
Hangar Capacity	100%	100% Based Aircraft	No Recommendation	$0
Apron Capacity (SF)	40,000	10,000	Maintain Standard	$0
SERVICES				
Fuel				
Available 24/7	Yes	Yes	Maintain Standard	$0
AvGAS	Yes	Yes	Maintain Standard	$0
Jet A	Yes	Not an Objective	No Recommendation	N/A
Ground Transportation Link	Yes	Yes	Maintain Standard	$0
Total				**$0**

Kansas Department of Transportation
Division of Aviation

700 SW Harrison
Topeka, KS 66603
www.ksdot.org/divaviation

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APPENDIX D

ABILENE MUNICIPAL AIRPORT LEGAL PROPERTY MAP

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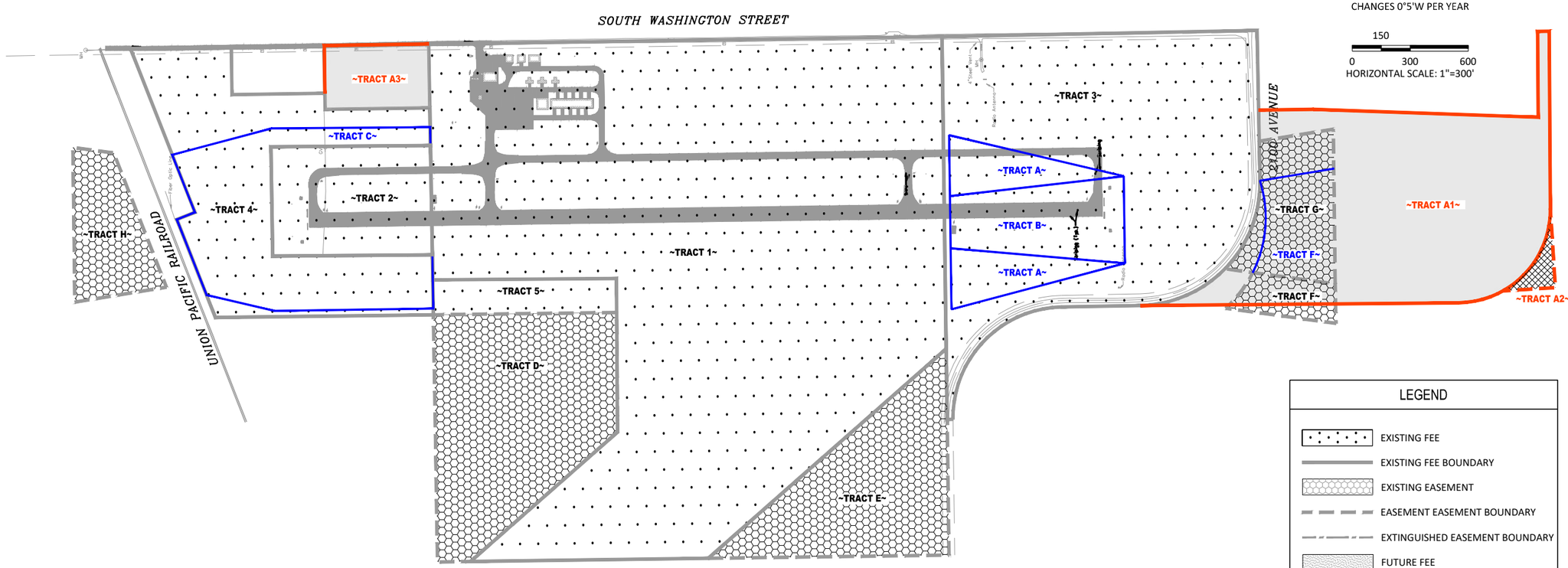

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

150
0 300 600
HORIZONTAL SCALE: 1"=300'

LEGEND

- EXISTING FEE
- EXISTING FEE BOUNDARY
- EXISTING EASEMENT
- EASEMENT EASEMENT BOUNDARY
- EXTINGUISHED EASEMENT BOUNDARY
- FUTURE FEE
- FUTURE FEE BOUNDARY
- FUTURE EASEMENT
- FUTURE EASEMENT BOUNDARY
- EXTINGUISHED EASEMENT BOUNDARY

EXHIBIT A EFFECTIVE DATE: JULY 15, 2020
AIP GRANT NO. 3-20-0001-011-2017

PROPOSED AIRPORT PROPERTY				
TRACT	TITLE	CURRENT PROPERTY OWNER/INTEREST	ACREAGE	TIME FRAME
A1	FEE SIMPLE	UNKNOWN	35.4	LONG TERM
A2	EASEMENT	UNKNOWN	0.8	LONG TERM
A3	FEE SIMPLE	UNKNOWN	4.1	LONG TERM

AIRPORT PROPERTY DATA TABLE

EXISTING AIRPORT PROPERTY

TRACT	FAA PROJECT NO.	TITLE	GRANTOR	CURRENT PROPERTY OWNER/INTEREST	ACQUSITION DATE	CITY DEEDS RECORDS	ORIGINAL ACREAGE	EXISTING PROPERTY ACREAGE	COMMENTS
1	9-14-001-701	FEE SIMPLE	E.A. WARD	CITY OF ABILENE	8/11/1945	BK 118, PG 232	160.0	102.9	PARTIALLY EXTINGUISHED [1]
2	9-14-001-6102	FEE SIMPLE	WILLIAM HOUGH	CITY OF ABILENE	10/8/1960	BK 150, PG 102	10.7	10.7	
A	9-14-001-6102	EASEMENT	WALTER WHITEHAIR	CITY OF ABILENE	10/17/1961	MISC BK 142, PG 643-644	6.5		FULLY EXTINGUISHED [2]
B	9-14-001-6102	EASEMENT	WALTER WHITEHAIR	CITY OF ABILENE	10/17/1961	MISC BK 142, PG 643-644	7.4		FULLY EXTINGUISHED [2]
C	9-14-001-6102	EASEMENT	WILLIAM HOUGH	CITY OF ABILENE	10/17/1961	MISC BK 142, PG 674	15.7		FULLY EXTINGUISHED [3]
D	5-20-0001-01	EASEMENT	DEANNA WHITEHAIR	DEANNA WHITEHAIR	9/21/1983	BK 199, PG 157	25.7	21.8	PARTIALLY EXTINGUISHED [4]
E	5-20-0001-01	EASEMENT	DEANNA WHITEHAIR	DEANNA WHITEHAIR	9/21/1983	BK 199, PG 157		14.5	
3	5-20-0001-01	FEE SIMPLE	KIRK & PHYLLIS NEMECHEK	KIRK & PHYLLIS NEMECHEK	10/11/1983	BK 199, PG 217-218	50.4	50.4	
F	5-20-0001-01	EASEMENT	KIRK & PHYLLIS NEMECHEK	KIRK & PHYLLIS NEMECHEK	10/11/1983	BK 199, PG 217-218	6.7	2.3	PARTIALLY EXTINGUISHED [5]
G		EASEMENT	DARLENE & KENNETH THOMPSON	DARLENE & KENNETH THOMPSON	8/2/1984	BK 200, PG 418	7.2	7.2	
H	LOCAL	EASEMENT	LENA BENSON	NORTHWOOD INC.	6/11/1987	MISC BK 206, PG 405-408	6.0	6.0	
4	3-20-0001-03	FEE SIMPLE	DEANNA WHITEHAIR	CITY OF ABILENE	11/14/2006	BK 238, PG 41-43		24.9	
5	3-20-0001-03	FEE SIMPLE	DEANNA WHITEHAIR	CITY OF ABILENE	11/14/2006	BK 238, PG 41-43		3.9	

[1] TRACT 1 WAS REDUCED FROM 160 ACRES TO 102.9 ACRES WITH TRANSFER OF TRACTS D & E TO EASEMENT.

[2] TRACTS A & B WERE FULLY EXTINGUISHED WITH THE PURCHASE OF TRACT 3.

[3] TRACT C WAS FULLY EXTINGUISHED WITH THE PURCHASE OF TRACT 4.

[4] TRACT D WAS PARTIALLY (3.9 ACRES) EXTINGUISHED WITH PURCHASE OF TRACT 5.

[5] TRACT F WAS PARTIALLY (4.4 ACRES) EXTINGUISHED WITH THE PURCHASE OF TRACT G IN EASEMENT.

PROPERTY QUANTITY SUMMARY	
EXISTING PROPERTY (FEE)	207 ACRES
EXISTING PROPERTY (ESMT)	50 ACRES
PROPOSED PROPERTY (FEE)	39.5 ACRES
PROPOSED PROPERTY (ESMT)	0.8 ACRES

DATE | REVISIONS | NO.

ALP
PLAN UPDATE
JULY 15, 2020

EXHIBIT A PROPERTY MAP

AIRPORT LAYOUT PLAN UPDATE REPORT

ABILENE MUNICIPAL AIRPORT

benesch
engineers · scientists · planners
Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

DRAWN BY: JWM | DESIGNED BY: NWM | REVIEWED BY: BJW | DOCUMENTS CHECKED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

SHEET NO. 17 of 38

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 EXHIBIT A PROPERTY MAP.dwg] [Plot Date: 7/15/2020 9:55:19 AM] [Last Saved: 7/13/2020 9:15:01 AM; Bwaller]

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APPENDIX E

RUNWAY 17 & 35 PUBLISHED GPS APPROACH PROCEDURES

benesch

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WAAS	APP CRS	Rwy Idg	4100
CH 63234	173°	TDZE	1153
W17A		Apt Elev	1153

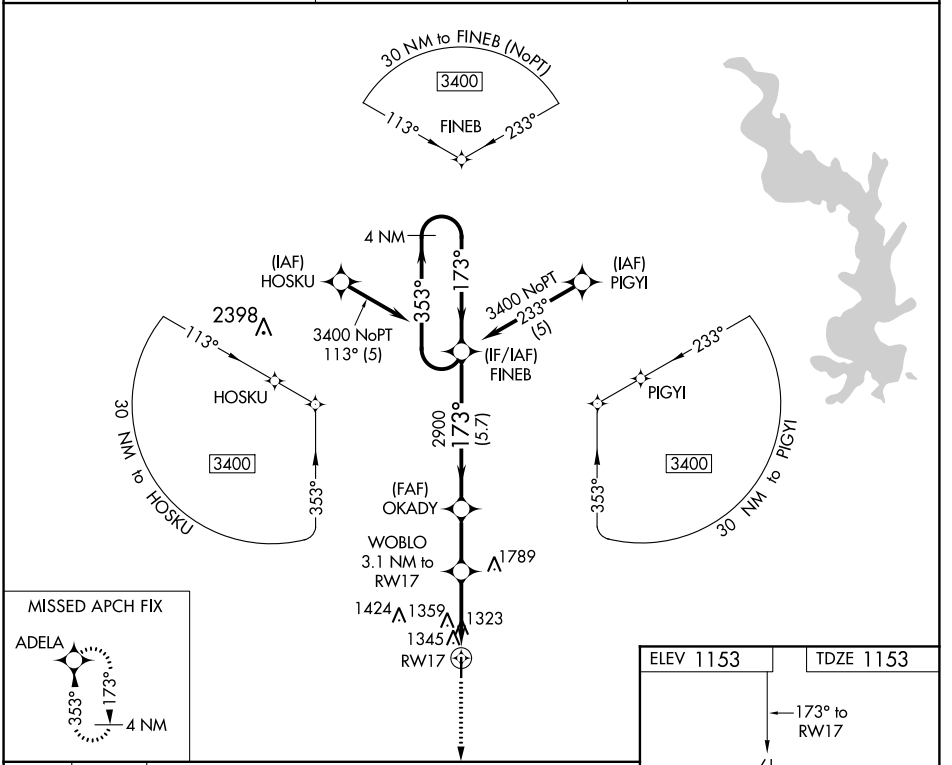
RNAV (GPS) RWY 17

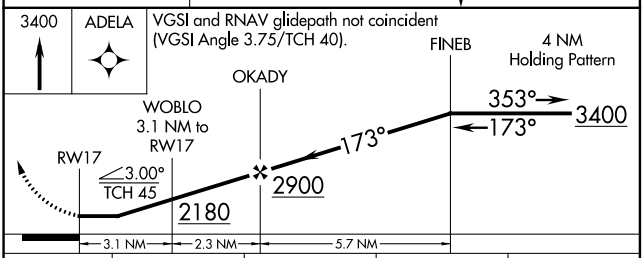
ABILENE MUNI (K78)

Rwy 17 helicopter visibility reduction below 1 SM NA. DME/DME RNP-0.3 NA.
Straight-in Rwy 17 NA at night, Circling Rwy 17 NA at night.
When local altimeter setting not received, use Salina altimeter setting.

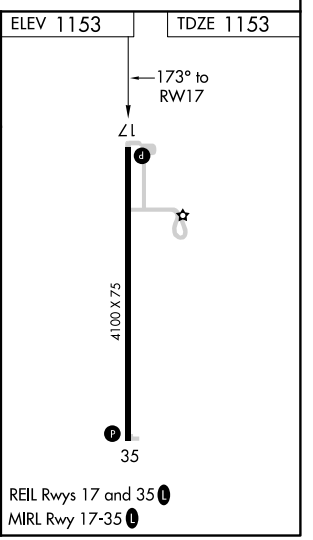
MISSED APPROACH: Climb to 3400 direct ADELA and hold.

AWOS-3	MARSHALL GCA ★	UNICOM
124.125	121.25 254.35	122.8 (CTAF) L





CATEGORY	A	B	C	D
LP MDA	1640-1 487 (500-1)		1640-1⅜ 487 (500-1⅜)	NA
LNAV MDA	1680-1 527 (600-1)		1680-1½ 527 (600-1½)	NA
C CIRCLING	1740-1 587 (600-1)		1980-2½ 827 (900-2½)	NA



NC-2, 09 NOV 2017 to 07 DEC 2017
NC-2, 09 NOV 2017 to 07 DEC 2017

WAAS	APP CRS	Rwy Idg	4100
CH 97734	353°	TDZE	1151
W35A		Apt Elev	1153

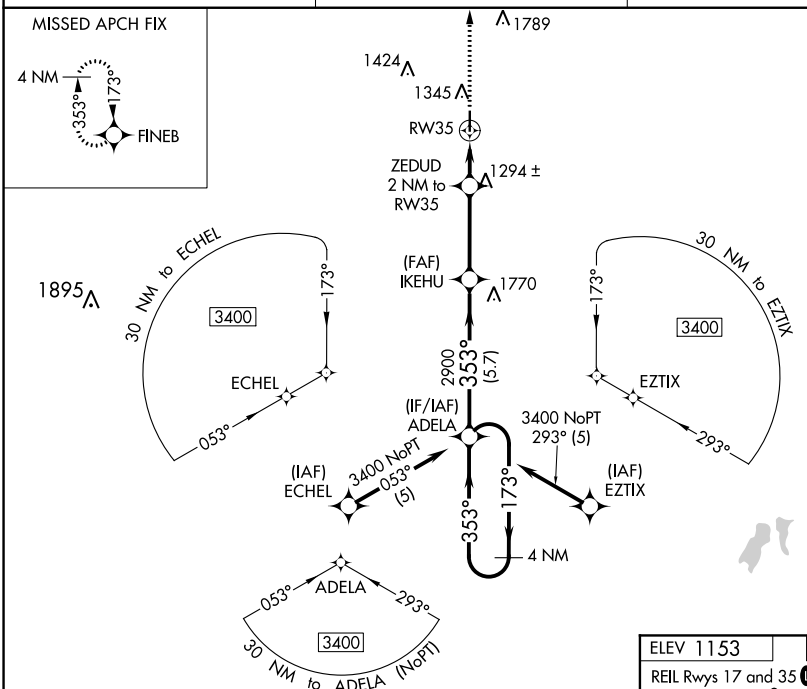
RNAV (GPS) RWY 35

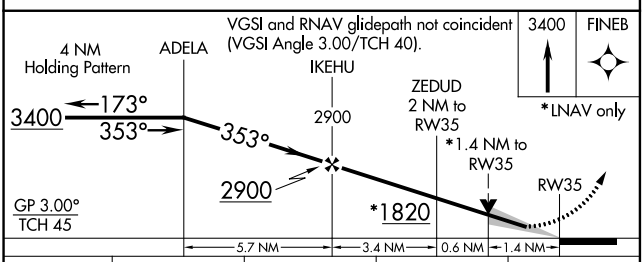
ABILENE MUNI (K78)

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below 17°C (2°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. Baro-VNAV and VDP NA when using Salina altimeter setting. When local altimeter setting not received, use Salina altimeter setting. Circling Rwy 17 NA at night.

MISSED APPROACH: Climb to 3400 direct FINEB and hold.

AWOS-3	MARSHALL GCA★	UNICOM
124.125	121.25 254.35	122.8 (CTAF) L



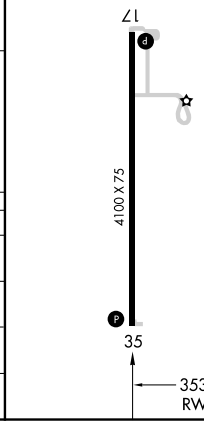


CATEGORY	A	B	C	D
LPV DA	1468-1 317 (400-1)			NA
LNAV/VNAV DA	1468-1 317 (400-1)			NA
LNAV MDA	1620-1 469 (500-1)		1620-1⅜ 469 (500-1⅜)	NA
C CIRCLING	1740-1 587 (600-1)		1980-2½ 827 (900-2½)	NA

ELEV 1153 TDZE 1151

REIL Rwys 17 and 35 L

MIRL Rwy 17-35 L



NC-2, 09 NOV 2017 to 07 DEC 2017
NC-2, 09 NOV 2017 to 07 DEC 2017

VORTAC SLN	APP CRS	Rwy Idg	N/A
117.1	087°	TDZE	N/A
Chan 118		Apt Elev	1153

VOR-A

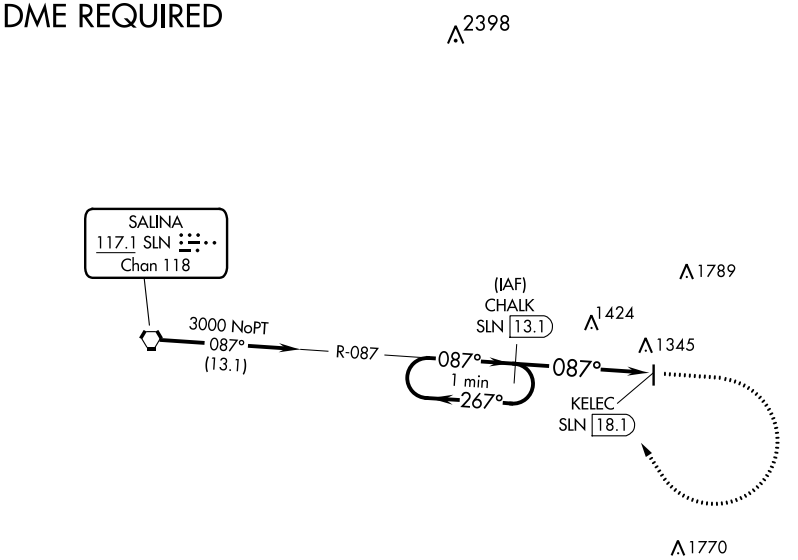
ABILENE MUNI (K78)

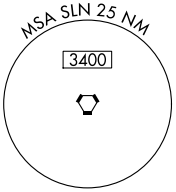
DME required. When local altimeter setting not received, use Salina altimeter setting. Rwy 17 helicopter visibility reduction below 1 SM NA. Circling Rwy 17 NA at night.

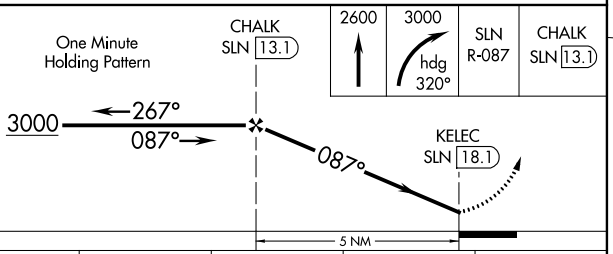
MISSED APPROACH: Climb to 2600 then climbing right turn to 3000 on heading 320° and SLN VORTAC R-087 to CHALK/13.1 DME and hold.

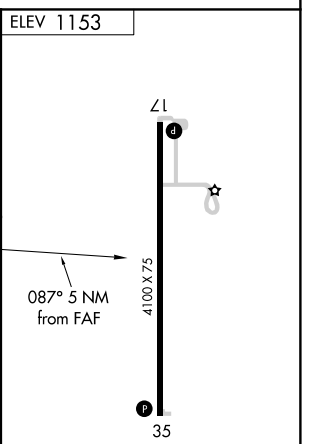
AWOS-3	MARSHALL GCA★	UNICOM
124.125	121.25 254.35	122.8 (CTAF) L

DME REQUIRED









CATEGORY	A	B	C	D
C CIRCLING	1760-1 607 (700-1)		1980-2½ 827 (900-2½)	NA

REIL Rwys 17 and 35 L

MIRL Rwy 17-35 L

NC-2, 09 NOV 2017 to 07 DEC 2017

NC-2, 09 NOV 2017 to 07 DEC 2017

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APPENDIX F

KANSAS AVIATION ECONOMIC IMPACT STUDY 2010 (KAEIS) - EXECUTIVE SUMMARY

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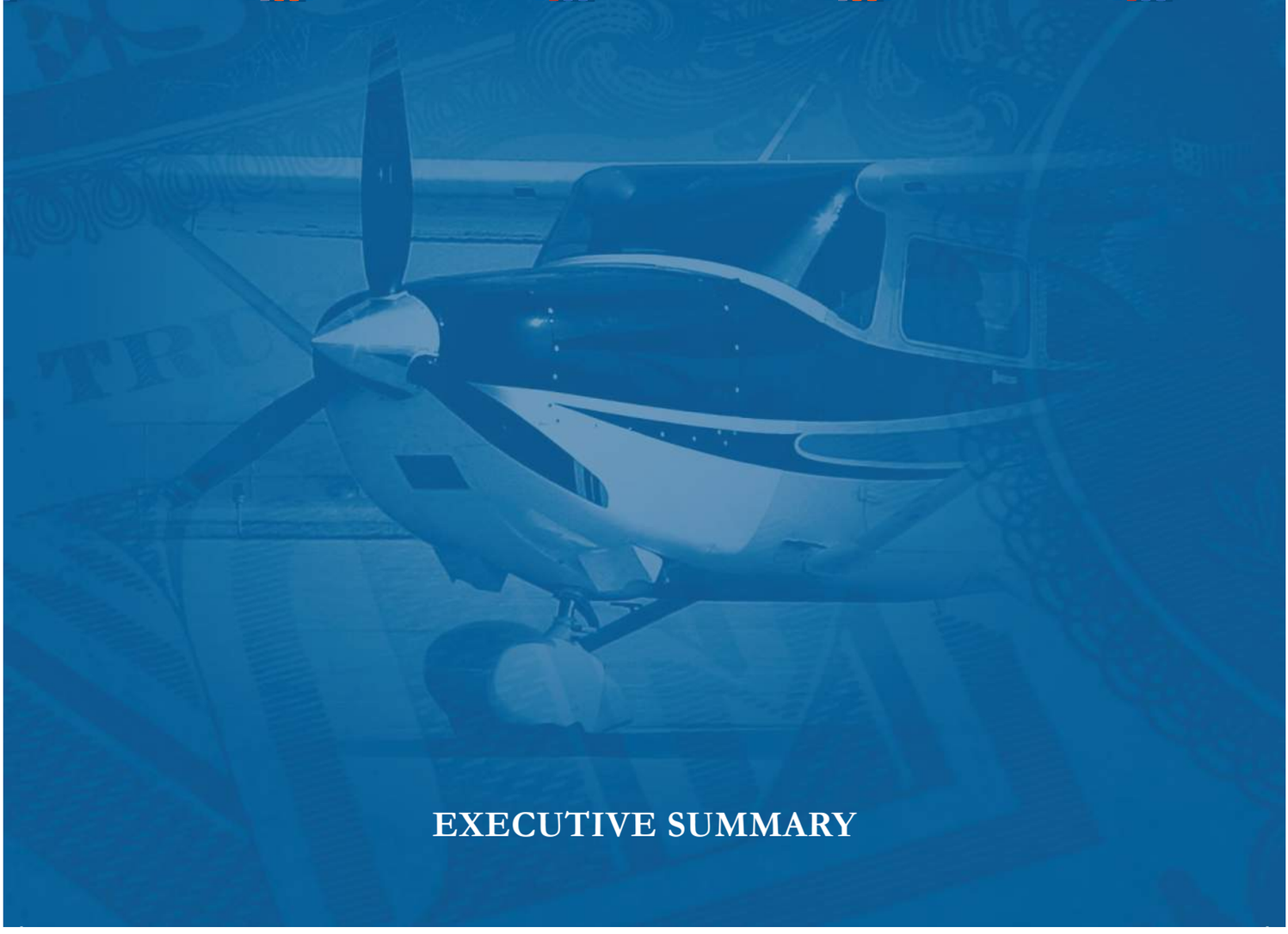
Kansas AVIATION

Kansas Aviation Economic Impact Study



EXECUTIVE SUMMARY

INTRODUCTION

The history of aviation and Kansas are intertwined. The state is home to many aviation pioneers, including Clyde Cessna, Lloyd Stearman, and Walter and Olive Beech. Wichita's early commitment to aircraft manufacturing earned it the title "Air Capital of the United States" in the 1920s. Cities and towns across Kansas are now home to some of the world's leading aerospace manufacturing companies as well as their suppliers. Without the rich history of aircraft manufacturing in Kansas, the aviation industry would not be what it is today, and the Kansas economy would be drastically smaller in size.

Air transportation benefits Kansas in a variety of ways. Airports in Kansas are the gateway to the nation's air transportation system and the world's economy. Air transportation is essential in today's global marketplace. It helps attract and retain businesses in communities throughout the state. Air transportation is not only important to businesses in Kansas, it also helps to support tourism, agriculture, emergency medical services, the military, and public safety. Each airport is an important component of the Kansas Aviation System.

STUDY OVERVIEW

Economic impacts were identified for eight commercial and 132 general aviation airports. This study focused on identifying economic benefits associated with the businesses and tenants that are located on each of the airports. Spending by visitors who arrive in Kansas by air also results in significant economic impacts each year, and this study calculated these benefits.

Airports throughout the state contribute to Kansas' economy through a variety of activities. This study explored several unique industries and aviation-related areas that help Kansas in ways that are not as easily quantified. This study analyzed the aviation benefits residents of Kansas derive from:

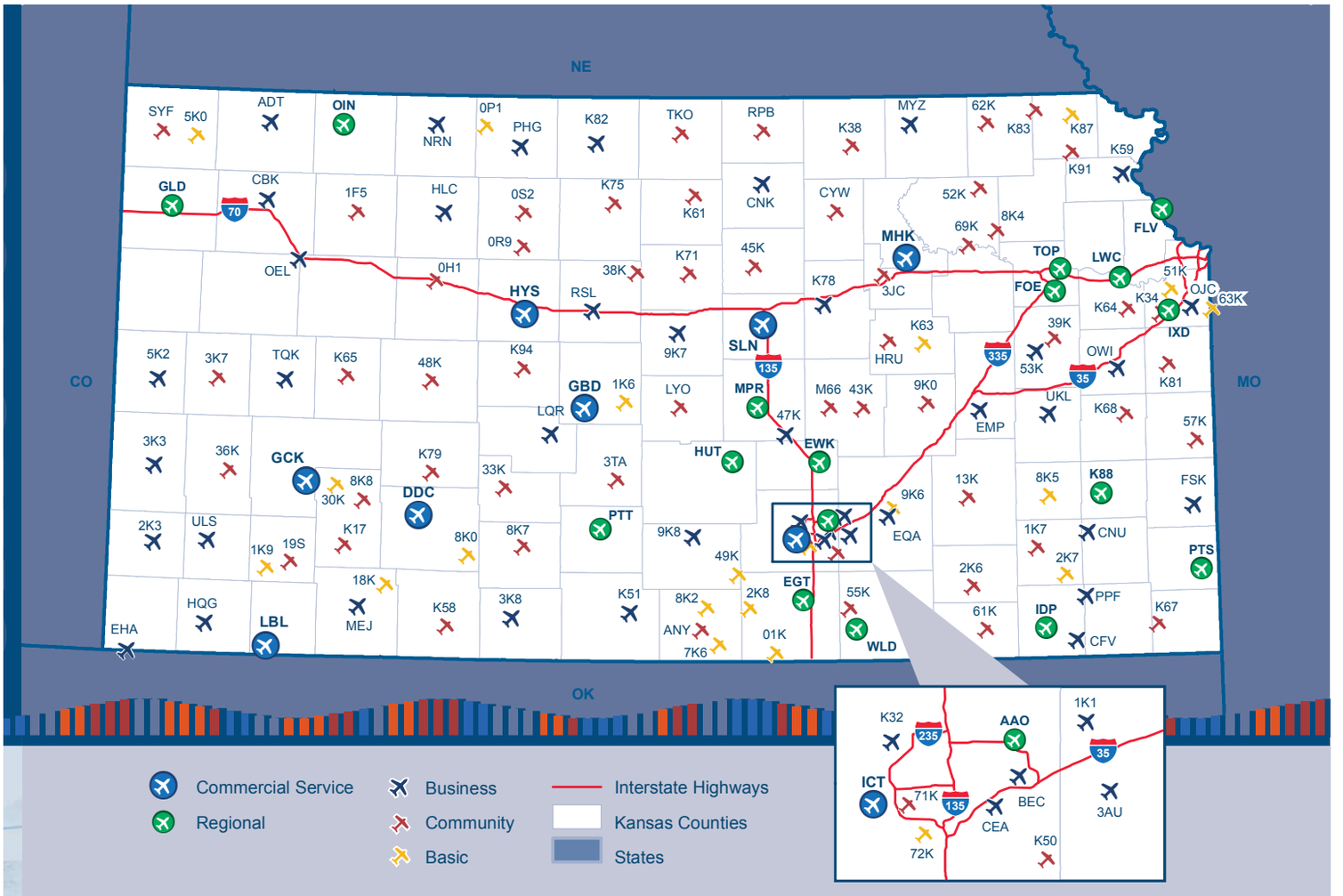
- Airport and Heliport Use by Hospitals
- Agricultural Application
- Off-Airport Aerospace Manufacturing
- Value Added Benefits from Off-Airport Aviation Dependent Businesses
- Qualitative Airport Benefits
- Kansas City International Airport

Airports in Kansas:

Support
47,651
JOBS

Generate
$2.3 BILLION
IN PAYROLL

Produce
$10.4 BILLION
IN ECONOMIC ACTIVITY



AIRPORT ROLE

COMMERCIAL SERVICE AIRPORTS – Airports that accommodate scheduled commercial airline service

REGIONAL AIRPORTS – Airports that accommodate regional economic activities, connect the state and national economies, and serve all types of general aviation users

BUSINESS AIRPORTS – Airports that accommodate local business activities and general aviation users

COMMUNITY AIRPORTS – Airports that serve a supplemental role in local economies, primarily serving smaller business, and personal flying

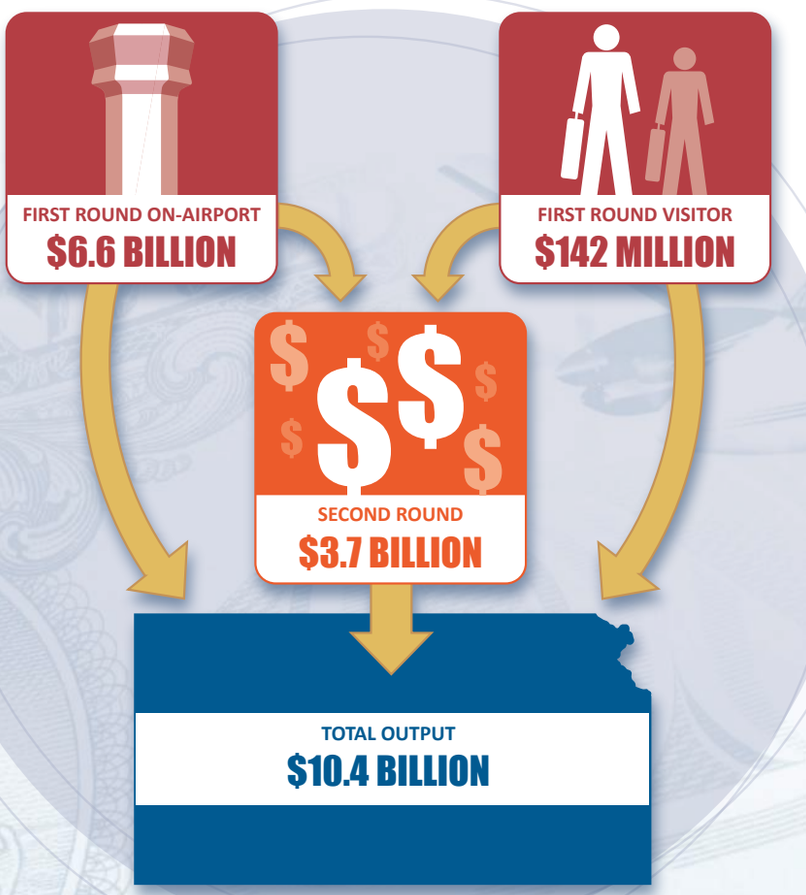
BASIC AIRPORTS – Airports that serve a limited role in the local economy, primarily serving personal flying

STUDY METHODOLOGY

Airports create economic impacts in a variety of ways. On-airport businesses, such as airlines, flight schools, agricultural sprayers, corporate flight departments, aircraft mechanics, and government entities including airport sponsors and the Federal Aviation Administration are responsible for tens of thousands of jobs and extensive capital projects at airports throughout Kansas. These are the first round direct benefits of Kansas airports. Visitors arriving on commercial service airlines and general aviation aircraft spend money for hotels, restaurants, retail, and entertainment, which creates additional jobs and economic benefits. These are the first round indirect benefits of Kansas airports.

The methodology used to quantitatively estimate these benefits involved on-site data gathering and surveys mailed to airports and their tenants to tabulate the direct benefits of airports and their tenants. A survey also sampled general aviation visitors' spending habits while traveling to determine their indirect benefits. Kansas specific ratios were used to convert this spending into jobs and payroll. As these first round benefits are released into the statewide economy, additional second round benefits are created. For example, when airport managers use their salary to buy groceries, this spending helps support additional economic activity. This spending recirculates or multiplies until the benefits ultimately leak outside of Kansas. Second round benefits for this study were calculated using Kansas specific multipliers. In general, for every $100 of first round benefits generated by aviation-related businesses, an additional second round benefit of $55 is created. The total economic benefit is the sum of first round and second round benefits.

The quantitative benefits of Kansas' airport system are expressed as jobs, payroll, and output. Jobs are expressed as full-time equivalents, where any part-time job is treated as half a full-time job. Payroll includes all wages, salaries, and benefits paid to employees. Output is a measure of annual economic activity equivalent to the annual revenues of a business or the annual expenditures of a visitor or organization that does not generate revenues.



IMPACT MEASURES

For this study, economic impacts are expressed in terms of employment, payroll, and total economic activity or output. For each of these measures, first round and second round impacts were calculated.

EMPLOYMENT

Thousands of jobs in Kansas are directly created by businesses, tenants, and other activities located at commercial service and general aviation airports. In addition to on-airport jobs, spending by Kansas visitors arriving via a commercial service or general aviation airport supports additional indirect employment. For this study, jobs were measured in terms of full-time equivalents, where any part-time job was treated as half a full-time job. In total, Kansas airports support 47,651 jobs.

PAYROLL

As noted above, aviation in Kansas supports an estimated 47,651 first and second round jobs. All of these jobs have annual wages, salaries, and benefits that contribute to the payroll impacts identified in this study. Study findings estimate that the commercial service and general aviation airports generate $2.3 billion in annual payroll benefits.

OUTPUT

The value of the goods and services produced by airports and related aviation activities is the economic output of that airport. The output of on-airport businesses is estimated as the sum of annual gross revenues and average annual capital expenditures. For organizations that do not produce revenues (such as corporate flight departments), annual payroll and expenses are substituted for annual revenues. This study concluded that commercial service and general aviation airports in Kansas currently contribute $10.4 billion in total economic impacts to state, regional, and local economies each year. Aerospace manufacturing is tied to 83 percent of this output.

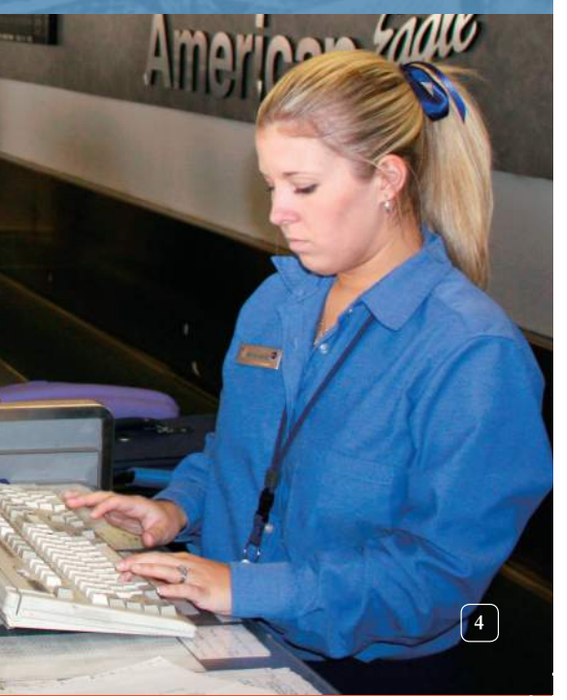
GENERAL AVIATION AIRPORTS	
JOBS	23,266
PAYROLL	$1.1 BILLION
OUTPUT	$5.4 BILLION

+

COMMERCIAL SERVICE AIRPORTS	
JOBS	24,385
PAYROLL	$1.3 BILLION
OUTPUT	$5.0 BILLION

=

TOTAL IMPACTS	
JOBS	47,651
PAYROLL	$2.3 BILLION
OUTPUT	$10.4 BILLION



ANNUAL ECONOMIC IMPACT OF

COMMERCIAL SERVICE AIRPORTS

Associated City	ID	Airport	Total Employment	Total Payroll	Total Output
Dodge City	DDC	Dodge City Regional	159	$5,267,500	$19,582,400
Garden City	GCK	Garden City Regional	187	$5,774,100	$25,296,900
Great Bend	GBD	Great Bend Municipal	119	$4,482,500	$12,199,000
Hays	HYS	Hays Regional	179	$5,769,100	$24,579,200
Liberal	LBL	Liberal Mid-America Regional	200	$6,122,500	$28,725,500
Manhattan	MHK	Manhattan Regional	233	$6,483,200	$22,888,900
Salina	SLN	Salina Municipal	995	$39,613,600	$146,843,800
Wichita	ICT	Wichita Mid-Continent	22,313	$1,196,316,900	$4,685,303,200
Commercial Service Airports Total			**24,385**	**$1,269,829,400**	**$4,965,418,900**

ANNUAL ECONOMIC IMPACT OF

GENERAL AVIATION AIRPORTS

REGIONAL AIRPORTS

Associated City	ID	Airport	Total Employment	Total Payroll	Total Output
Goodland	GLD	Renner Field-Goodland Municipal	125	$3,721,200	$15,465,400
Hutchinson	HUT	Hutchinson Municipal	169	$5,336,400	$15,182,400
Independence	IDP	Independence Municipal	2,066	$88,226,500	$578,142,300
Iola	K88	Allen County	31	$711,700	$2,871,600
Lawrence	LWC	Lawrence Municipal	96	$3,558,900	$10,722,800
Leavenworth	FLV	Sherman Army Airfield	30	$960,300	$2,701,000
McPherson	MPR	McPherson	34	$856,600	$2,369,800
Newton	EWK	Newton City/County	440	$16,712,000	$56,889,300
Oberlin	OIN	Oberlin Municipal	12	$177,900	$805,600
Olathe	IXD	New Century AirCenter	478	$24,907,400	$92,854,500
Pittsburg	PTS	Atkinson Municipal	54	$1,727,900	$7,114,500
Pratt	PTT	Pratt Regional	47	$1,228,100	$5,319,900
Topeka	FOE	Forbes Field	1,303	$54,134,500	$99,960,000
Topeka	TOP	Philip Billard Municipal	199	$6,800,700	$14,258,300
Wellington	EGT	Wellington Municipal	35	$1,025,400	$4,660,400
Wichita	AAO	Col. James Jabara	738	$33,592,300	$89,923,600
Winfield/Arkansas City	WLD	Strother Field	1,669	$156,983,300	$1,542,667,500

BUSINESS AIRPORTS

Abilene	K78	Abilene Municipal	18	$359,400	$1,069,600
Atchison	K59	Amelia Earhart	7	$162,900	$499,400
Atwood	ADT	Atwood-Rawlins County	30	$814,400	$5,908,500
Augusta	3AU	Augusta Municipal	122	$5,048,700	$23,753,300
Benton	1K1	Stearman Field	22	$519,600	$2,675,200
Burlington	UKL	Coffey County	15	$433,500	$1,993,900
Chanute	CNU	Chanute-Martin Johnson	35	$1,077,800	$3,160,000
Coffeyville	CFV	Coffeyville Municipal	15	$220,000	$1,120,900
Colby	CBK	Shalz Field	20	$596,000	$4,036,800
Coldwater	3K8	Comanche County	1	$19,400	$72,000
Concordia	CNK	Blosser Municipal	8	$134,800	$437,000
El Dorado	EQA	Capt. Jack Thomas	13	$496,500	$1,778,600
Elkhart	EHA	Elkhart-Morton County	11	$333,000	$2,440,900

ANNUAL ECONOMIC IMPACT OF

GENERAL AVIATION AIRPORTS *CONTINUED*

BUSINESS AIRPORTS *CONTINUED*

Associated City	ID	Airport	Total Employment	Total Payroll	Total Output
Ellsworth	9K7	Ellsworth Municipal	8	$242,800	$1,494,600
Emporia	EMP	Emporia Municipal	53	$2,160,100	$6,330,100
Fort Scott	FSK	Fort Scott Municipal	8	$200,100	$1,238,000
Hill City	HLC	Hill City Municipal	13	$292,700	$1,513,700
Hugoton	HQG	Hugoton Municipal	16	$490,000	$2,154,000
Johnson	2K3	Stanton County Municipal	41	$999,900	$6,142,200
Kingman	9K8	Kingman-Clyde Cessna Field	13	$228,500	$994,100
Larned	LQR	Larned-Pawnee County	11	$326,900	$2,243,100
Marysville	MYZ	Marysville Municipal	7	$334,600	$813,400
Meade	MEJ	Meade Municipal	7	$178,400	$1,178,600
Medicine Lodge	K51	Medicine Lodge	less than 1	$27,600	$146,400
Moundridge	47K	Moundridge Municipal	16	$583,700	$2,559,700
Norton	NRN	Norton Municipal	10	$299,100	$2,304,100
Oakley	OEL	Oakley Municipal	26	$557,300	$3,916,000
Olathe	OJC	Johnson County Executive	377	$10,012,500	$36,608,900
Osage City	53K	Osage City Municipal	45	$2,077,100	$7,071,600
Ottawa	OWI	Ottawa Municipal	10	$233,000	$875,100
Parsons	PPF	Tri-City	19	$407,800	$1,810,700
Phillipsburg	PHG	Phillipsburg Municipal	8	$262,100	$1,977,700
Russell	RSL	Russell Municipal	13	$340,900	$1,856,700
Scott City	TQK	Scott City Municipal	17	$394,600	$1,916,700
Smith Center	K82	Smith Center Municipal	17	$470,600	$3,018,100
Syracuse	3K3	Syracuse-Hamilton County Municipal	29	$724,100	$4,532,200
Tribune	5K2	Tribune Municipal	5	$151,800	$899,700
Ulysses	ULS	Ulysses	39	$1,189,400	$5,716,500
Wichita	BEC	Beech Factory	11,014	$486,998,500	$1,783,759,000
Wichita	CEA	Cessna Aircraft Field	3,020	$133,614,700	$890,973,900
Wichita	K32	Riverside	8	$177,700	$582,300

COMMUNITY AIRPORTS

Anthony	ANY	Anthony Municipal	3	$92,300	$517,200
Ashland	K58	Harold Krier Field	4	$120,200	$858,900
Baldwin City	K64	Vinland Valley Aerodrome	82	$2,959,200	$3,536,400
Belleville	RPB	Belleville Municipal	4	$111,100	$692,100
Beloit	K61	Moritz Memorial	18	$577,300	$2,265,100
Cimarron	8K8	Cimarron Municipal	1	$23,100	$130,300
Clay Center	CYW	Clay Center Municipal	14	$291,100	$1,081,400
Dighton	K65	Dighton	less than 1	$30,100	$66,800
Eureka	13K	Eureka Municipal	5	$189,000	$561,700
Fredonia	1K7	Fredonia	1	$4,400	$15,200
Gardner	K34	Gardner Municipal	15	$282,400	$1,008,800
Garnett	K68	Garnett Municipal	8	$277,400	$669,100
Greensburg	8K7	Paul Windle Municipal	1	$56,200	$424,000
Herington	HRU	Herington Regional	12	$249,400	$1,141,400
Hillsboro	M66	Alfred Schroeder Field	1	$41,500	$223,600
Hoxie	1F5	Hoxie-Sheridan County	13	$452,700	$3,485,800
Jetmore	K79	Jetmore Municipal	less than 1	$2,900	$16,900
Junction City	3JC	Freeman Field	91	$3,333,200	$12,608,600

ANNUAL ECONOMIC IMPACT OF

GENERAL AVIATION AIRPORTS *CONTINUED*

COMMUNITY AIRPORTS *CONTINUED*

Associated City	ID	Airport	Total Employment	Total Payroll	Total Output
Kinsley	33K	Kinsley Municipal	35	$1,424,500	$13,117,600
Lakin	36K	Lakin	11	$441,400	$1,541,700
Leoti	3K7	Mark Hoard Memorial	18	$635,800	$5,003,000
Lincoln	K71	Lincoln Municipal	11	$338,000	$2,561,700
Lyndon	39K	Pomona Lake	1	$26,400	$139,700
Lyons	LYO	Lyons-Rice County Municipal	28	$710,600	$3,591,400
Mankato	TKO	Mankato	5	$167,600	$941,200
Marion	43K	Marion Municipal	3	$62,300	$196,100
Minneapolis	45K	Minneapolis City-County	6	$119,300	$866,100
Montezuma	K17	Montezuma Municipal	10	$201,400	$1,223,900
Ness City	48K	Ness City Municipal	less than 1	$8,900	$38,000
Osborne	K75	Osborne Municipal	9	$147,900	$1,223,500
Oswego	K67	Oswego Municipal	2	$14,000	$81,400
Oxford	55K	Oxford Municipal	3	$66,400	$345,600
Paola	K81	Miami County	29	$952,500	$3,390,000
Pleasanton	57K	Gilmore	4	$91,000	$477,700
Rose Hill	K50	Cook Airfield	6	$115,900	$503,600
Sabetha	K83	Sabetha Municipal	less than 1	$22,300	$83,500
St. Francis	SYF	Cheyenne County Municipal	17	$306,700	$1,303,700
Stafford	3TA	Stafford Municipal	less than 1	$19,700	$38,900
Sublette	19S	Sublette Flying Club	3	$42,100	$173,600
WaKeeney	0H1	Trego WaKeeney	6	$124,000	$899,700
Wamego	69K	Wamego Municipal	1	$30,800	$184,100
Washington	K38	Washington County Memorial	13	$277,600	$1,445,700
Wichita	71K	Westport	11	$310,100	$1,170,100

BASIC AIRPORTS

Anthony	7K6	Wilcox Field	7	$46,400	$52,500
Bird City	5K0	Bressler Field	11	$227,500	$660,200
Ellinwood	1K6	Ellinwood Municipal	11	$423,800	$3,312,500
Harper	8K2	Harper Municipal	5	$172,700	$1,344,700
Ingalls	30K	Ingalls Municipal	7	$281,600	$2,341,100
Neodesha	2K7	Neodesha Municipal	1	$27,800	$124,600
Olathe	51K	Cedar Air Park	10	$90,800	$288,100
Satanta	1K9	Satanta Municipal	3	$119,000	$920,600
Yates Center	8K5	Yates Center	less than 1	$500	$11,200

Other General Aviation Airports *	13	$52,400	$167,700
General Aviation Airports Total	**23,266**	**$1,072,046,800**	**$5,444,550,100**

ALL AIRPORTS TOTAL	**47,651**	**$2,341,876,200**	**$10,409,969,000**

*** Other General Aviation Airports include:** Argonia Municipal, Bucklin, C.E. Grutzmacher Municipal, Caldwell Municipal, Cotton Wood Falls, Council Grove Municipal, Elk County, Fowler, Hiawatha Municipal, Hillside, Horton Municipal, Lucas, Norwich, Patty Field, Plainville Airpark, Rush County, Sedan City, Seneca Municipal, St. Marys Airpark, Stockton Municipal, Van Pak, and Westport Auxiliary.

ADDITIONAL AREAS OF ECONOMIC BENEFIT TO KANSANS

Certain areas of aviation provide benefits to Kansas that are not captured in the traditional economic model process described previously. This study evaluated several additional areas of economic benefit to Kansas and its residents.

Economic impact for airport and heliport use by hospitals:

Lives, Health, Service

AIRPORT AND HELIPORT USE BY HOSPITALS

In purely economic terms, aviation use by the healthcare industry is only a tiny part of aviation's overall impact. However, aviation serves a critical role in providing communities, especially those in rural areas, with access to medical services. The ability to rapidly and safely move patients and medical personnel throughout Kansas is an aviation benefit that cannot be measured solely in terms of jobs, payroll, and economic output. Lives are improved, in some cases saved, and these outcomes are difficult to assign an economic value. Through a survey of nearly 200 hospitals across Kansas, it was determined that hospitals on average host eight specialty clinics a month with doctors flying long distances from major cities to conduct the clinics. Hospitals also rely on the use of helicopters and fixed wing aircraft to transfer patients both in and out of Kansas. In addition to using airports to move doctors and patients around the state, hospitals also use airports to move a variety of medical items and important paperwork via air cargo or overnight delivery services.

AGRICULTURAL APPLICATION

As part of the "Grain Belt," Kansas plays a major role in the production of agriculture products for the nation and the world. In 2009, Kansas harvested more than 21 million acres of crops valued at nearly $7 billion, which places Kansas among the top 10 states in agriculture production. Aviation has a significant role in supporting the Kansas agriculture industry. In general, agricultural applicators apply pesticides to crops without negatively impacting yield as ground rigs can to certain crops. Agricultural applicators are also used to respond quickly to outbreaks of plant disease or insect infestation. Without these actions by agricultural application operators, some or even all of the economic value of a crop can be lost.

Economic impact of crop value attributed to agricultural applicators:

Up to $1.2 billion

OFF-AIRPORT AEROSPACE MANUFACTURING

Aviation and aerospace companies make up a large sector of the Kansas economy. The state has attracted many businesses that are engaged in the development, production, and manufacturing of aircraft, aviation support systems, aircraft components, and other aviation and aerospace-related products. In some instances, these aviation-related businesses are located on-airport. However, a substantial portion of the aerospace manufacturing industry takes place at locations other than airports. With a rich aviation history, it is no surprise that aerospace manufacturing plays such an important role in the Kansas economy.

Economic impact for off-airport aerospace manufacturing:

Jobs	**47,000**
Payroll	**$1.6 billion**
Output	**$9.5 billion**

OFF-AIRPORT AVIATION DEPENDENT BUSINESSES

Many employers in Kansas, while not located directly on the airport, benefit from the proximity and availability of the state's airports. Businesses rely on airports to provide transportation or to move goods quickly. Without these airports, many companies in the state would experience adverse effects in business activity levels. A survey of Kansas businesses found that many businesses in the region depend on the state's airports for the transport of employees, clients and suppliers as well as goods. Without access to these airports, some companies would be forced to cut employment or possibly locate outside of Kansas. Based on this survey, an estimated 67,000 Kansas jobs exist in non-aviation companies because of the availability of aviation services in Kansas.

Off-Airport Aviation Dependent Businesses support:

Increased Jobs & Business Activity

QUALITATIVE AIRPORT BENEFITS

Beyond the quantitative aspects of aviation benefits, there are also qualitative benefits that deserve consideration when the total value of an airport system is analyzed. Qualitative benefits are those activities which take place at an airport on a regular basis that add to the quality of life, but are difficult to assign a dollar value. One example is the use of aviation in disaster response plans. The Kansas Highway Patrol, Civil Air Patrol, and Kansas National Guard all use aviation assets during emergencies to provide aid. For example, during winter storms, the Kansas Highway Patrol uses aircraft to locate stranded motorists, and the Kansas National Guard flies food to cattle that ranchers are unable to reach. Aviation is also an integral part of the Western Kansas Weather Modification Program. Cloud seeding by aircraft was estimated to produce $4 million in annual benefits through the reduction of crop-damaging hail.

Qualitative benefits typically enhance the health, welfare, or safety of individuals in the airport's market area. While it may be difficult to place a dollar value on these activities, the benefits resulting from these activities improve the quality of life of Kansas' residents in numerous ways.

KANSAS CITY INTERNATIONAL AIRPORT

This study examined the positive benefits that airports within Kansas provide the state and its people. However, one major airport outside the state – Kansas City International Airport – is close enough and has a large enough market area that its influence is felt within Kansas. In fact, two reliever airports that support metropolitan general aviation activity, are located in Kansas. With 12 airlines providing scheduled service and 5.8 million annual passenger enplanements, Kansas City International was evaluated to determine its economic benefit to Kansas.

Kansas economic impact for Kansas City International Airport:

Jobs	**25,400**
Payroll	**$537.9 million**
Output	**$1.8 billion**

Some examples of the qualitative benefits of aviation at Kansas system airports include:

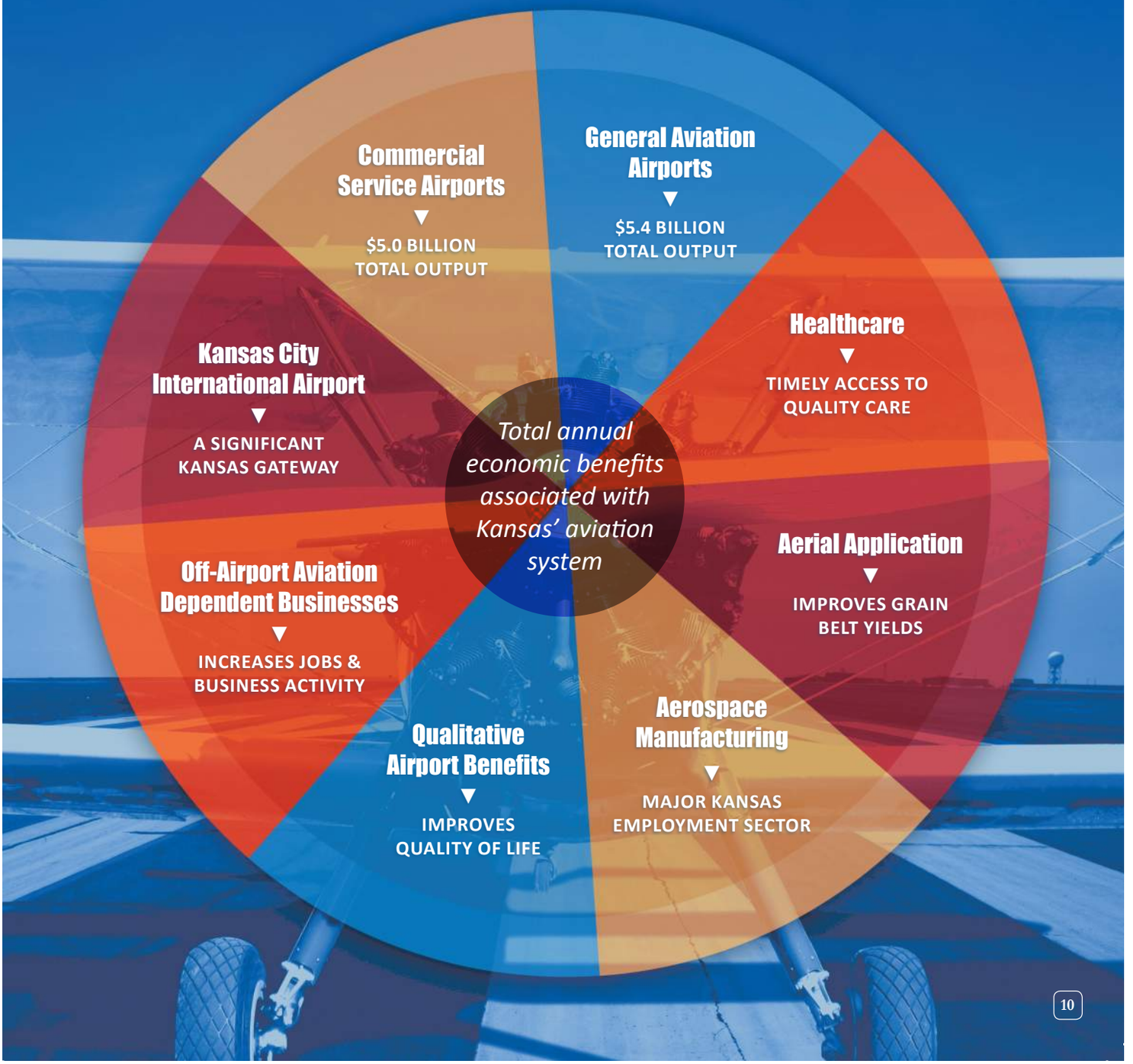
- Supporting rangeland firefighting efforts
- Supporting the U.S. military and other government organizations
- Conducting search-and-rescue operations
- Serving as a staging area for community events
- Providing police support
- Assisting with prisoner transport
- Providing entertainment opportunities, such as air shows
- Hosting school field trips and other educational events

SUMMARY

In 2009, $10.4 billion in annual economic activity was supported by Kansas' Aviation System. To put things into perspective, the recently completed Kansas Airport System Plan concluded that approximately $665 million will be needed over the next 20 years to improve airports. This 20-year need is roughly 6 percent of what the Kansas Aviation System contributed to Kansas' economy in 2009!

Furthermore, the benefits of aviation extend well beyond the economic value found at Kansas' airports. Kansas farmers owe as much as $1.2 billion in crop value to the efforts of aerial applicators. Off-airport aerospace manufacturing contributes significantly to the Kansas economy. And, without aviation, the healthcare network in Kansas would not operate as effectively as it does.

It is clear that aviation and airports in Kansas have a significant positive impact on the economy and quality of life of the people of Kansas.



KANSAS
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APPENDIX G

ABILENE MUNICIPAL AIRPORT KAEIS SUMMARY

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Kansas AVIATION

Kansas Aviation Economic Impact Study

The Kansas Airport System

There is a strong relationship between Kansas' economy and aviation. The state's system of eight commercial service and 132 general aviation airports serves as an integral connection between Kansas businesses and residents and the ever-expanding global economy. Airports in Kansas help to both lead and sustain growth and economic diversification. Airports are important economic catalysts, supporting thousands of jobs and billions of dollars in economic activity. Most of Kansas' largest employers, as well as many smaller businesses, rely on the state's aviation system to reliably transport employees, customers, supplies, and products to and from their operations. Kansas' airports serve as the base of operations for a variety of businesses, including airlines, air cargo companies, flight instructors, charters, concessionaires, government entities, and many others. Kansas' tourism industry also depends on the state's system of airports to accommodate thousands of visitors each year.

Study Process

The Kansas Department of Transportation, Division of Aviation, commissioned this Federal Aviation Administration funded study to examine the relationship between the state's system of airports and the economy. The study follows an approved methodology that has successfully quantified the value of airports and airport systems throughout the United States.

The economic contribution of each airport in the Kansas airport system was measured in terms of employment, payroll, and output. Through a comprehensive survey process, the direct economic benefits related to on-airport businesses and government tenants, and the indirect benefits associated with visitor-related expenditures, were calculated for each airport. The multiplier effect of these airport activities was also calculated using multipliers that are specific to Kansas. For example, when an airport employee purchases local goods and services, that spending and re-spending generates additional economic activity in the region. The total economic impact is the sum of all direct, indirect, and multiplier impacts.

Statewide Impacts

When all of the impacts of Kansas' 140 airports are added together, 47,651 total jobs can be traced to the aviation industry. These employees receive more than $2.3 billion in total payroll, and generate nearly $10.4 billion in total economic activity. In addition, Kansas' airports provide a number of health, welfare, and safety benefits, the impacts including aerial agricultural spraying, medical transport and evacuation, flight training, law enforcement, wildlife management, military exercises, and search and rescue operations.

Kansas' Total Annual Economic Benefits from Aviation

Total Jobs	**47,651**
Total Payroll	**$2.3 BILLION**
Total Output	**$10.4 BILLION**

Impact Measures

Employment measures the number of full-time equivalent (FTE) jobs related to airport activity including on-airport construction. A part-time employee counts as half a full-time employee.

Payroll measures the total annual wages and benefits paid to all workers whose salaries are directly attributable to airport activity.

Economic Activity (Output) measures the value of goods and services related to airports in Kansas. The output of on-airport businesses is typically assumed to be the sum of annual gross sales and average annual capital expenditures.

Abilene Municipal (K78)

Abilene Municipal Airport is located in central Kansas, approximately one mile southwest of Abilene. The airport is included in the FAA's National Plan of Integrated Airport Systems (NPIAS), making it eligible to receive federal monies. Additionally, its role within the Kansas Aviation System Plan is identified as a Business airport, which is intended to accommodate local business activities and general aviation users.

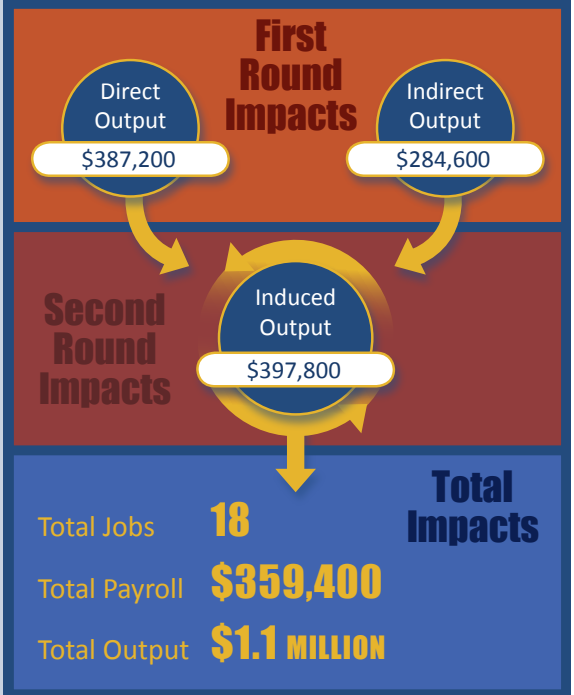
The Abilene Municipal Airport is a general aviation airport serving the City of Abilene and the surrounding communities. The airport's primary runway is 4,100 feet long and equipped with a non-precision approach. There is one fixed base operator on the field, Abilene Flying Service, which provides fuel, maintenance, hangar space, apron tie-downs, aircraft rental, and flight instruction.

The airport accommodates a variety of air traffic. Student pilots from Kansas State University use the runway for instrument training and touch-and-go practice. The airport is also used by business travelers, aerial applicators, medical personnel, law enforcement, Civil Air Patrol, and the Kansas Department of Wildlife and Parks. The airport attracts the flying public to visit local historical places, such as the Eisenhower Center and Presidential Library, Greyhound Hall of Fame and Registry, and the Brookville Hotel, as well as numerous local antique and specialty shops.

Abilene Municipal Airport serves an important role in getting critically injured patients to trauma centers around the state. Fixed wing aircraft provide this air ambulance service to transport patients to Wichita or Kansas City in order to access needed medical facilities.

Local clubs, groups, and civic organizations such as the boy scouts use the airport for educational programs and meetings. The airport also provides tours of the facility to the public and interested parties. The local Experimental Aircraft Association chapter regularly gives free airplane rides to children interested in aviation. The airport and its local pilots hold annual airport "fly-ins" and pancake breakfasts for both the flying and non-flying patrons. These events are provided to attract visitors to the community and to raise money to fund scholarships for Dickinson County residents who seek a career in the field of aviation.

Abilene Municipal



Impact Types

First Round Impacts include both direct and indirect impacts. Direct impacts are those benefits associated with on-airport businesses and government tenants. Indirect impacts generally take place off-airport and are usually attributable to visitor spending.

Second Round Impacts consist of induced impacts, which are those benefits that result from the re-circulation and re-spending of direct and indirect impacts within the economy. This re-circulation is commonly referred to as the "multiplier effect."

Total Impacts are the combination of all first-round and second-round impacts.

KANSAS DEPARTMENT OF TRANSPORTATION

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APPENDIX H

APRON SIZE CALCULATIONS

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Apron Size Calculations for Transient Aircraft

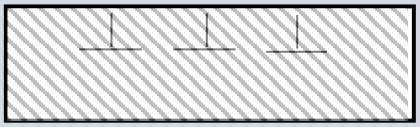
Airport	Abilene Municipal Airport - 2017 (Current)
Location	Abilene, KS

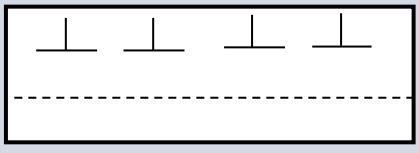
Existing Apron
square yards → 4500

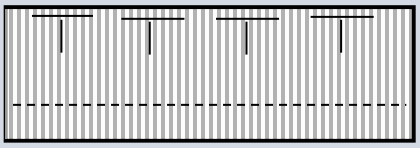
Calculations are based upon guidance established within Appendix 5 to AC 150/5300-13. User may calculate size of apron based upon total annual ops or user may develop an estimate of annual operations based upon number of based aircraft.

	Based Aircraft	OR	Total Annual Ops
1. Calculate the total annual operations			
Enter number of based aircraft →	19		
Enter number of operations per aircraft [1] →	150		
Total Annual Operations →	2,850		2,850
2. Busiest Month (% of Annual Ops) [2]			
Enter % of Annual Ops that occur in busiest month →	20		
Busiest Month Operations →	570		570
3. Busiest Day (10%>Avg Day)			
Enter Busiest Month (e.g. August) →	Jun		
Avg Day Busy Month →	19		19
Busiest Day 10% > avg. day →	21		21
4. # Itinerant Aircraft			
Enter % of Itinerant Operations [3] →	40		
# Itinerant Aircraft operations →	8		8
# Itinerant Aircraft Landing Operations →	4		4
Enter % of Itinerant Operations on ground →	50		
# Itinerant AC on ground (assume 50%) →	2		2
5. Apron area			
# square yards per aircraft [4] →	960		
Apron Area (sq yds) →	2,006		2,006
6. Planned Apron (10%>)			
# square yards →	2,207		2,207

NOTES:
1. Ops/Based Aircraft:
   Small GA-250 Med GA-350 Reliever-450 Busy Reliever-750
2. Amount of activity can be determined from fuel sales or from actual operations counts. For example if month with highest fuel sales accounts for 20% of annual sales, use 20% of annual as busy month. If actual traffic counts available, use those.
3. Assume 50% of operations are itinerant if no records are available.
4. Planning areas shown assume 10' clearance between wingtips. Taxilane @ edge places taxilane on edge of apron.
5. Users requiring assistance or reasonable accommodation may contact the FAA Central Region at 816-329-2600.







Apron Area	w/o Taxilane	w/Taxilane @ edge	w/Taxilane
Group I	360	755	960
Group II	490	1,075	1,385

Apron Size Calculations for Transient Aircraft

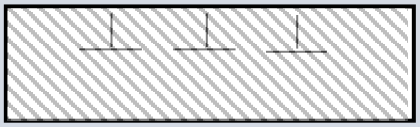
Airport Abilene Municipal Airport - 2022 (Short Term)
Location Abilene, KS

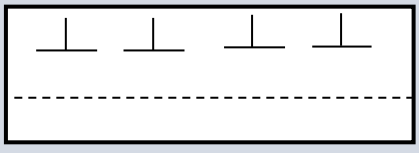
Existing Apron
square yards → 4500

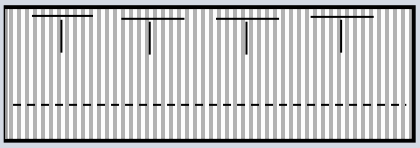
Calculations are based upon guidance established within Appendix 5 to AC 150/5300-13. User may calculate size of apron based upon total annual ops or user may develop an estimate of annual operations based upon number of based aircraft.

	Based Aircraft	OR	Total Annual Ops
1. Calculate the total annual operations			
Enter number of based aircraft →	21		
Enter number of operations per aircraft [1] →	165		
Total Annual Operations →	**3,465**		**3,465**
2. Busiest Month (% of Annual Ops) [2]			
Enter % of Annual Ops that occur in busiest month →	20		
Busiest Month Operations →	**693**		**693**
3. Busiest Day (10%>Avg Day)			
Enter Busiest Month (e.g. August) →	Jul		
Avg Day Busy Month →	**22**		**22**
Busiest Day 10% > avg. day →	**25**		**25**
4. # Itinerant Aircraft			
Enter % of Itinerant Operations [3] →	40		
# Itinerant Aircraft operations →	**10**		**10**
# Itinerant Aircraft Landing Operations →	**5**		**5**
Enter % of Itinerant Operations on ground →	50		
# Itinerant AC on ground (assume 50%) →	**2**		**2**
5. Apron area			
# square yards per aircraft [4] →	960		
Apron Area (sq yds) →	**2,361**		**2,361**
6. Planned Apron (10%>)			
# square yards →	**2,597**		**2,597**

NOTES:
1. Ops/Based Aircraft:
   Small GA-250 Med GA-350 Reliever-450 Busy Reliever-750
2. Amount of activity can be determined from fuel sales or from actual operations counts. For example if month with highest fuel sales accounts for 20% of annual sales, use 20% of annual as busy month. If actual traffic counts available, use those.
3. Assume 50% of operations are itinerant if no records are available.
4. Planning areas shown assume 10' clearance between wingtips. Taxilane @ edge places taxilane on edge of apron.
5. Users requiring assistance or reasonable accommodation may contact the FAA Central Region at 816-329-2600.







Apron Area	w/o Taxilane	w/Taxilane @ edge	w/Taxilane
Group I	360	755	**960**
Group II	490	1,075	**1,385**

Apron Size Calculations for Transient Aircraft

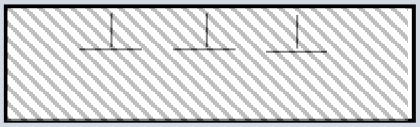
Airport Abilene Municipal Airport - 2027 (Intermediate)
Location Abilene, KS

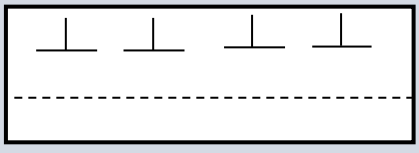
Existing Apron
square yards → 4500

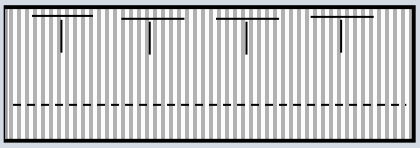
Calculations are based upon guidance established within Appendix 5 to AC 150/5300-13. User may calculate size of apron based upon total annual ops or user may develop an estimate of annual operations based upon number of based aircraft.

	Based Aircraft	OR	Total Annual Ops
1. Calculate the total annual operations			
Enter number of based aircraft →	22		
Enter number of operations per aircraft [1] →	182		
Total Annual Operations →	3,993		3,993
2. Busiest Month (% of Annual Ops) [2]			
Enter % of Annual Ops that occur in busiest month →	20		
Busiest Month Operations →	799		799
3. Busiest Day (10%>Avg Day)			
Enter Busiest Month (e.g. August) →	Jul		
Avg Day Busy Month →	26		26
Busiest Day 10% > avg. day →	28		28
4. # Itinerant Aircraft			
Enter % of Itinerant Operations [3] →	40		
# Itinerant Aircraft operations →	11		11
# Itinerant Aircraft Landing Operations →	6		6
Enter % of Itinerant Operations on ground →	50		
# Itinerant AC on ground (assume 50%) →	3		3
5. Apron area			
# square yards per aircraft [4] →	960		
Apron Area (sq yds) →	2,720		2,720
6. Planned Apron (10%>)			
# square yards →	2,992		2,992

NOTES:
1. Ops/Based Aircraft:
   Small GA-250 Med GA-350 Reliever-450 Busy Reliever-750
2. Amount of activity can be determined from fuel sales or from actual operations counts. For example if month with highest fuel sales accounts for 20% of annual sales, use 20% of annual as busy month. If actual traffic counts available, use those.
3. Assume 50% of operations are itinerant if no records are available.
4. Planning areas shown assume 10' clearance between wingtips. Taxilane @ edge places taxilane on edge of apron.
5. Users requiring assistance or reasonable accommodation may contact the FAA Central Region at 816-329-2600.







Apron Area	w/o Taxilane	w/Taxilane @ edge	w/Taxilane
Group I	360	755	960
Group II	490	1,075	1,385

Apron Size Calculations for Transient Aircraft

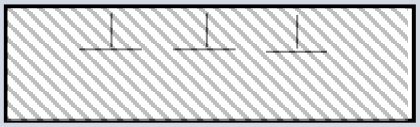
Airport	Abilene Municipal Airport - 2037 (Long Term)
Location	Abilene, KS

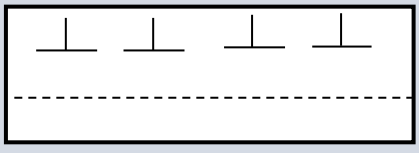
Existing Apron
square yards → 4500

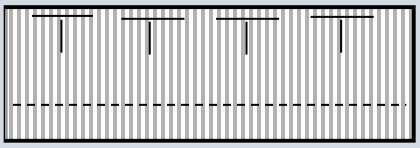
Calculations are based upon guidance established within Appendix 5 to AC 150/5300-13. User may calculate size of apron based upon total annual ops or user may develop an estimate of annual operations based upon number of based aircraft.

	Based Aircraft	OR	Total Annual Ops
1. Calculate the total annual operations			
Enter number of based aircraft →	24		
Enter number of operations per aircraft [1] →	200		
Total Annual Operations →	**4,792**		**4,792**
2. Busiest Month (% of Annual Ops) [2]			
Enter % of Annual Ops that occur in busiest month →	20		
Busiest Month Operations →	**958**		**958**
3. Busiest Day (10%>Avg Day)			
Enter Busiest Month (e.g. August) →	Jul		
Avg Day Busy Month →	**31**		**31**
Busiest Day 10% > avg. day →	**34**		**34**
4. # Itinerant Aircraft			
Enter % of Itinerant Operations [3] →	40		
# Itinerant Aircraft operations →	**14**		**14**
# Itinerant Aircraft Landing Operations →	**7**		**7**
Enter % of Itinerant Operations on ground →	50		
# Itinerant AC on ground (assume 50%) →	**3**		**3**
5. Apron area			
# square yards per aircraft [4] →	960		
Apron Area (sq yds) →	**3,264**		**3,265**
6. Planned Apron (10%>)			
# square yards →	**3,591**		**3,591**

NOTES:
1. Ops/Based Aircraft:
   Small GA-250 Med GA-350 Reliever-450 Busy Reliever-750
2. Amount of activity can be determined from fuel sales or from actual operations counts. For example if month with highest fuel sales accounts for 20% of annual sales, use 20% of annual as busy month. If actual traffic counts available, use those.
3. Assume 50% of operations are itinerant if no records are available.
4. Planning areas shown assume 10' clearance between wingtips. Taxilane @ edge places taxilane on edge of apron.
5. Users requiring assistance or reasonable accommodation may contact the FAA Central Region at 816-329-2600.







Apron Area	w/o Taxilane	w/Taxilane @ edge	w/Taxilane
Group I	360	755	**960**
Group II	490	1,075	**1,385**

APPENDIX I

AIRFIELD PAVEMENT MANAGEMENT REPORT FOR THE ABILENE MUNICIPAL AIRPORT

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AIRFIELD PAVEMENT MANAGEMENT REPORT
ABILENE MUNICIPAL AIRPORT

Prepared for the

KANSAS DEPARTMENT OF TRANSPORTATION
Topeka, KS

Kansas
Department of Transportation
Division of Aviation

December 2013

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SINCE 1898

R·D·M
Engineering Technology Research

Airfield Pavement Management Report

prepared for the

Kansas Department of Transportation

and the

Abilene Municipal Airport
Abilene, KS

December 2013

prepared by

Alfred Benesch & Co.
Manhattan, KS

With

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

And

Roy D. McQueen & Associates, Ltd.
Chantilly, VA

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1.0 INTRODUCTION

In 2011, Alfred Benesch & Company, in association with Burns & McDonnell and Roy D. McQueen and Associates, Ltd., was retained by the Kansas Department of Transportation (KDOT) to prepare a state-wide Airport Pavement Management System (APMS). The objective of the APMS is to evaluate the functional conditions of all airports in the State of Kansas listed in the National Plan of Integrated Airport Systems (NPIAS). The assessment of the APMS will be summarized in a report that allows the airport ownership as well as the State of Kansas to:

- Assess the current and projected functional condition (PCI) of pavement surfaces and catalogue of pavement distresses
- Assess the operational effectiveness of existing pavements based on current PCI and PCI projections
- Prioritize rehabilitation and/or maintenance needs
- Optimize timing for pavement rehabilitation projects
- Recommend pavement maintenance procedures

To achieve the objectives of the APMS, the following tasks will be performed:

- Records research
- Development of a Network Identification Drawing
- Condition Survey
- MicroPAVER and GIS implementation
- PCI Computation
- Maintenance and Rehabilitation analysis

The information contained in this report provides guidance in planning not only local, but also state and federal budgets for pavement asset management.

1.1 OVERVIEW OF KANSAS AVIATION

Based on the Kansas Aviation Economic Impact Study, the State of Kansas receives an economic benefit from aviation of roughly $10 billion based on the value of goods and services related to the airports in the state. Airport activity accounts for over $2 billion in wages and benefits for employees in the State of Kansas. Based on these demographics, it is of paramount importance that the assets associated with airports in the State of Kansas be maintained for the continued economic benefit realized by the

communities they serve. An Airport Pavement Management System is an excellent tool used to maintain and monitor the pavement assets associated with the State of Kansas Aviation system.

1.2 PAVEMENT CONDITION INDEX INSPECTIONS

The Alfred Benesch & Company team inspected a total of 43 NPIAS airports in the winter of 2012-2013. These inspections captured 100% of the publically owned pavements at each of the airports inspected. All inspections were conducted in accordance with ASTM D5340 – Standard Test Method for Airport Pavement Condition Index Surveys. A Network Identification Drawings was developed to organize the airport pavements into the following:

- **Branch – A single entity. Typically a branch is categorized as a runway, taxiway, or apron. As an example, Runway 17-35 is categorized as a branch.**
- **Section – A section is within a branch. Typically, a section is part of a branch and is separated based on perceived traffic, construction history, pavement types, etc. For example, the first 1,000 feet of a runway could be considered a separate traffic area.**
- **Sample Unit – A sample unit is a subdivision of a section. For asphalt concrete pavements, a sample unit is 5,000 contiguous square feet (±2,000 square feet). For Portland cement concrete pavements, a sample unit is 20 contiguous slabs (±8 slabs).**

Based upon the Network Identification Drawing, all sample units for each pavement section were inspected. The inspection catalogues the types, severity, quantity, and location of the distresses in order to provide the State and the airport owner an accurate location of each pavement defect. The inspection results were entered in MicroPAVER™ to compute the Pavement Condition Index (PCI) and rate the pavements. The PCI rating scale used for this program is shown in Figure 1.1.

Color	PCI Value	Description
	100-86	Good
	85-71	Satisfactory
	70-56	Fair
	55-41	Poor
	40-26	Very Poor
	25-11	Serious
	10-0	Failed

Figure 1.1: PCI Rating Scale

The scale presented in Figure 1.1 is the default scale provided by the ASTM D5340. This scale was used for clarity of usage and ease of data transfer to airport owners and the KDOT.

1.3 ABILENE MUNICIPAL AIRPORT

Abilene Municipal Airport (K78) is located approximately one mile southwest of Abilene in central Dickinson County in central Kansas. Weather conditions in the area are typical of the central plains. Typically, the area experiences hot summers with average highs at 95 degrees, cold winters with average highs at 30 degrees, and moderate annual precipitation of approximately 32 inches. The typical frost penetration is approximately 30 inches.

The airport features one paved runway. Runway 17-35 is the asphalt paved and primary runway. It is 4,100' x 175' and rated for 13,000 lb. Single Wheeled Gear (SWG) and 16,000 lb. Dual Wheeled Gear (DWG) aircraft. Taxiway A is parallel to Runway 17-35 and has four connecting taxiways. Connecting Taxiway TA-2 provides direct access from the primary runway to the general aviation apron and existing hangars.

According to the Kansas Aviation Economic Impact Study, the Abilene Municipal Airport contributes 18 total jobs and a total economic activity of just over $1.1 million. The airport is considered a general aviation airport and accommodates regional economic activities, connects state and national economies, and serves all types of general aviation aircraft. Pavement management is integral to the continued maintenance of the infrastructure at K78 in order for the businesses and community that use the airport to have continuing support within the community.

The Abilene Municipal Airport was also part of the Airport System Plan prepared by the Kansas Department of Transportation. This project provided recommended development costs for the airport, and pavement maintenance is included within the anticipated mid-term and long-term budgets of the airport. According to the system plan, the activity forecast for the airport is anticipated to increase steadily over the analysis period, thus providing justification for increased pavement management. The following sections provide the current pavement conditions and recommendations for further pavement improvements at the airport.

* * * * *

2.0 ABILENE MUNICIPAL AIRPORT PAVEMENT

2.1 PAVEMENT INVENTORY

A detailed pavement inventory is provided in Appendix A of this report. This inventory provides details regarding each pavement branch's general dimensions, structural type and section, age of structure (if known), drainage features, pavement usage, pavement strength (per current published documentation), priority, and any miscellaneous information. An aerial image of the existing pavement branches is illustrated in Figure 2.2.

The pavements at K78 were divided into branches, sections, and sample units in accordance with ASTM D 5340. Approximately 634,400 square feet of pavement was inspected at the airport. Figure 2.1 shows the distribution of pavement usages by branch and Figure 2.3 shows the distribution of pavement types.

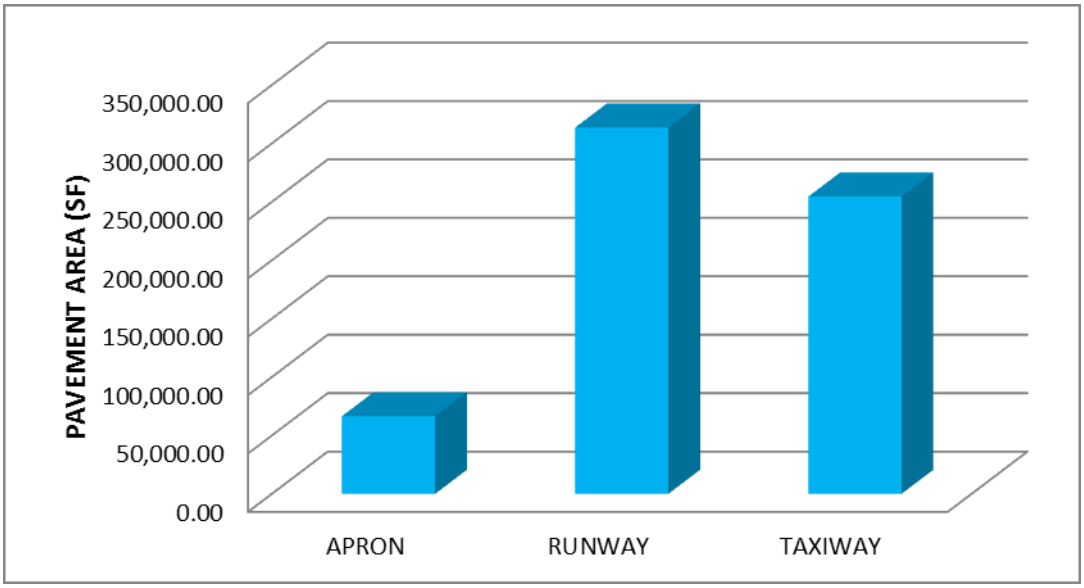

Figure 2.1: Pavement Area by Branch Usage

TA1
TTA1
TA
AA
TL3
TA2
TA5
TL1
TL2
R17
TA
TA4
TA3
TA3
0
250
500
Feet
N
Burns & McDonnell
SINCE 1898
Figure 2.2
K78 Pavement Branches
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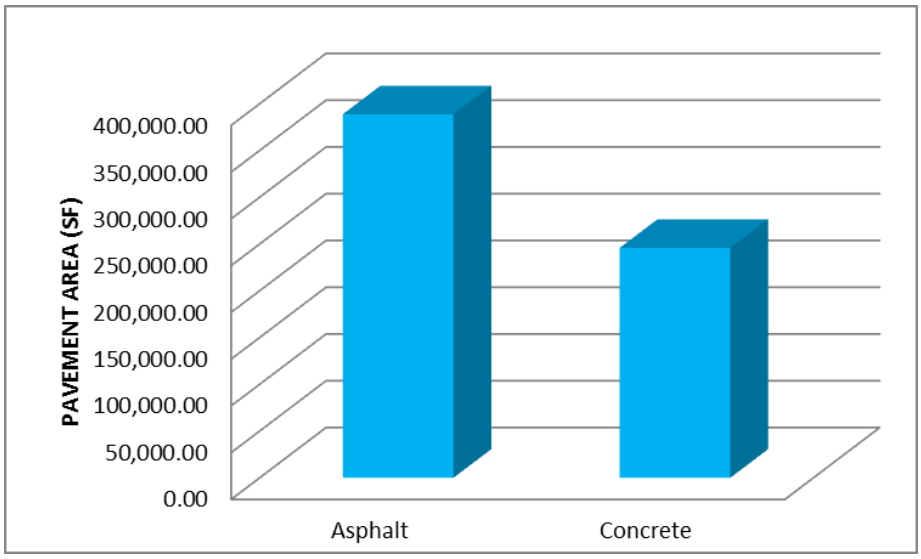


Figure 2.3: Pavement Area by Pavement Type

2.2 PAVEMENT CONDITION SURVEY

An inspection of the pavement systems at Abilene Municipal Airport was conducted on December 6, 2012. The inspection covered all relevant areas including aprons, taxiways, and runways. All distresses were recorded into the MicroPAVER™ software to compute the most current Pavement Condition Index (PCI). Currently, 77% of the pavement area inspected is considered to be in satisfactory to good condition as illustrated in Figure 2.4.

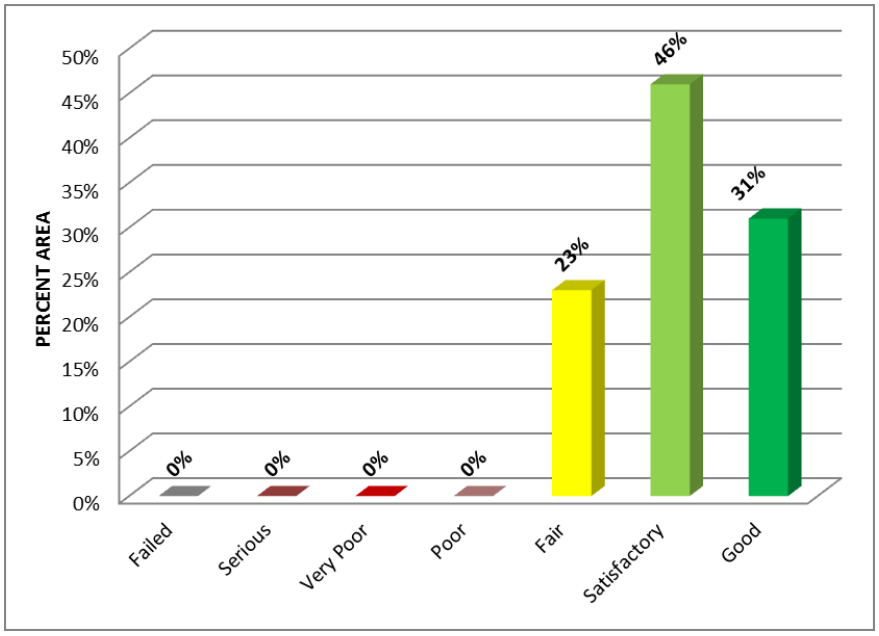
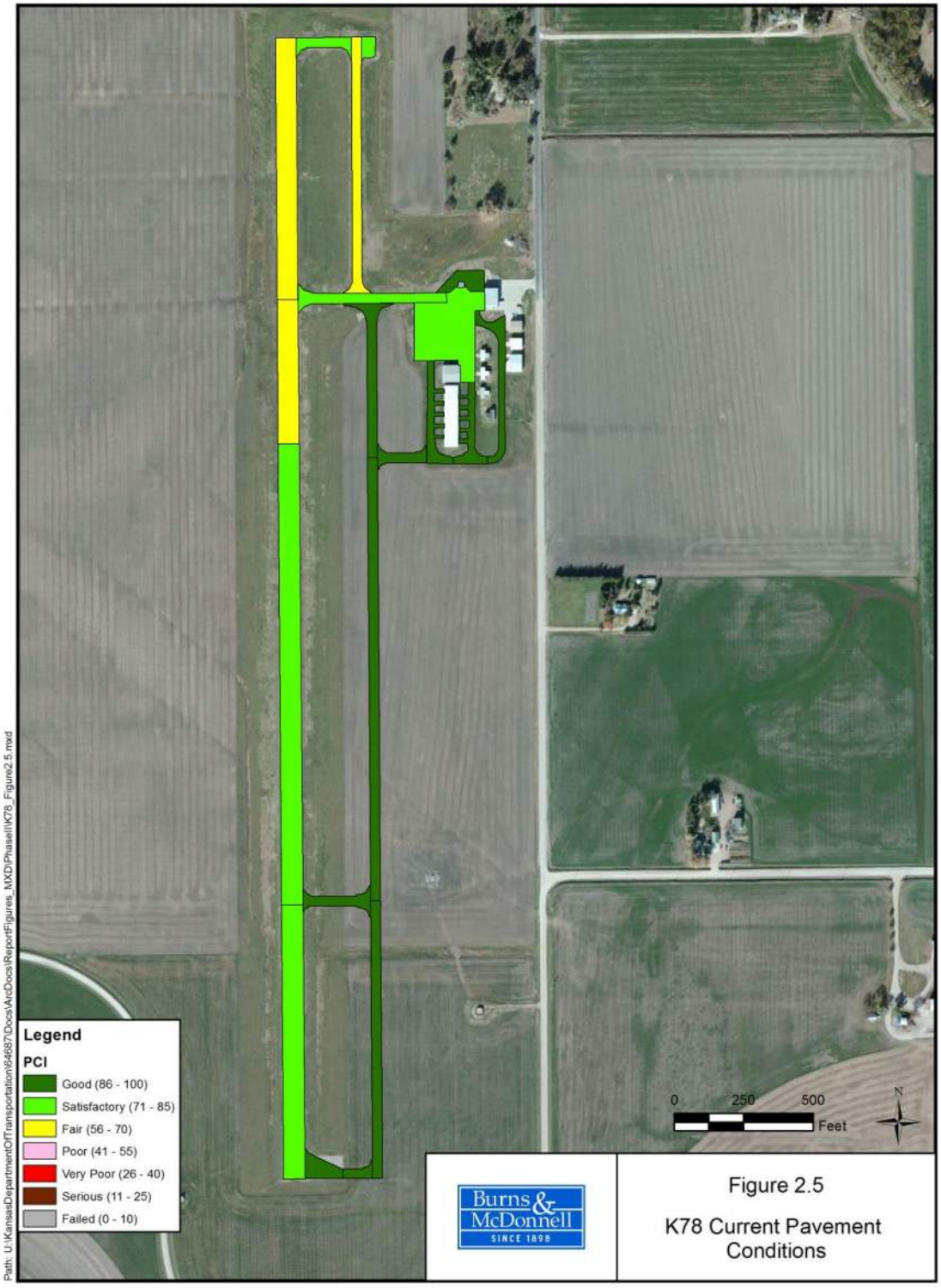


Figure 2.4: Pavement Condition by Area

An aerial photo with the pavement condition of each pavement section is provided in Figure 2.5, and the breakdown of each branch's weighted PCI is identified in Table 2.1.


Legend
PCI
Good (86 - 100)
Satisfactory (71 - 85)
Fair (56 - 70)
Poor (41 - 55)
Very Poor (26 - 40)
Serious (11 - 25)
Failed (0 - 10)
0
250
500
Feet
N
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Burns & McDonnell
SINCE 1898
Figure 2.5
K78 Current Pavement Conditions

Branch ID	Usage	Weighted Average PCI
AA	Apron	87
R17	Runway 17-35	73
TA	Taxiway A	91
TA1	Taxiway A-1	72
TA2	Taxiway A-2	73
TA3	Taxiway A-3	95
TA4	Taxiway A-4	96
TA5	Taxiway A-5	100
TL1	Taxilane 1	93
TL2	Taxilane 2	98
TL3	Taxilane 3	92
TTA1	Taxiway Turnaround 1	73

Table 2.1: Branch PCI Values

The following paragraphs provide a general description of the branches inspected at Abilene Municipal Airport. Some of the distresses encountered during the inspection were archived in the following photographs of this report. The following photos are in no way a comprehensive library of all distresses located in the pavement sections, but rather a set of photographs providing a sample of distresses common to the pavement elements at Abilene Municipal Airport. For more guidance on distress identification and maintenance, it is suggested that the reader reference the American Society for Testing and Materials (ASTM) section D 5340-11 – *Standard Test Method for Airport Pavement Condition Surveys* and FAA Advisory Circular 150/5380-6B – *Guidelines and Procedures for Maintenance of Airport Pavements*.

2.2.1 Runway 17-35

Runway 17-35 currently features an asphalt concrete pavement surface. The runway was rehabilitated in 2000 with 3-inches of asphalt concrete overlay. The pavement markings on the primary runway are significantly faded. A photo of Runway 17-35 and its condition at the time of inspection is illustrated in Figures 2.6.

Figure 2.6: Condition of Runway 17-35

2.2.2 Taxiway A

The Taxiway A branch consists of a concrete and asphalt pavement section. The northern section of Taxiway A consists of 3-inches asphalt constructed in 1987. The southern section, majority of Taxiway A, was constructed in 2011 with 6-inches of Portland cement concrete. A photo of Taxiway A and its condition at the time of inspection is shown in Figure 2.7.

Figure 2.7: Overall Condition of PCC on Taxiway A

2.2.3 Connecting Taxiways

These branches include the Connecting Taxiways A1, A2, A3, and A4. Connectors A1, A2, A3, and A4 connect Taxiway A to Runway 17-35. The northernmost connecting taxiway, A-1, consists of 3-inches of asphalt constructed in 1987. Connecting Taxiway A-2 provides direct access to the general aviation apron from Runway 17-35. Connecting Taxiway A-3 and A-4 were constructed in 2011 with 6-inches of Portland cement concrete. A typical photo at the time of the inspections for Connecting Taxiway A-1 and A-2 is shown in Figures 2.8 and 2.9.

Figure 2.8: Typical Condition on Taxiway A-1

Figure 2.9: Typical Condition on Taxiway A-2

2.2.4 Aprons

The general aviation apron consists of a Portland cement concrete pavement section; however, the age of this pavement in unknown. It should be noted that general aviation apron did not have construction history available; therefore, the MicroPAVER program was used to calculate the last estimated construction date. If future information becomes available, the MicroPAVER database should be updated. A typical photo at the time of the inspections for Main General Aviation Apron is shown in Figure 2.10.

The small individual taxilanes for the hangars located just south of the main general aviation apron are Portland cement concrete. These pavement branches were reconstructed in 2006 and consist of 5-inches of Portland cement concrete. A typical photo at the time of the inspections for Taxilanes is shown in Figure 2.11.

Figure 2.10: Main General Aviation Apron

Figure 2.11: Overall Condition of the Taxilane Aprons

* * * * *

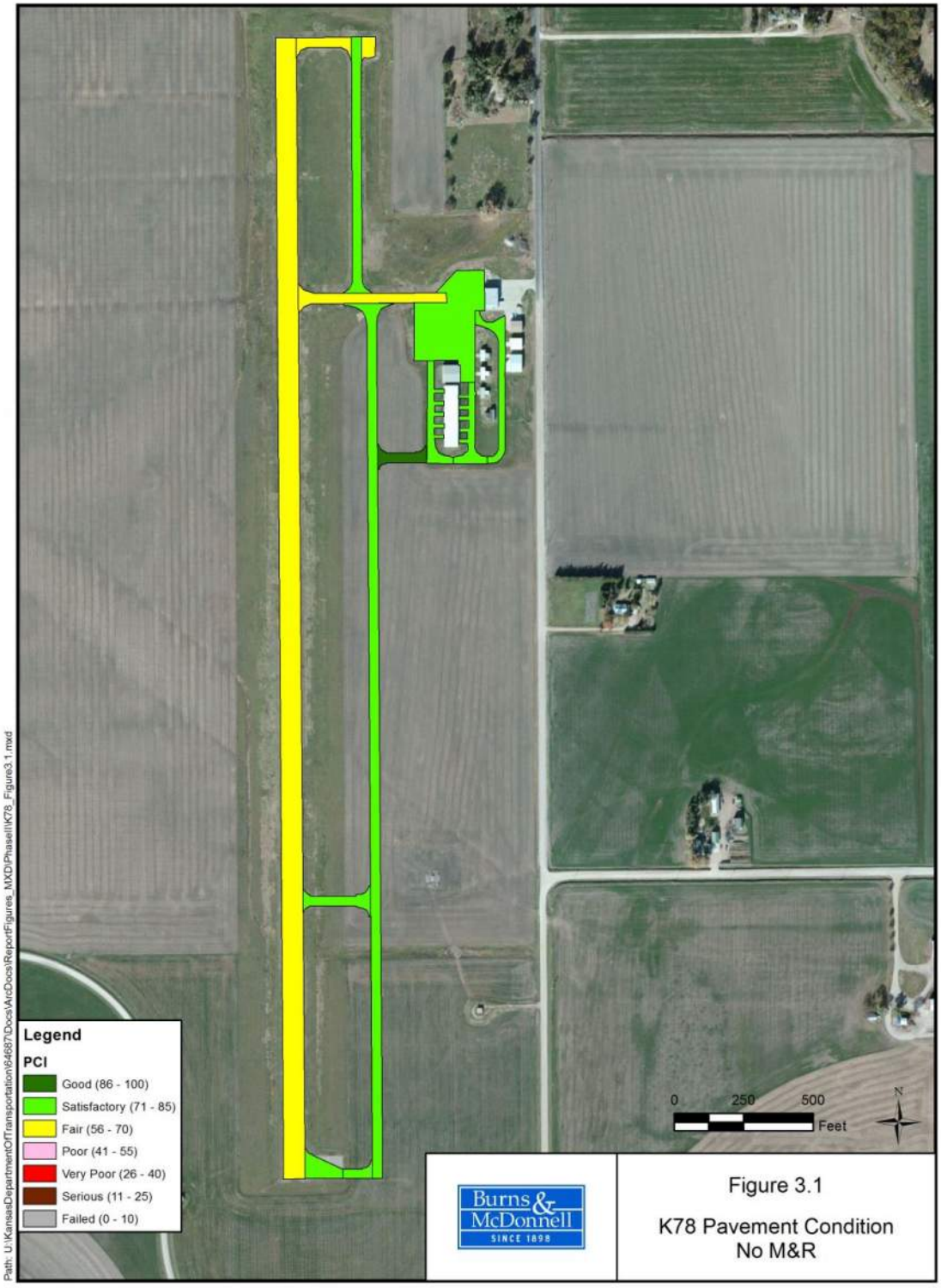
3.0 PAVEMENT MAINTENANCE

Several scenarios were examined to address any anticipated major rehabilitation or maintenance tasks necessary to help Abilene Municipal Airport maintain pavement. The scenarios presented herein include the following assumptions:

- **Any maintenance and rehabilitation plan begins from the date of this report for a length of 5 years.**
- **There is only one budget for all maintenance and rehabilitation.**
- **The MicroPAVER™ defined defaults for maintenance and rehabilitation are adequate for this program.**
- **An inflation rate of 2.1% is applied to any future work**

3.1 UNFUNDED PAVEMENT MAINTENANCE

The first scenario examined for Abilene Municipal Airport involves predicting the resultant PCI values of those pavement sections inspected if no maintenance or rehabilitation is performed over the next 5-year period. A figurative representation of the condition presented in the year 2017 is included in Figure 3.1. As the figure displays, a significant drop off in pavement condition is anticipated when no maintenance or rehabilitation is performed. Table 3.1 provides a yearly examination of each branch's PCI value if no maintenance work is performed.


Legend
PCI
Good (86 - 100)
Satisfactory (71 - 85)
Fair (56 - 70)
Poor (41 - 55)
Very Poor (26 - 40)
Serious (11 - 25)
Failed (0 - 10)
0
250
500
Feet
N
Burns & McDonnell
SINCE 1898
Figure 3.1
K78 Pavement Condition
No M&R
Path: U:\KansasDepartmentOfTransportation\84687\Docs\ArcDocs\ReportFigures_MXD\Phase\\K78_Figure3.1.mxd

Branch ID	2013	2014	2015	2016	2017
AA	85	82	79	76	73
R17	72	69	66	63	60
TA	89	86	83	80	77
TA1	71	68	65	62	59
TA2	72	69	66	63	60
TA3	93	90	87	84	81
TA4	95	92	89	86	83
TA5	99	96	93	90	87
TL1	92	89	86	83	80
TL2	97	94	91	88	85
TL3	91	88	85	82	79
TTA1	72	69	66	63	60

Table 3.1: Projected PCI Condition Analysis – No Maintenance

3.2 LIMITED BUDGET FOR PAVEMENT MAINTENANCE

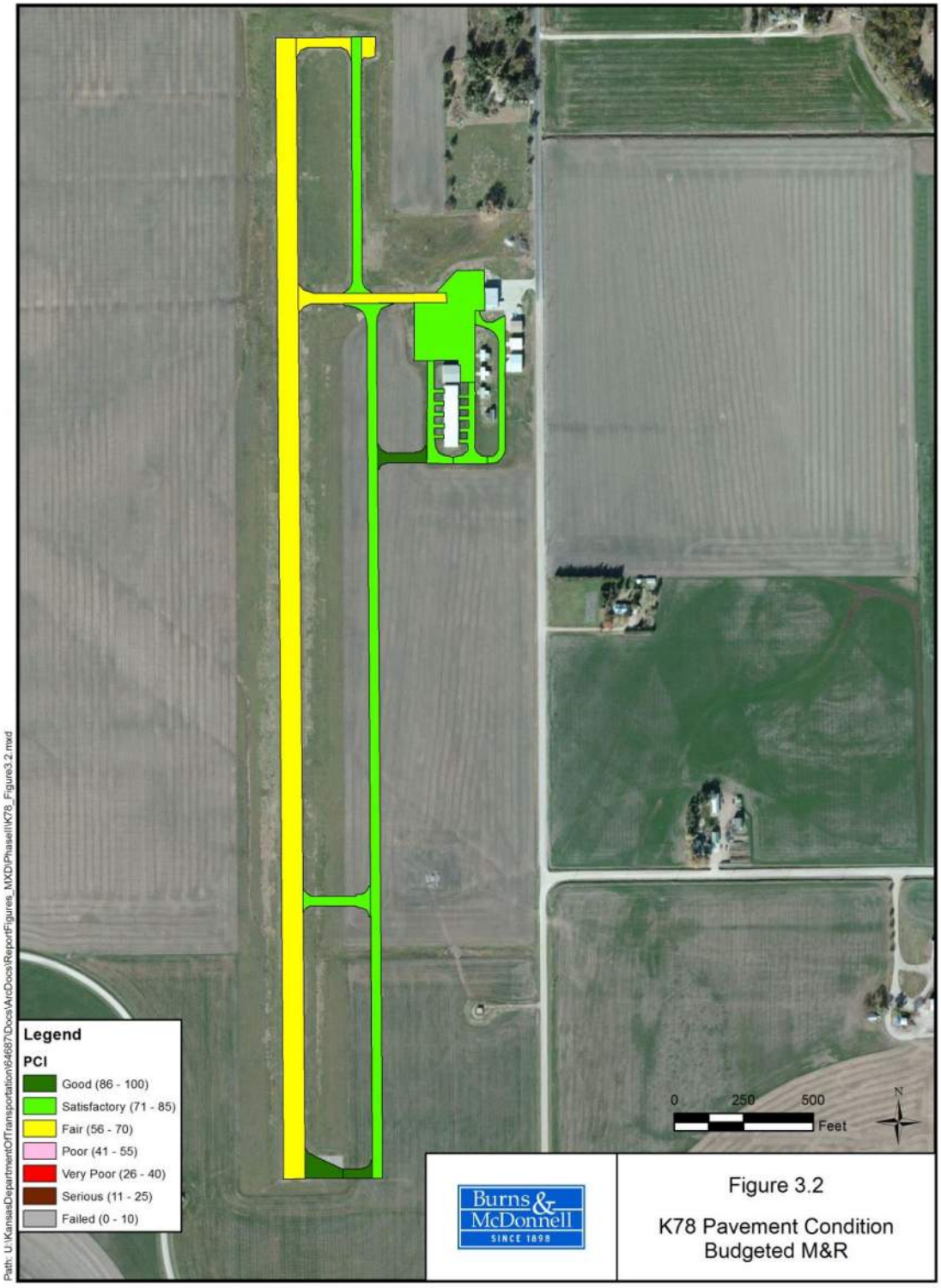
The limited budget scenario included limiting the budget for maintenance and rehabilitation to $165,000 per calendar year. This number includes using all of the anticipated FAA entitlement funding ($150,000) plus an airport sponsor's typical 10% contribution ($15,000).

Using the PAVER™ modeling software, a figurative representation of the condition presented in the year 2017 under this scenario is included in Figure 3.2. Table 3.2, provides a yearly examination of each branch's PCI value for a limited maintenance budget.

Branch ID	2013	2014	2015	2016	2017
AA	86	83	80	77	75
R17	72	70	67	65	66
TA	89	87	84	81	79
TA1	71	69	67	64	68
TA2	72	70	68	65	69
TA3	93	91	88	85	86
TA4	95	92	89	86	84
TA5	99	96	93	90	87
TL1	92	89	86	84	81
TL2	97	94	91	88	85
TL3	91	88	85	83	80
TTA1	72	70	68	65	69

Table 3.2: Projected PCI Condition Analysis – Limited Maintenance Budget

Regarding limited budget maintenance; a number of items of note can be taken from this analysis. Please note the minimal change in PCI between no maintenance and limited maintenance budget. Since most of the pavements at Abilene are in satisfactory or better condition, very little maintenance may be required on a small budget. This will require considerable funds to increase the PCI value, and preventative maintenance may be adequate.


Legend
PCI
Good (86 - 100)
Satisfactory (71 - 85)
Fair (56 - 70)
Poor (41 - 55)
Very Poor (26 - 40)
Serious (11 - 25)
Failed (0 - 10)
0 250 500
Feet
N
Burns & McDonnell
SINCE 1898
Figure 3.2
K78 Pavement Condition
Budgeted M&R
Path: U:\KansasDepartmentOfTransportation\84687\Docs\ArcDocs\ReportFigures_MXD\Phase\\K78_Figure3.2.mxd

3.3 UNLIMITED BUDGET FOR PAVEMENT MAINTENANCE

The unlimited budget scenario includes allowing all necessary pavement maintenance and rehabilitation goals to be met assuming there is no restraint on a Federal, State, or Local government level funding.

Using the PAVER™ modeling software, a figurative representation of the condition presented in the year 2017 under this scenario is included in Figure 3.3. Table 3.3 provides a yearly examination of each branch's PCI value for an unlimited budget scenario.

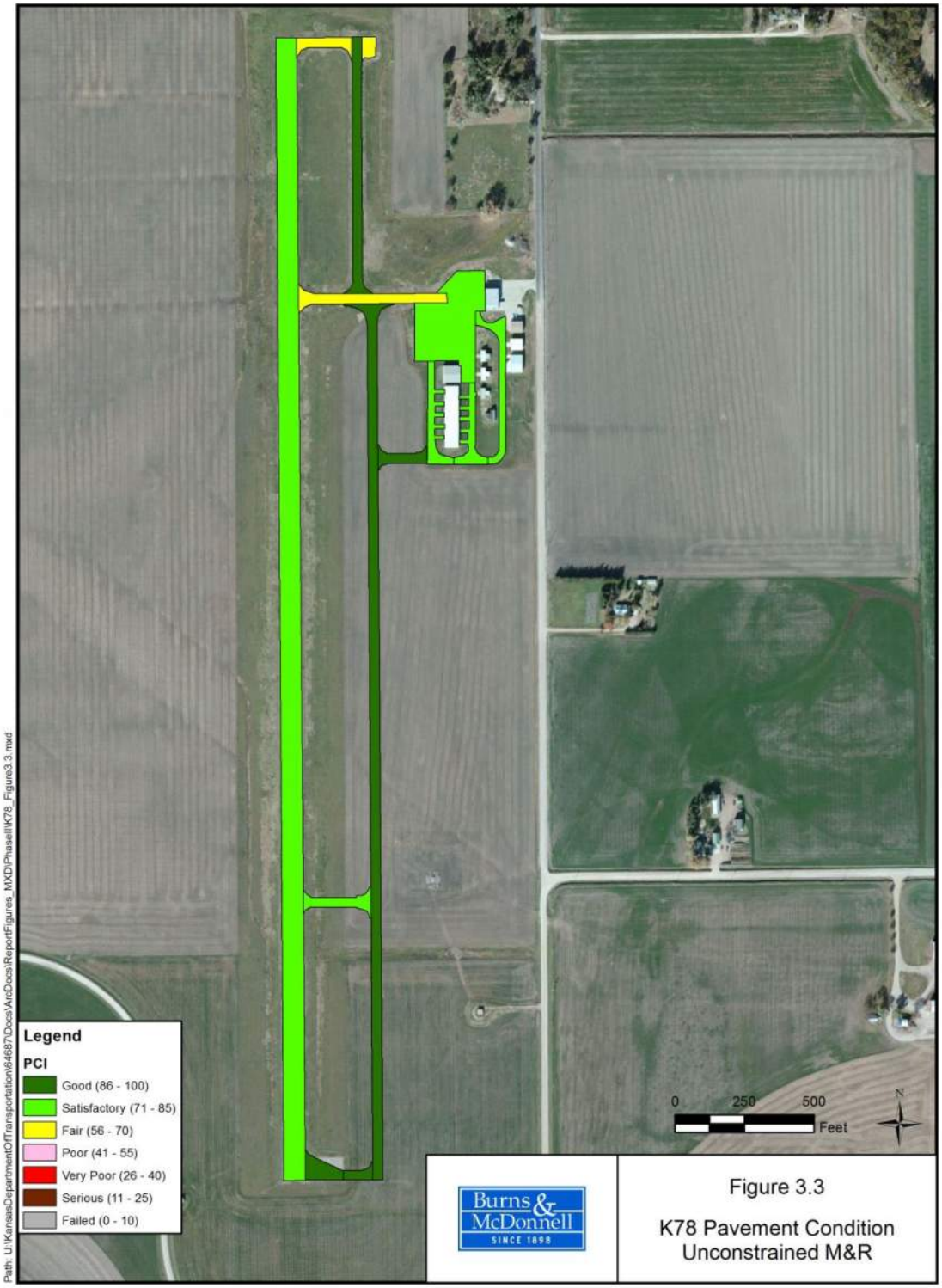
Branch ID	2013	2014	2015	2016	2017
AA	86	83	80	77	75
R17	72	70	67	65	81
TA	89	87	84	81	88
TA1	71	69	67	64	68
TA2	72	70	68	65	69
TA3	93	91	88	85	86
TA4	95	92	89	86	84
TA5	99	96	93	90	87
TL1	92	89	86	84	81
TL2	97	94	91	88	85
TL3	91	88	85	83	80
TTA1	72	70	68	65	69

Table 3.3: Projected PCI Condition Analysis – Unlimited Maintenance Budget

Using the unlimited maintenance budget scenario allows the user to coordinate potential priorities based on the location of the anticipated major repair work to be conducted on a pavement section. In this instance, the repair work includes rehabilitation or branch specific repair projects. Subsequently, most of the remaining asphalt and concrete pavement at the airport would undergo significant repair work during the upcoming 5-year period.

3.4 PROGRAM FUNDING AND PROGRAMMING

The Abilene Municipal Airport is funded by user fees, agricultural leasing, and fuel revenues. Available funds are limited, and the cost of most repairs may exceed the revenue generated by the airport. Any future repairs are recommended to follow a combination of the limited and unlimited budget scenarios to prioritize future maintenance and rehabilitation projects.


Legend
PCI
Good (86 - 100)
Satisfactory (71 - 85)
Fair (56 - 70)
Poor (41 - 55)
Very Poor (26 - 40)
Serious (11 - 25)
Failed (0 - 10)
0 250 500
Feet
N
Burns & McDonnell
SINCE 1898
Figure 3.3
K78 Pavement Condition
Unconstrained M&R
Path: U:\KansasDepartmentOfTransportation\84687\Docs\ArcDocs\ReportFigures_MXD\Phase\\K78_Figure3.3.mxd

* * * * *

4.0 RECOMMENDATIONS

The following recommendations are based on the existing pavement conditions at Abilene Municipal Airport. All recommendations are based on maintaining pavement condition at the airport and do not consider other potentially critical maintenance projects involving lighting, pavement marking, etc.

4.1 PAVEMENT INSPECTIONS

The Airport Manager, Airport Maintenance Staff, or other qualified personnel designated by the Airport Manager, will complete the Abilene Municipal Airport pavement inspections on a regular basis. All inspections should be properly recorded and kept on file with the Airport Manager. As a result, the inspection schedule, as illustrated in Table 4.1, has been established for the Abilene Municipal Airport.

Inspection Type	Description
Daily	Basic pavement review. Observe Foreign Object Damage (FOD) debris or rodent issues that may present a safety issue.
Weekly	Included as part of the overall pavement remediation program and as limited by the annual maintenance budget. These weekly inspections need not be as thorough as monthly inspections, but should contain notes on areas of frequent pavement distresses.
Monthly	Review of pavements and implementation of pavement remediation program as limited by the annual maintenance budget. One pavement branch shall be thoroughly inspected.
Yearly	Comprehensive review of the observations and remediation performed from the most recent fiscal year and the expenditures incurred. Also a review of previous fiscal years and the completed remediation and general upkeep performed.

Table 4.1: Inspection Types and Descriptions

According to the Federal Aviation Administration (FAA) Advisory Circular 150/5380-6B, in Appendix A, "Trained personnel must perform a detailed inspection of the airport pavements at least once a year. If a history of recorded pavement deterioration in the form of a Pavement Condition Index (PCI) survey as set forth in ASTM D 5340, Standard Test Method for Airport Pavement Condition Index Surveys, is available, the frequency of inspections may be extended to 3 years." (A-2 Inspection Schedule, Paragraph a.) Drive-by inspections should be performed at least once a month to detect any unusual or drastic changes in pavement conditions. Additional inspection report forms can be found in Appendix B of this report and are recommended to be used to file any findings from inspections performed on the airport.

4.2 AIRFIELD CAPITAL IMPROVEMENT PLAN

A number of factors are considered in developing an airfield capital improvement plan (ACIP) for each airport. These factors include, but are not limited to, budgetary concerns, airport master plan recommendations, existing infrastructure conditions, and public demand at the airport.

The following table provides a recommendation of an ACIP over the next 5 years that includes pavement maintenance goals and costs. Table 4.2 is in no way meant to supersede those recommendations provided by the KASP. However, the purpose of this plan is to focus solely on pavement condition and the costs to maintain that condition at an acceptable level.

Year/ Maintenance Item	Cost	Anticipated Source of Funding
2013		
Pavement Marking on Runway 17-35	$120,000	FAA / City funds
2014		
Asphalt Crack Sealant	$1,483,992	FAA/City funds
2015		
Concrete Apron Joint Sealant Replacement	$85,000	City funds
2016		
Airfield Maintenance	$10,000	City crews
2017		
Rehabilitation of Connection Taxiways	$285,000	FAA / City funds
2018		
Airfield Maintenance	$10,000	City crews

Table 4.2: Recommended Airport Capital Improvement Plan

Notes:

1. **This table was derived based on 2013 estimated costs for materials, labor, and installation/repairs. These figures do not include design or construction services.**
2. **These figures represent only budgetary estimates and should be re-examined prior to any repairs.**

* * * * *

APPENDIX A – PAVEMENT INVENTORY

APPENDIX A - PAVEMENT INVENTORY

PAVEMENT BRANCH	RUNWAY R17 (Runway 17-35)
Dimensions:	**4,100 Feet Long by 75 Feet Wide**
Pavement Structure Type:	**Flexible**
Pavement Surface Material:	Asphalt Concrete
Pavement Structure:	***Runway 17-35***
	1. 3-inch AC (P-401) (2000)
	2. Existing AC (P-401) (Unknown)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Primary Runway
Pavement Strength:	13,000 SWG; 16,000 DWG
Miscellaneous:	

PAVEMENT BRANCH	TAXIWAY TA (Taxiways A, Section 1)
Dimensions:	**920 Feet Long by 35 Feet Wide**
Pavement Structure Type:	**Flexible**
Pavement Surface Material:	Asphalt Concrete
	3. 3-inch AC (P-401) (2000)
	4. Existing AC (P-401) (Unknown)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Primary Taxiway
Pavement Strength:	Estimated at 13,000 SWG; 16,000 DWG
Miscellaneous:	

PAVEMENT BRANCH	TAXIWAY TA (Taxiways A, Sections 2 and 3)
Dimensions:	**3,150 Feet Long by 35 Feet Wide**
Pavement Structure Type:	**Rigid**
Pavement Surface Material:	Portland Cement Concrete
Pavement Structure:	1. 6-inch PCC (P-501) (2011)
	2. 4-inch Crushed Aggregate Base Course (P-209) (2011)
	3. 8-inch Cement Kiln Dust Treated Subgrade (P-157) (2011)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Primary Taxiway
Pavement Strength:	30,000 SWG; 30,000 DWG
Miscellaneous:	

PAVEMENT BRANCH	TAXIWAY TA1 and TA2 (Connecting Taxiways TA-1 and TA-2)
Dimensions:	**TA1: Approx. 200 Feet Long by 40 Feet Wide, TA2: Approx. 200 Feet Long by 35 Feet Wide**
Pavement Structure Type:	**Flexible**
Pavement Surface Material:	Asphalt Concrete
Pavement Structure:	1. 3-inch AC (P-401) (2000)
	2. Existing AC (P-401) (Unknown)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Taxiway Connectors
Pavement Strength:	Estimated at 13,000 SWG; 16,000 DWG
Miscellaneous:	

PAVEMENT BRANCH	TAXIWAY TA3 and TA4 (Connecting Taxiways TA-3 and TA-4)
Dimensions:	**TA1: Approx. 245 Feet Long by 35 Feet Wide, TA2: Approx. 245 Feet Long by 35 Feet Wide**
Pavement Structure Type:	**Rigid**
Pavement Surface Material:	Portland Cement Concrete
Pavement Structure:	1. 6-inch PCC (P-501) (2011)
	2. 4-inch Crushed Aggregate Base Course (P-209) (2011)
	3. 8-inch Cement Kiln Dust Treated Subgrade (P-157) (2011)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Taxiway Connectors
Pavement Strength:	Estimated at 13,000 SWG; 16,000 DWG
Miscellaneous:	

PAVEMENT BRANCH	TAXILANES TL1, TL2, TL3 (Hangar Taxilanes)
Dimensions:	**TL1: Approx. 370 Feet Long by 35 Feet Wide, TL2: Approx. 350 Feet Long by 35 Feet Wide, TL3: Approx. 500 Feet Long by 35 Feet Wide,**
Pavement Structure Type:	**Rigid**
Pavement Surface Material:	Portland Cement Concrete
Pavement Structure:	1. 5-inch PCC (P-501) (2006)
	2. 4-inch Crushed Aggregate Base Course (P-209) (2006)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Taxiway Connector
Pavement Strength:	Estimated at 13,000 SWG; 16,000 DWG
Miscellaneous:	

PAVEMENT BRANCH	APRON AA (Main General Aviation Apron)
Dimensions:	**Approx. 300 Feet North and South by 215 Feet East and West**
Pavement Structure Type:	**Rigid**
Pavement Surface Material:	Portland Cement Concrete
Pavement Structure:	1. PCC (P-501) (Unknown) 2. Aggregate Base Course (P-209) (Unknown)
Drainage Features:	No Apparent Subsurface Drainage
Pavement Use:	Apron for Main General Aviation Apron
Pavement Strength:	Estimated at 13,000 SWG; 16,000 DWG
Miscellaneous:	

APPENDIX B – INSPECTION FORMS

Pavement Element: _____ **Inspected By:** _____ **Date Inspected:** _____

Inspection Record		Maintenance Action		
Location	Distress Description/Dimensions/Severity/Features Recommended Action	Description of Repair	Date Performed	Cost

Pavement Element: _____ **Inspected By:** _____ **Date Inspected:** _____

Inspection Record		Maintenance Action		
Location	Distress Description/Dimensions/Severity/Features Recommended Action	Description of Repair	Date Performed	Cost

Pavement Element: _____ **Inspected By:** _____ **Date Inspected:** _____

Inspection Record		Maintenance Action		
Location	Distress Description/Dimensions/Severity/Features Recommended Action	Description of Repair	Date Performed	Cost

Pavement Element: _____ **Inspected By:** _____ **Date Inspected:** _____

Inspection Record		Maintenance Action		
Location	Distress Description/Dimensions/Severity/Features Recommended Action	Description of Repair	Date Performed	Cost

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

PAVEMENT BRANCH

Dimensions:

Pavement Structure Type: _____

Pavement Surface Material: _____

Pavement Structure: _____

_____

_____

Drainage Features: _____

Pavement Use: _____

Pavement Strength: _____

Miscellaneous:

APPENDIX C - REFERENCES

REFERENCES

FAA ADVISORY CIRCULARS

150/5320-17 – Airfield Pavement Surface Evaluation and Rating Manuals
http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/23242

150/5380-6B – Guidelines and Procedures for Maintenance of Airport Pavements
http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/22556

150/5380-7A – Airport Pavement Management Program
http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/23094

ASTM

D5340-12 – Standard Test Method for Airport Pavement Condition Index Surveys

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APPENDIX J

AIRPORT DEVELOPMENT ALTERNATIVES

(PRIMARY RUNWAY ALTERNATIVES R-1 THROUGH R-4
& LANDSIDE ALTERNATIVES L-1 THROUGH L-4)

benesch

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MAJOR IMPROVEMENTS NEEDED

1. REMOVE AND RELOCATE 2100 AVENUE 500 FEET SOUTH USING NEW GRAVEL ROAD
2. PURCHASE LAND OUT TO 35 FEET BRL AND RPZ FOR EXTENSION OF EXISTING RUNWAY 17/35
3. EXTEND EXISTING RUNWAY 17/35 AND PARALLEL TAXIWAY BY 500 FEET

PROS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-1

1.1. LEAST AMOUNT OF NEW PAVEMENT

1.2. LEAST LAND ACQUISITION

1.3. LEAST EXPENSIVE ALTERNATIVE

1.4. NO PAVEMENT REMOVAL

1.5. LESS AMOUNT OF NEW GRAVEL NEEDED THAN ALTERNATIVE R-2

CONS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-1

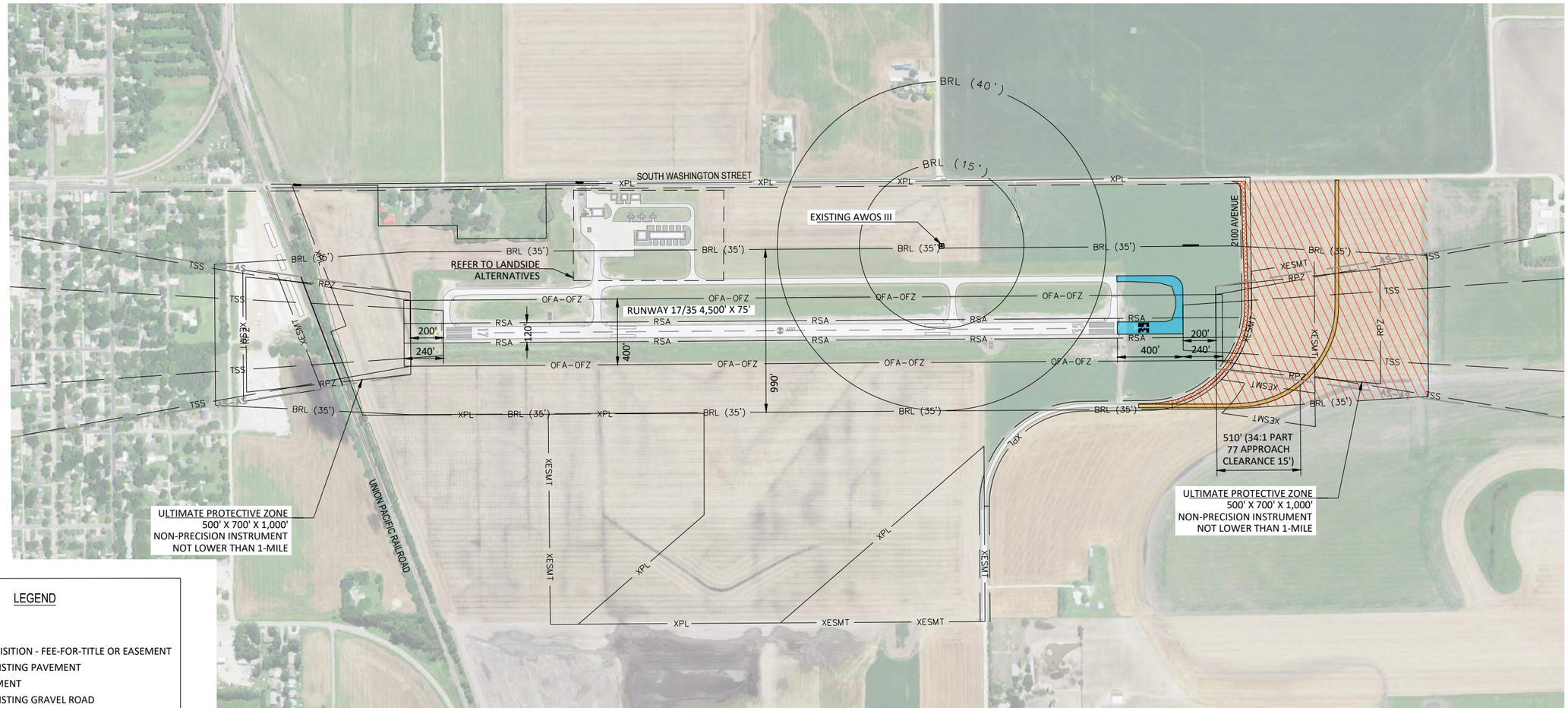
1.1. LEAST AMOUNT OF LAND AVAILABLE FOR DEVELOPMENT

1.2. RELOCATION OF PORTION OF 2100 AVENUE

1.3. DOES NOT ELIMINATE OBSTRUCTION DUE TO RAILROAD TO THE NORTH

ALTERNATIVES COMPARISON OF QUANTITIES

ALTERNATE #	LAND ACQUISITION (ACRES)	PAVEMENT REMOVAL (SY)	CONCRETE PAVEMENT (SY)	GRAVEL ROAD REMOVAL (SY)	GRAVEL ROAD (SY)	ESTIMATED COST
R-1	36	0	7,800	4,100	5,500	$1,322,680.00
R-2	51	7,100	15,000	4,100	6,700	$2,372,296.00
R-3	103	0	43,800	0	0	$4,392,695.00
R-4	43	0	12,700	4,100	6,500	$1,832,425.00



RUNWAY ALTERNATIVE

LEGEND

HATCHES

- LAND ACQUISITION - FEE-FOR-TITLE OR EASEMENT
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- REMOVE EXISTING GRAVEL ROAD
- NEW GRAVEL ROAD

LINETYPES

BRL - BUILDING RESTRICTIVE LINE WITH HEIGHT
OFA - OBJECT FREE AREA
XPL - EXISTING PROPERTY LINE
RPZ - RUNWAY PROTECTIVE ZONE
RSA - RUNWAY SAFETY AREA
XESMT - EXISTING EASEMENT LINE

N

175

0 350 700

HORIZONTAL SCALE: 1"=350'

MAGNETIC DECLINATION 3°28'48"E (WMM 2015)
CHANGES 0°06'W PER YEAR
(SOURCE: http://www.gcmap.com/airport/K78)

NO.	REVISIONS	DATE
.	.	.

ALP
PLAN UPDATE
OCTOBER
2019

RUNWAY ALTERNATIVE R-1

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

benesch
engineers · scientists · planners
Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 1306614.00

DRAWN BY: JWM | DESIGNED BY: JWM | REVIEWED BY: BJW | QUANTITIES BY: N/A

PROJECT: ALP UPDATE

DATE: JANUARY 2020

SHEET NO.
R-1

[File Location: Y:\Manhattan\130400S\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\02 - Appendix - Runway Alternatives\130492.00 RUNWAY ALTERNATIVE 1.dwg] [Plot Date: 2/25/2020 3:52:20 PM] [Last Saved: 9/26/2019 10:22:15 AM: Brrenblay]

MAJOR IMPROVEMENTS NEEDED

1. EXTEND RUNWAY 35 1,000 FEET SOUTH, MAKING RUNWAY 17/35 4,600 FEET LONG
2. REMOVE PORTION OF 2100 AVENUE GRAVEL ROAD
3. PURCHASE LAND OUT TO35 FEET BRL AND RPZ FOR RUNWAY 17/35
4. RELOCATE PORTION OF 2100 AVENUE 1,000 FEET SOUTH USING NEW GRAVEL
5. RELOCATE RUNWAY 17 THRESHOLD 500 FEET SOUTH
6. CONSTRUCT NEW CONNECTING TAXIWAY AT NORTH END OF RUNWAY 35

PROS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-2

1.1. LESS LAND FOR DEVELOPMENT THAN ALTERNATIVE R-3

1.2. ELIMINATES OBSTRUCTION DUE TO RAILROAD TO THE NORTH

1.3. LESS EXPENSIVE THAN ALTERNATIVE R-3

CONS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-2

1.1. MORE LAND ACQUISITION THAN ALTERNATIVE R-1

1.2. MORE PAVEMENT THAN ALTERNATIVE R-1

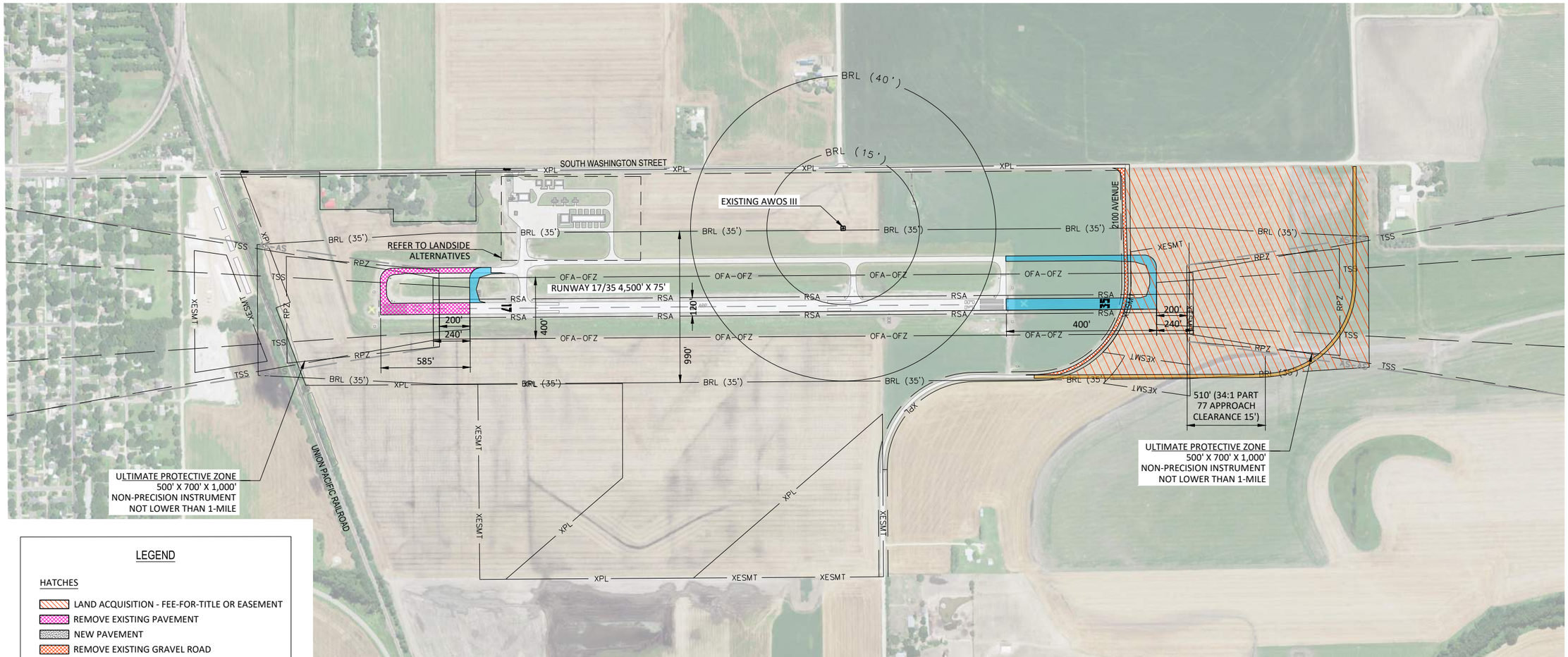
1.3. MOST CONCRETE REMOVAL

1.4. RELOCATION OF PORTION OF 2100 AVENUE

1.5. MOST NEW GRAVEL NEEDED

ALTERNATIVES COMPARISON OF QUANTITIES

ALTERNATE #	LAND ACQUISITION (ACRES)	PAVEMENT REMOVAL (SY)	CONCRETE PAVEMENT (SY)	GRAVEL ROAD REMOVAL (SY)	GRAVEL ROAD (SY)	ESTIMATED COST
R-1	36	0	7,800	4,100	5,500	$1,322,680.00
R-2	51	7,100	15,000	4,100	6,700	$2,372,296.00
R-3	103	0	43,800	0	0	$4,392,695.00
R-4	43	0	12,700	4,100	6,500	$1,832,425.00



LEGEND

HATCHES

- LAND ACQUISITION - FEE-FOR-TITLE OR EASEMENT
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- REMOVE EXISTING GRAVEL ROAD
- NEW GRAVEL ROAD

LINETYPES

BRL - BUILDING RESTRICTIVE LINE WITH HEIGHT
OFA - OBJECT FREE AREA
XPL - EXISTING PROPERTY LINE
RPZ - RUNWAY PROTECTIVE ZONE
RSA - RUNWAY SAFETY AREA
XESMT - EXISTING EASEMENT LINE

N

175

0 350 700

HORIZONTAL SCALE: 1"=350'

RUNWAY ALTERNATIVE

DATE | REVISIONS | NO.

ALP
PLAN UPDATE
OCTOBER
2019

RUNWAY ALTERNATIVE R-2

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

benesch
engineers · scientists · planners
Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 1306614.00

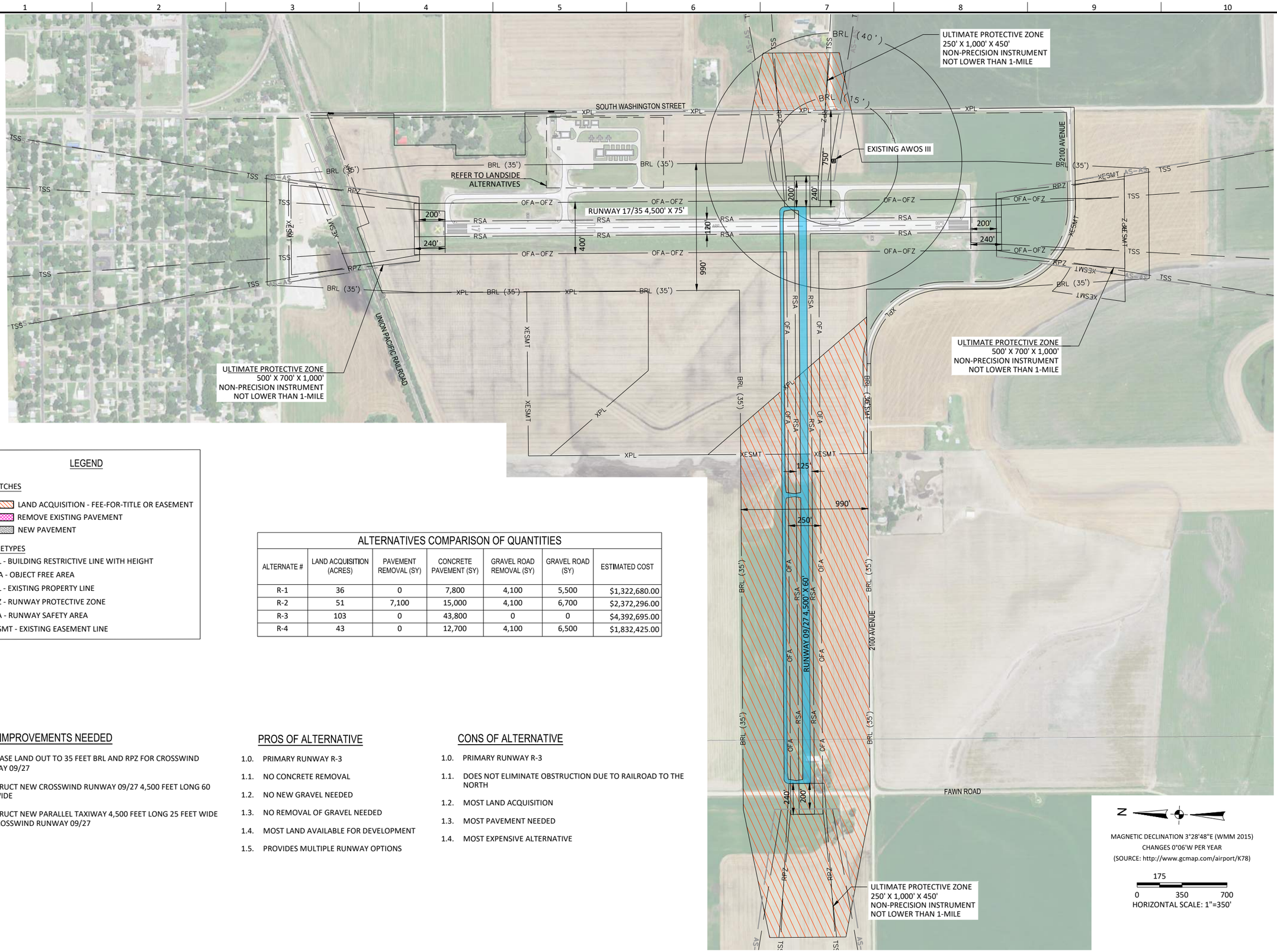
DRAWN JWM | DESIGNED JWM | REVIEWED BJW | QUANTITIES N/A

PROJECT: ALP UPDATE

DATE: JANUARY 2020

SHEET NO.
R-2

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\02 - Appendix - Runway Alternatives\130492.00 RUNWAY ALTERNATIVE 2.dwg] [Plot Date: 2/25/2020 3:54:45 PM] [Last Saved: 2/25/2020 9:57:03 AM: jparsons]



LEGEND

HATCHES

- LAND ACQUISITION - FEE-FOR-TITLE OR EASEMENT
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT

LINETYPES

- BRL - BUILDING RESTRICTIVE LINE WITH HEIGHT
- OFA - OBJECT FREE AREA
- XPL - EXISTING PROPERTY LINE
- RPZ - RUNWAY PROTECTIVE ZONE
- RSA - RUNWAY SAFETY AREA
- XESMT - EXISTING EASEMENT LINE

ALTERNATIVES COMPARISON OF QUANTITIES

ALTERNATE #	LAND ACQUISITION (ACRES)	PAVEMENT REMOVAL (SY)	CONCRETE PAVEMENT (SY)	GRAVEL ROAD REMOVAL (SY)	GRAVEL ROAD (SY)	ESTIMATED COST
R-1	36	0	7,800	4,100	5,500	$1,322,680.00
R-2	51	7,100	15,000	4,100	6,700	$2,372,296.00
R-3	103	0	43,800	0	0	$4,392,695.00
R-4	43	0	12,700	4,100	6,500	$1,832,425.00

MAJOR IMPROVEMENTS NEEDED

1. PURCHASE LAND OUT TO 35 FEET BRL AND RPZ FOR CROSSWIND RUNWAY 09/27
2. CONSTRUCT NEW CROSSWIND RUNWAY 09/27 4,500 FEET LONG 60 FEET WIDE
3. CONSTRUCT NEW PARALLEL TAXIWAY 4,500 FEET LONG 25 FEET WIDE FOR CROSSWIND RUNWAY 09/27

PROS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-3
1.1. NO CONCRETE REMOVAL
1.2. NO NEW GRAVEL NEEDED
1.3. NO REMOVAL OF GRAVEL NEEDED
1.4. MOST LAND AVAILABLE FOR DEVELOPMENT
1.5. PROVIDES MULTIPLE RUNWAY OPTIONS

CONS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-3
1.1. DOES NOT ELIMINATE OBSTRUCTION DUE TO RAILROAD TO THE NORTH
1.2. MOST LAND ACQUISITION
1.3. MOST PAVEMENT NEEDED
1.4. MOST EXPENSIVE ALTERNATIVE

MAGNETIC DECLINATION 3°28'48"E (WMM 2015)
CHANGES 0°06'W PER YEAR
(SOURCE: http://www.gcmap.com/airport/K78)

175
0 350 700
HORIZONTAL SCALE: 1"=350'

NO.	REVISIONS	DATE
-	-	-

ALP
PLAN UPDATE
OCTOBER
2019

RUNWAY ALTERNATIVE R-3

AIRPORT LAYOUT PLAN UPDATE

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DRAWN BY: JWM | DESIGNED BY: JWM | REVIEWED BY: BJW | QUANTITIES BY: N/A

PROJECT: ALP UPDATE

DATE: JANUARY 2020

SHEET NO.
R-3

[File Location: Y:\Manhattan\130405\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\02 - Appendix - Runway Alternatives\130492.00 RUNWAY ALTERNATIVE 3.dwg] [Plot Date: 2/25/2020 3:57:38 PM] [Last Saved: 9/26/2019 10:20:25 AM; Brrenblay]

MAJOR IMPROVEMENTS NEEDED

1. REMOVE AND RELOCATE 2100 AVENUE 900 FEET SOUTH USING NEW GRAVEL ROAD
2. PURCHASE LAND OUT TO 35 FEET BRL AND RPZ FOR EXTENSION OF EXISTING RUNWAY 17/35
3. EXTEND EXISTING RUNWAY 17/35 AND PARALLEL TAXIWAY BY 900 FEET TO ULTIMATE LENGTH OF 5,000 FEET.

PROS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-1

1.1. NO PAVEMENT REMOVAL

CONS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-1

1.1. LEAST AMOUNT OF LAND AVAILABLE FOR DEVELOPMENT

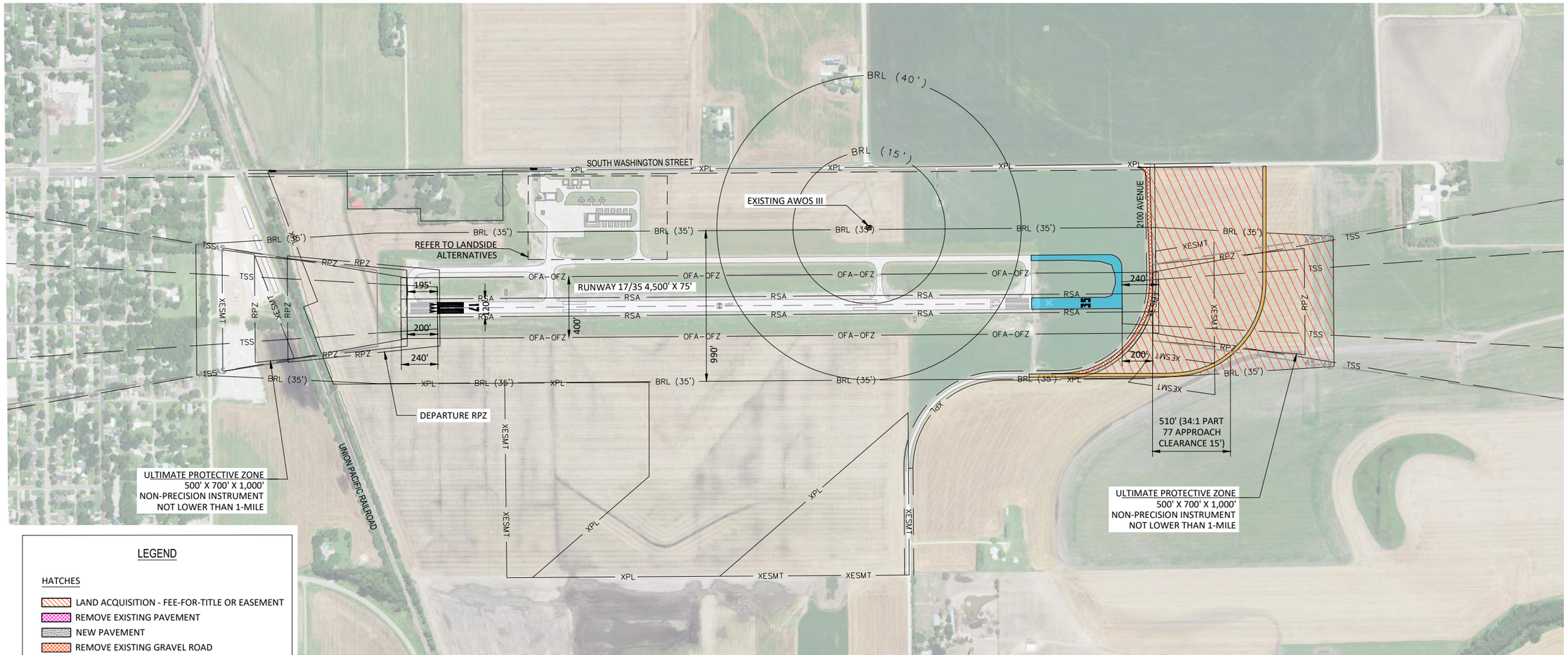
1.2. MORE LAND ACQUISITION THAN ALTERNATIVE R-1

1.3. RELOCATION OF PORTION OF 2100 AVENUE

1.4. DOES NOT ELIMINATE OBSTRUCTION DUE TO RAILROAD TO THE NORTH

ALTERNATIVES COMPARISON OF QUANTITIES

ALTERNATE #	LAND ACQUISITION (ACRES)	PAVEMENT REMOVAL (SY)	CONCRETE PAVEMENT (SY)	GRAVEL ROAD REMOVAL (SY)	GRAVEL ROAD (SY)	ESTIMATED COST
R-1	36	0	7,800	4,100	5,500	$1,322,680.00
R-2	51	7,100	15,000	4,100	6,700	$2,372,296.00
R-3	103	0	43,800	0	0	$4,392,695.00
R-4	43	0	12,700	4,100	6,500	$1,832,425.00



LEGEND

HATCHES

- LAND ACQUISITION - FEE-FOR-TITLE OR EASEMENT
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- REMOVE EXISTING GRAVEL ROAD
- NEW GRAVEL ROAD

LINETYPES

- BRL - BUILDING RESTRICTIVE LINE WITH HEIGHT
- OFA - OBJECT FREE AREA
- XPL - EXISTING PROPERTY LINE
- RPZ - RUNWAY PROTECTIVE ZONE
- RSA - RUNWAY SAFETY AREA
- XESMT - EXISTING EASEMENT LINE

N

175 350 700

HORIZONTAL SCALE: 1"=350'

RUNWAY ALTERNATIVE

NO.	REVISIONS	DATE
.	.	.

ALP
PLAN UPDATE
OCTOBER
2019

RUNWAY ALTERNATIVE R-4

AIRPORT LAYOUT PLAN UPDATE

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DRAWN BY: JWM | DESIGNED BY: JWM | REVIEWED BY: BJW | QUANTITIES BY: N/A

PROJECT: ALP UPDATE

DATE: JANUARY 2020

SHEET NO.
R-4

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\02 - Appendix - Runway Alternatives\130492.00 RUNWAY ALTERNATIVE 4.dwg] [Plot Date: 2/25/2020 4:01:42 PM] [Last Saved: 9/26/2019 10:10:45 AM: Brtemblay]

MAJOR IMPROVEMENTS NEEDED

1. REMOVE AND RELOCATE 2100 AVENUE 500 FEET SOUTH USING NEW GRAVEL ROAD
2. PURCHASE LAND OUT TO 35 FEET BRL AND RPZ FOR EXTENSION OF EXISTING RUNWAY 17/35
3. EXTEND EXISTING RUNWAY 17/35 AND PARALLEL TAXIWAY BY 500 FEET

PROS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-1

1.1. LEAST AMOUNT OF NEW PAVEMENT

1.2. LEAST LAND ACQUISITION

1.3. LEAST EXPENSIVE ALTERNATIVE

1.4. NO PAVEMENT REMOVAL

1.5. LESS AMOUNT OF NEW GRAVEL NEEDED THAN ALTERNATIVE R-2

CONS OF ALTERNATIVE

1.0. PRIMARY RUNWAY R-1

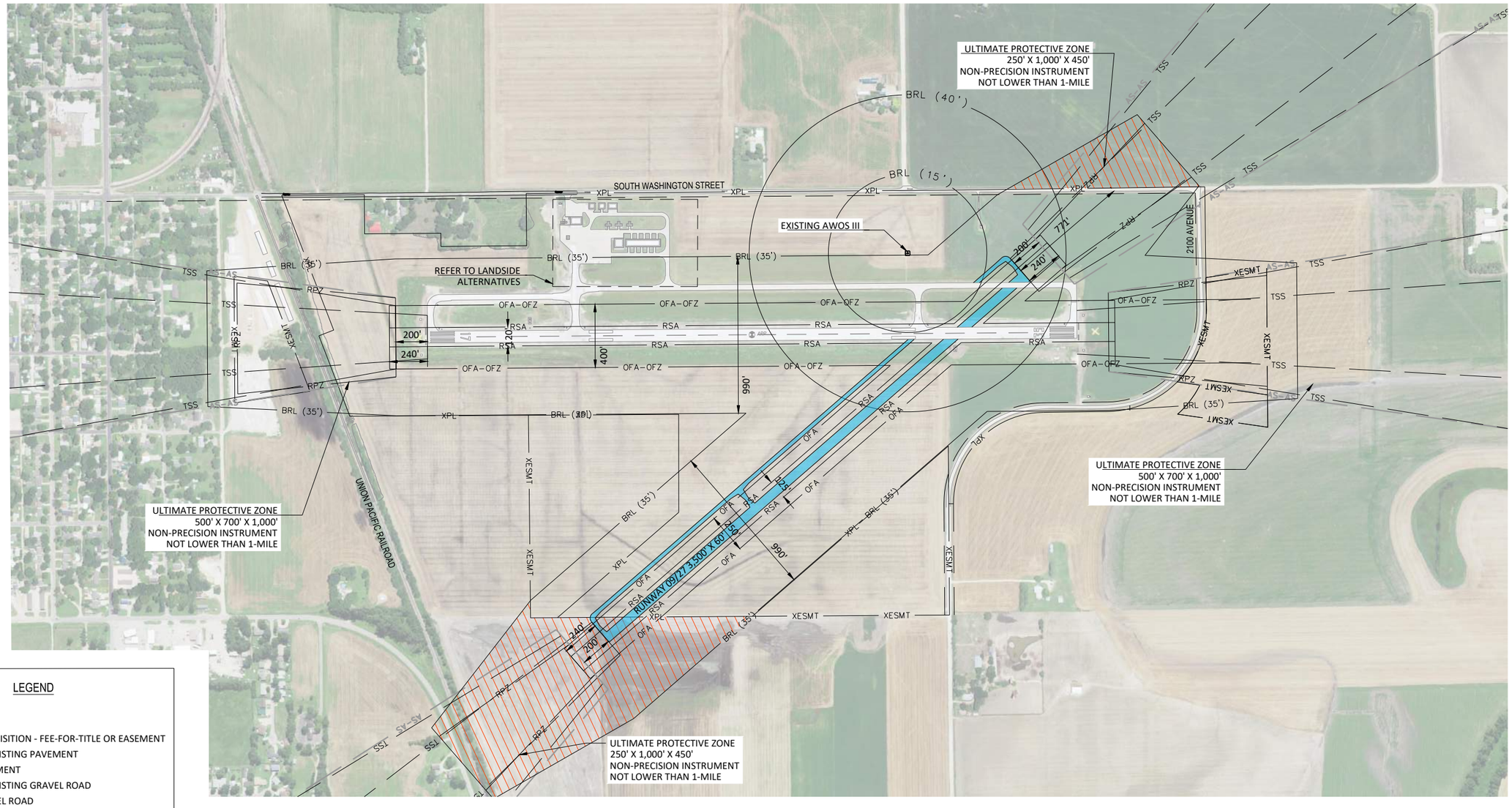
1.1. LEAST AMOUNT OF LAND AVAILABLE FOR DEVELOPMENT

1.2. RELOCATION OF PORTION OF 2100 AVENUE

1.3. DOES NOT ELIMINATE OBSTRUCTION DUE TO RAILROAD TO THE NORTH

ALTERNATIVES COMPARISON OF QUANTITIES

ALTERNATE #	LAND ACQUISITION (ACRES)	PAVEMENT REMOVAL (SY)	CONCRETE PAVEMENT (SY)	GRAVEL ROAD REMOVAL (SY)	GRAVEL ROAD (SY)	ESTIMATED COST
R-1	36	0	7,800	4,100	5,500	$1,322,680.00
R-2	51	7,100	15,000	4,100	6,700	$2,372,296.00
R-3	103	0	43,800	0	0	$4,392,695.00
R-4	43	0	12,700	4,100	6,500	$1,832,425.00



RUNWAY ALTERNATIVE

LEGEND

HATCHES

- LAND ACQUISITION - FEE-FOR-TITLE OR EASEMENT
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- REMOVE EXISTING GRAVEL ROAD
- NEW GRAVEL ROAD

LINETYPES

- BRL - BUILDING RESTRICTIVE LINE WITH HEIGHT
- OFA - OBJECT FREE AREA
- XPL - EXISTING PROPERTY LINE
- RPZ - RUNWAY PROTECTIVE ZONE
- RSA - RUNWAY SAFETY AREA
- XESMT - EXISTING EASEMENT LINE

N

175

0 350 700

HORIZONTAL SCALE: 1"=350'

DATE

REVISIONS

NO.

ALP
PLAN UPDATE
OCTOBER
2019

RUNWAY ALTERNATIVE R-5

AIRPORT LAYOUT PLAN UPDATE

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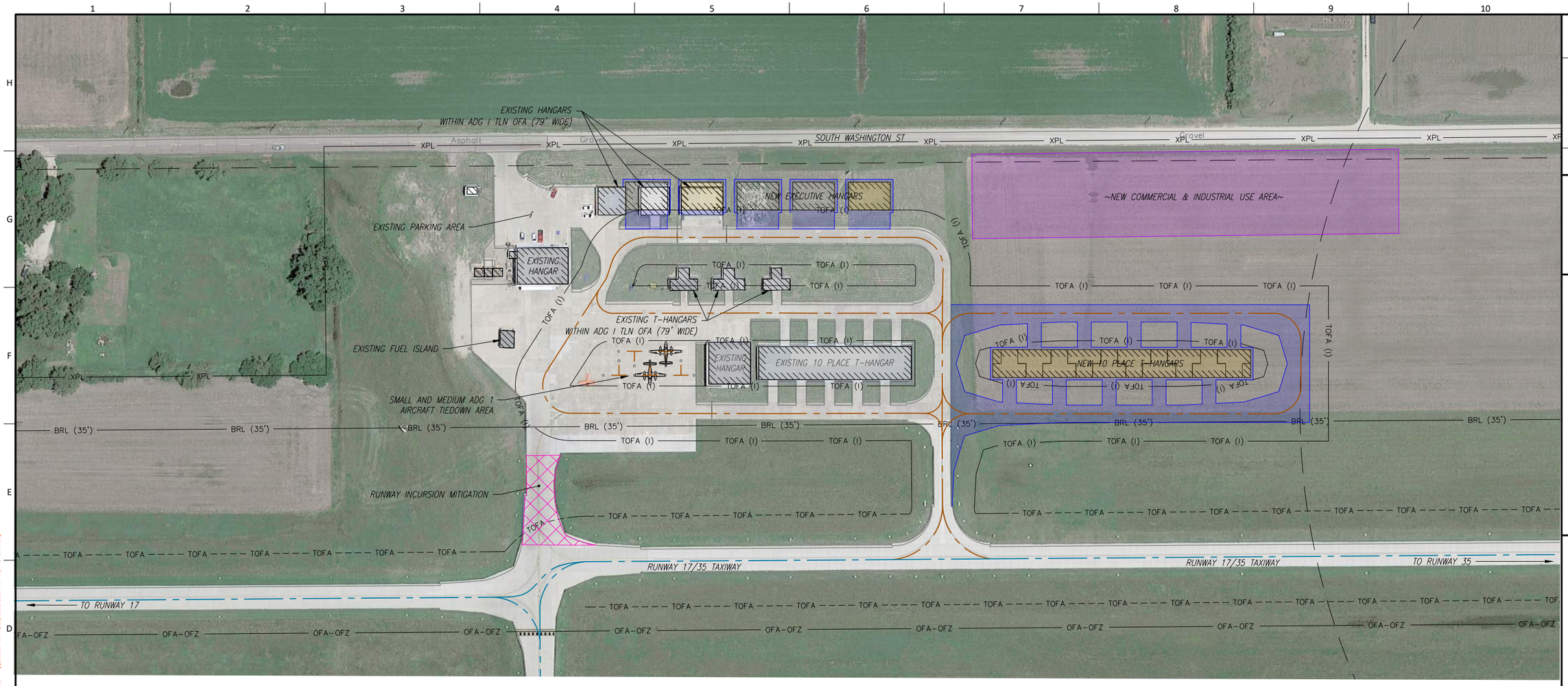
QUANTITIES BY: N/A
REVIEWED BY: BJW
DESIGNED BY: JWM
DRAWN BY: JWM

PROJECT: ALP UPDATE

DATE: JANUARY 2020

SHEET NO.
R-5

[File Location: Y:\Manhattan\130400S\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\02 - Appendix - Runway Alternatives\130492.00 RUNWAY ALTERNATIVE 5.dwg] [Plot Date: 2/25/2020 4:16:15 PM] [Last Saved: 2/25/2020 4:11:13 PM; Edwal]



MAJOR IMPROVEMENTS NEEDED

1. NEW COMMERCIAL AND INDUSTRIAL AREA AVAILABLE FOR DEVELOPMENT
2. NEW 3 EXECUTIVE HANGERS WITH ACCESSIBLE TAXILANE
3. NEW 10 PLACE T-HANGER WITH ACCESSIBLE TAXILANE
4. REMOVE CONNECTING TAXIWAY TO RUNWAY 17/35

PROS OF ALTERNATIVE

1. PROVIDES NEW 10 PLACE T-HANGAR
2. PROVIDES 5 NEW EXECUTIVE HANGARS
3. PROVIDES NEW COMMERCIAL USE AREA
4. NO NEW CONNECTING TAXIWAY TO RUNWAY 17/35

CONS OF ALTERNATIVE

1. REMOVAL OF 3 EXISTING T-HANGARS
2. REMOVAL OF 3 EXISTING EXECUTIVE HANGARS

N

MAGNETIC DECLINATION 3°28'48"E (WMM 2015)
CHANGES 0°06'W PER YEAR
(SOURCE: http://www.gcmap.com/airport/K78)

37.5
0 75 150
HORIZONTAL SCALE: 1"=75'

LEGEND

- EXISTING BUILDING
- NEW BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- NEW COMMERCIAL/INDUSTRIAL AREA
- TOFA (I) — TAXILANE OFA (ADG I)
- TOFA (II) — TAXILANE OFA (ADG II)
- TOFA — TAXIWAY OFA (ADG II)
- TDG I CENTERLINE
- TDG II CENTERLINE

BRL – BUILDING RESTRICTIVE LINE WITH HEIGHT
OFA – OBJECT FREE AREA
XPL – EXISTING PROPERTY LINE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
OCTOBER
2019

LANDSIDE ALTERNATIVE
ADG-1-1

AIRPORT LAYOUT PLAN UPDATE

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REVIEWED BY:
DESIGNED BY:
DRAWN BY:

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JANUARY 2020

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ADG-1-1

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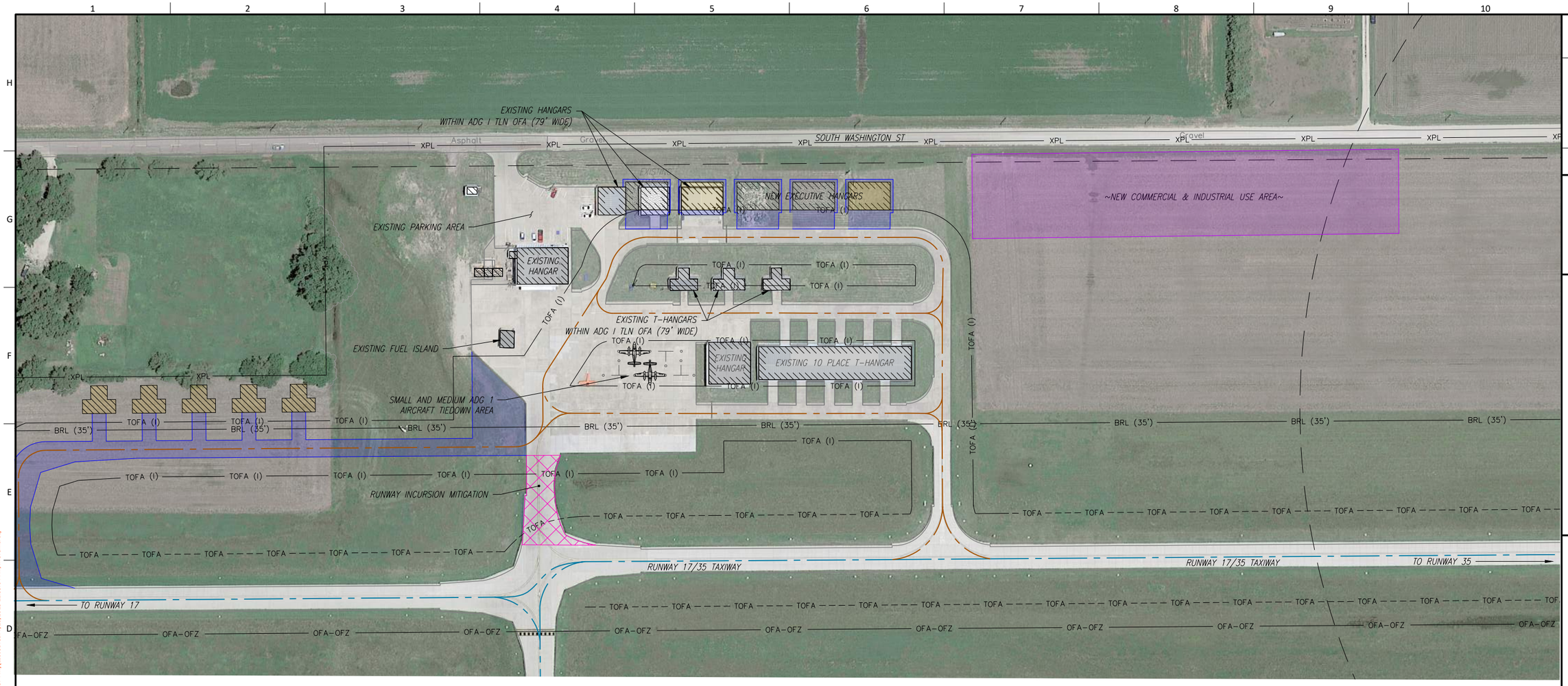

MAJOR IMPROVEMENTS NEEDED

1. NEW COMMERCIAL AND INDUSTRIAL AREA AVAILABLE FOR DEVELOPMENT
2. NEW 3 EXECUTIVE HANGERS WITH ACCESSIBLE TAXILANE
3. NEW 10 PLACE T-HANGER WITH ACCESSIBLE TAXILANE
4. REMOVE CONNECTING TAXIWAY TO RUNWAY 17/35

PROS OF ALTERNATIVE

1.

CONS OF ALTERNATIVE

1. NO ADG II ACCESS

LEGEND

- EXISTING BUILDING
- NEW BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- NEW COMMERCIAL/INDUSTRIAL AREA
- TOFA (I) — TAXILANE OFA (ADG I)
- TOFA (II) — TAXILANE OFA (ADG II)
- TOFA — TAXIWAY OFA (ADG II)
- TDG I CENTERLINE
- TDG II CENTERLINE

BRL – BUILDING RESTRICTIVE LINE WITH HEIGHT
OFA – OBJECT FREE AREA
XPL – EXISTING PROPERTY LINE

N

MAGNETIC DECLINATION 3°28'48"E (WMM 2015)
CHANGES 0°06'W PER YEAR
(SOURCE: http://www.gcmap.com/airport/K78)

37.5
0 75 150
HORIZONTAL SCALE: 1"=75'

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
OCTOBER
2019

LANDSIDE ALTERNATIVE ADG-1-2

AIRPORT LAYOUT PLAN UPDATE

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DATE: JANUARY 2020

SHEET NO.
ADG-1-2

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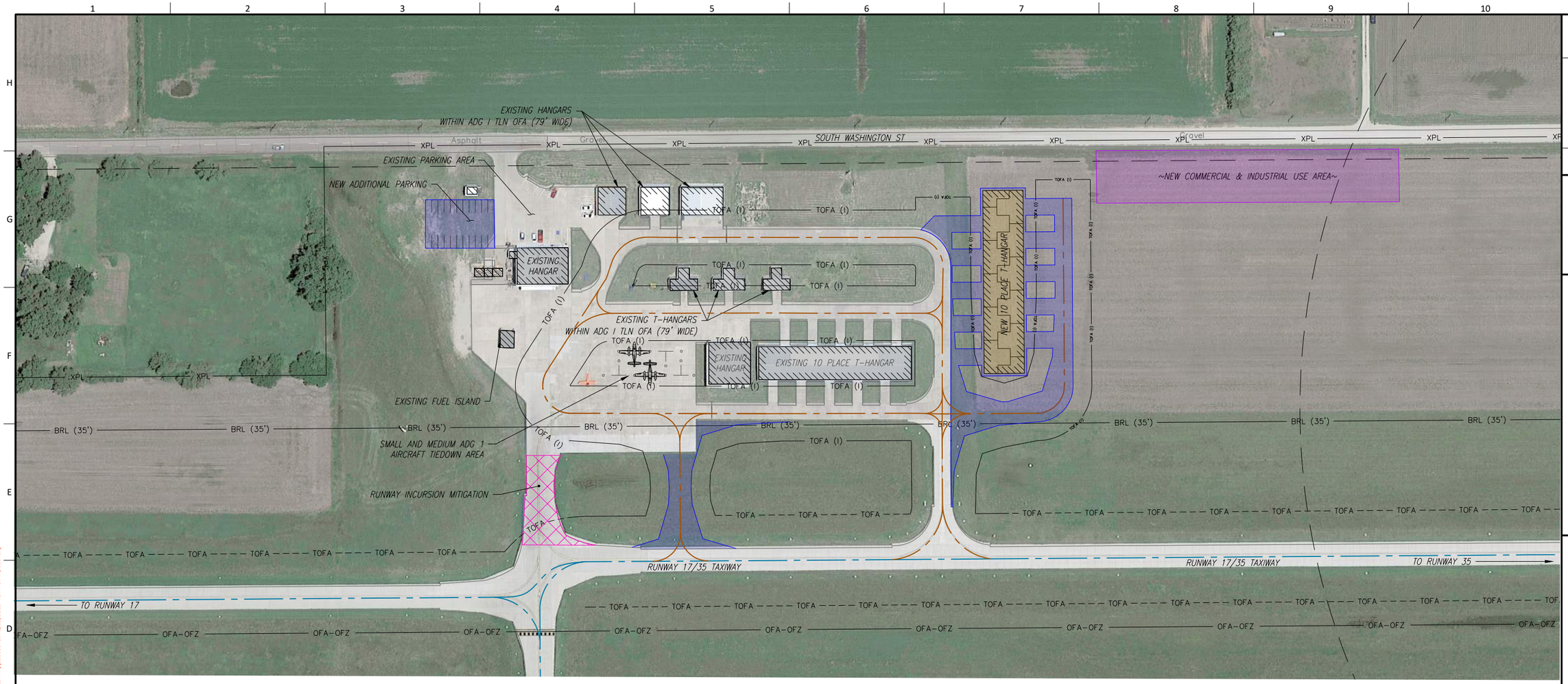

MAJOR IMPROVEMENTS NEEDED

1. NEW COMMERCIAL AND INDUSTRIAL AREA AVAILABLE FOR DEVELOPMENT
2. NEW 3 EXECUTIVE HANGERS WITH ACCESSIBLE TAXILANE
3. NEW 10 PLACE T-HANGER WITH ACCESSIBLE TAXILANE
4. REMOVE CONNECTING TAXIWAY TO RUNWAY 17/35

PROS OF ALTERNATIVE

1. PROVIDES NEW 10 PLACE T-HANGAR
2. PROVIDES 5 NEW EXECUTIVE HANGARS
3. PROVIDES NEW COMMERCIAL USE AREA
4. NO NEW CONNECTING TAXIWAY TO RUNWAY 17/35

CONS OF ALTERNATIVE

1. REMOVAL OF 3 EXISTING T-HANGARS
2. REMOVAL OF 3 EXISTING EXECUTIVE HANGARS

N

MAGNETIC DECLINATION 3°28'48"E (WMM 2015)
CHANGES 0°06'W PER YEAR
(SOURCE: http://www.gcmap.com/airport/K78)

37.5
0 75 150
HORIZONTAL SCALE: 1"=75'

LEGEND

- EXISTING BUILDING
- NEW BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- NEW COMMERCIAL/INDUSTRIAL AREA
- TOFA (I) — TAXILANE OFA (ADG I)
- TOFA (II) — TAXILANE OFA (ADG II)
- TOFA — TAXIWAY OFA (ADG II)
- TDG I CENTERLINE
- TDG II CENTERLINE

BRL – BUILDING RESTRICTIVE LINE WITH HEIGHT
OFA – OBJECT FREE AREA
XPL – EXISTING PROPERTY LINE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
OCTOBER
2019

LANDSIDE ALTERNATIVE ADG-1-3

AIRPORT LAYOUT PLAN UPDATE

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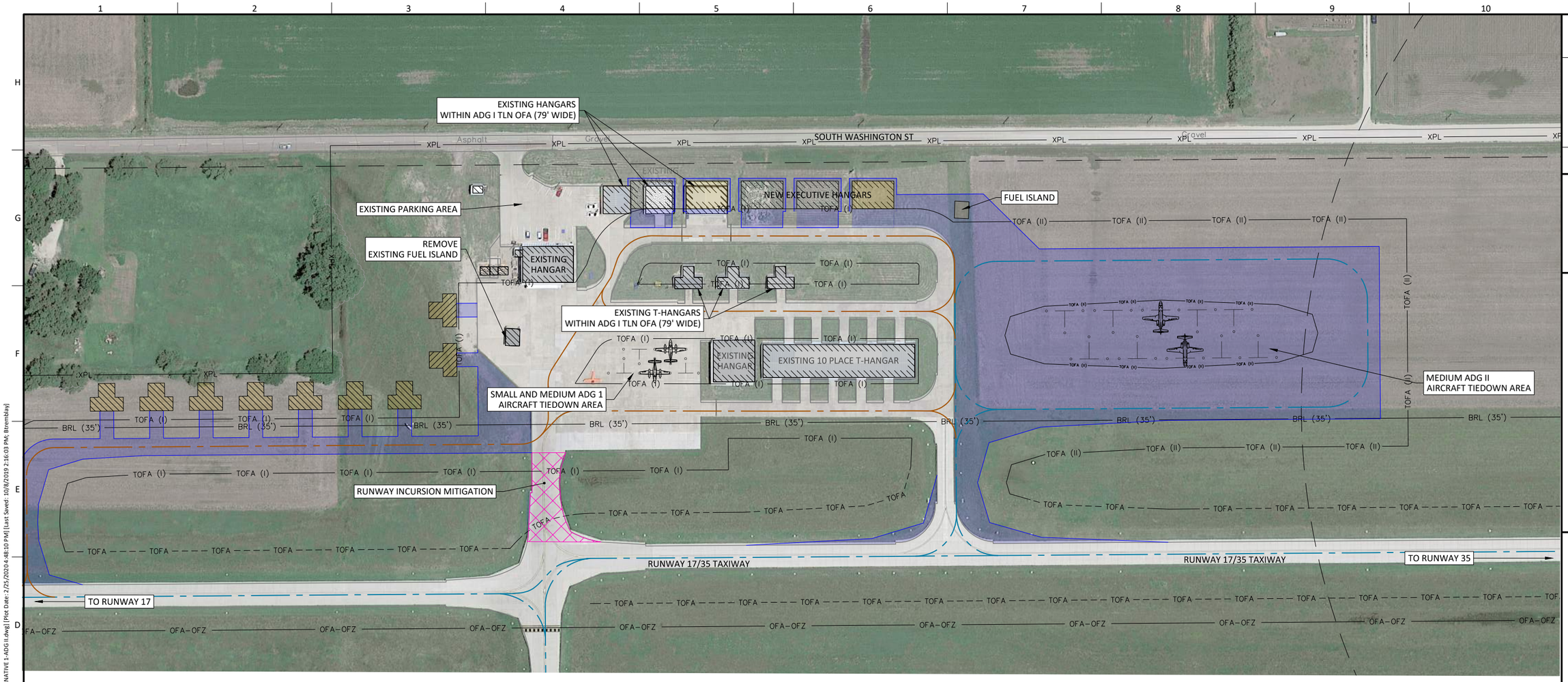
JANUARY 2020

SHEET NO.
ADG-1-3

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\LANDSIDE ALTERNATIVE 3-ADG I.dwg] [Plot Date: 2/25/2020 4:43:13 PM] [Last Saved: 2/25/2020 4:37:46 PM; Edward]



MAJOR IMPROVEMENTS NEEDED

1. NEW FUEL ISLAND
2. NEW ADG II APRON AND PARKING POSITIONS
3. NEW ADG I HANGARS

PROS OF ALTERNATIVE

1. PROVIDES ACCESS FOR ADG II AIRCRAFT
2. KEEPS EXISTING ADG I TIE-DOWNS

CONS OF ALTERNATIVE

1. FUEL ISLAND MUST BE RELOCATED

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

37.5
0 75 150
HORIZONTAL SCALE: 1"=75'

LEGEND

- EXISTING BUILDING
- NEW BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- NEW COMMERCIAL/INDUSTRIAL AREA
- TOFA (I) — TAXILANE OFA (ADG I)
- TOFA (II) — TAXILANE OFA (ADG II)
- TOFA — TAXIWAY OFA (ADG II)
- TDG I CENTERLINE
- TDG II CENTERLINE
- BRL — BUILDING RESTRICTION LINE (35')
- OFA — OBJECT FREE AREA
- XPL — EXISTING PROPERTY LINE

NO.	REVISIONS	DATE
.	-	-

ALP
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2019

LANDSIDE ALTERNATIVE
ADG-2-1

AIRPORT LAYOUT PLAN UPDATE

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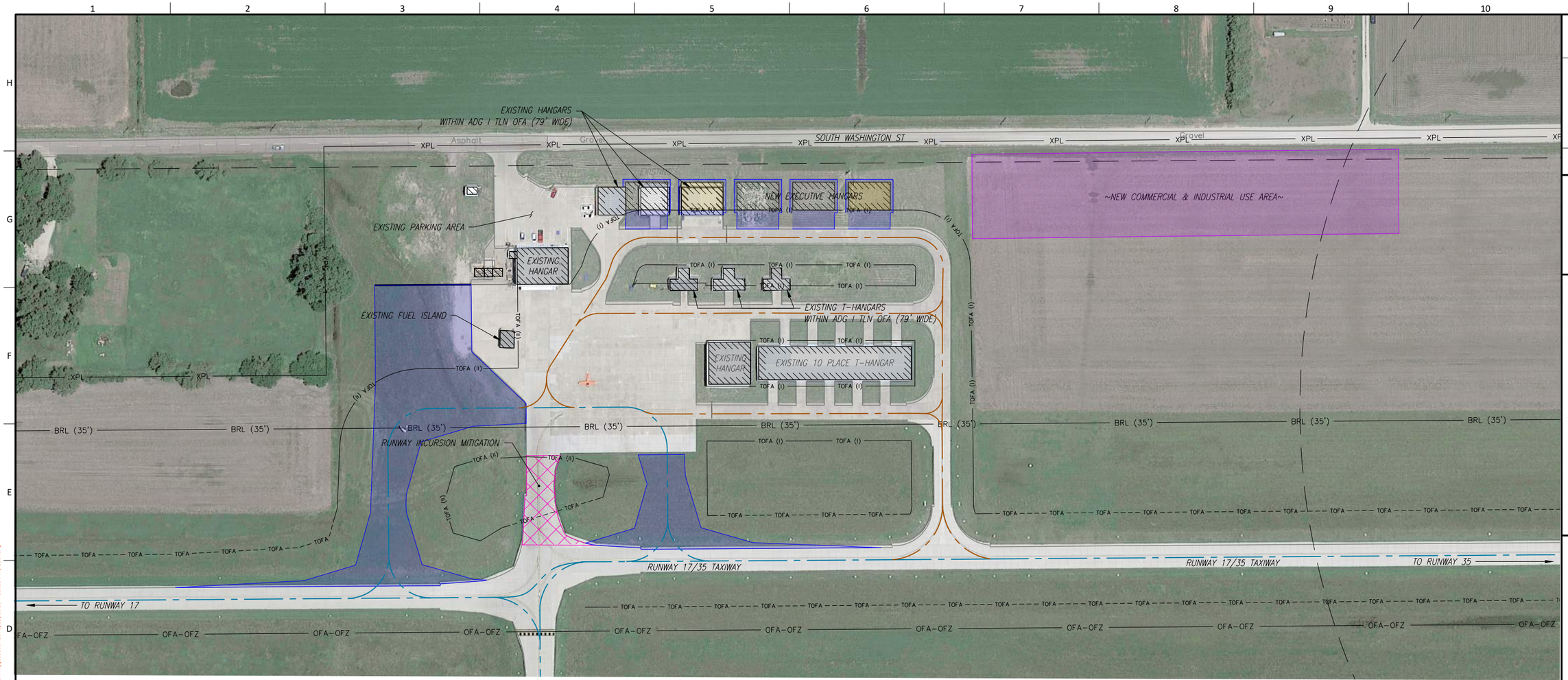
SHEET NO.
ADG-2-1

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\03 - Appendix - Landside Alternatives\130492.00 LANDSIDE ALTERNATIVE 1-ADG II.dwg] [Plot Date: 2/25/2020 4:48:10 PM] [Last Saved: 10/8/2019 2:16:03 PM; Btrenblay]



MAJOR IMPROVEMENTS NEEDED

1. NEW COMMERCIAL AND INDUSTRIAL AREA AVAILABLE FOR DEVELOPMENT
2. NEW 3 EXECUTIVE HANGERS WITH ACCESSIBLE TAXILANE
3. NEW 10 PLACE T-HANGER WITH ACCESSIBLE TAXILANE
4. REMOVE CONNECTING TAXIWAY TO RUNWAY 17/35

PROS OF ALTERNATIVE

1. PROVIDES NEW 10 PLACE T-HANGAR
2. PROVIDES 5 NEW EXECUTIVE HANGARS
3. PROVIDES NEW COMMERCIAL USE AREA
4. NO NEW CONNECTING TAXIWAY TO RUNWAY 17/35

CONS OF ALTERNATIVE

1. REMOVAL OF 3 EXISTING T-HANGARS
2. REMOVAL OF 3 EXISTING EXECUTIVE HANGARS

N

MAGNETIC DECLINATION 3°28'48"E (WMM 2015)
CHANGES 0°06'W PER YEAR
(SOURCE: http://www.gcmap.com/airport/K78)

37.5
0 75 150
HORIZONTAL SCALE: 1"=75'

LEGEND

- EXISTING BUILDING
- NEW BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- NEW COMMERCIAL/INDUSTRIAL AREA
- TOFA (I) — TAXILANE OFA (ADG I)
- TOFA (II) — TAXILANE OFA (ADG II)
- TOFA — TAXIWAY OFA (ADG II)
- TDG I CENTERLINE
- TDG II CENTERLINE

BRL – BUILDING RESTRICTIVE LINE WITH HEIGHT
OFA – OBJECT FREE AREA
XPL – EXISTING PROPERTY LINE

NO.	REVISIONS	DATE
-	-	-

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LANDSIDE ALTERNATIVE ADG-2-2

AIRPORT LAYOUT PLAN UPDATE

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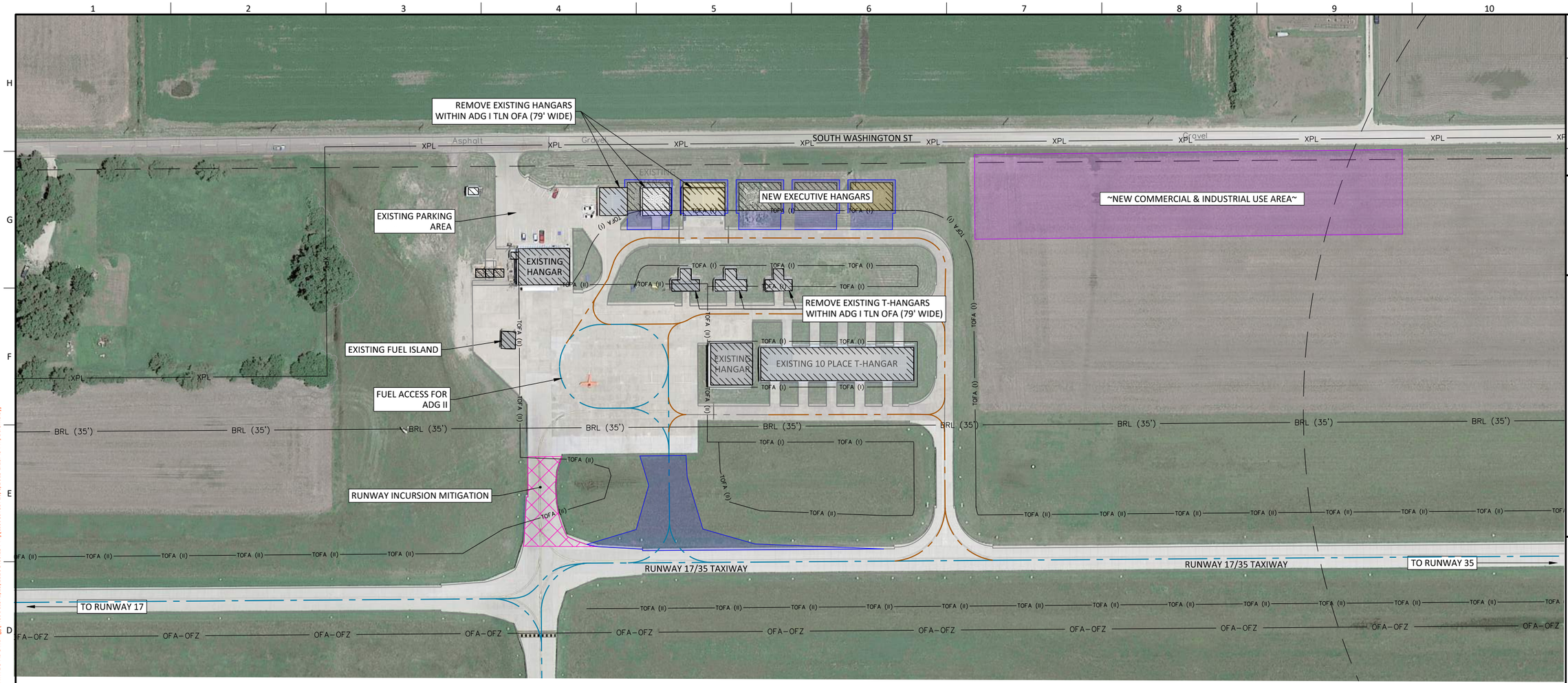
QUANTITIES ANALYZED BY:
REVIEWED BY:
DESIGNED BY:
DRAWN BY:

PROJECT
ALP UPDATE

DATE
JANUARY 2020

SHEET NO.
ADG-2-2

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\LANDSIDE ALTERNATIVE 2-ADG II.dwg] [Plot Date: 2/25/2020 4:56:02 PM] [Last Saved: 2/25/2020 4:53:25 PM; Edvall]



MAJOR IMPROVEMENTS NEEDED

1. NEW COMMERCIAL AND INDUSTRIAL AREA AVAILABLE FOR DEVELOPMENT
2. NEW 3 EXECUTIVE HANGERS WITH ACCESSIBLE TAXILANE
3. NEW 10 PLACE T-HANGER WITH ACCESSIBLE TAXILANE
4. REMOVE CONNECTING TAXIWAY TO RUNWAY 17/35

PROS OF ALTERNATIVE

1. PROVIDES NEW 10 PLACE T-HANGAR
2. PROVIDES 5 NEW EXECUTIVE HANGARS
3. PROVIDES NEW COMMERCIAL USE AREA
4. NO NEW CONNECTING TAXIWAY TO RUNWAY 17/35

CONS OF ALTERNATIVE

1. REMOVAL OF 3 EXISTING T-HANGARS
2. REMOVAL OF 3 EXISTING EXECUTIVE HANGARS

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

37.5
0 75 150
HORIZONTAL SCALE: 1"=75'

LEGEND

- EXISTING BUILDING
- NEW BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT
- NEW COMMERCIAL/INDUSTRIAL AREA
- TOFA (I) — TAXILANE OFA (ADG I)
- TOFA (II) — TAXILANE OFA (ADG II)
- TOFA — TAXIWAY OFA (ADG II)
- TDG I CENTERLINE
- TDG II CENTERLINE
- BRL — BUILDING RESTRICTION LINE (35')
- OFA — OBJECT FREE AREA
- XPL — EXISTING PROPERTY LINE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
OCTOBER
2019

LANDSIDE ALTERNATIVE
ADG-2-3

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

QUANTITIES PREPARED BY:
REVIEWED BY:
DESIGNED BY:
DRAWN BY:

PROJECT
ALP UPDATE

DATE
JANUARY 2020

SHEET NO.
ADG-2-3

[File Location: Y:\Manhattan\130405\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\03 - Appendix - Landside Alternatives\130492.00 LANDSIDE ALTERNATIVE 3-ADG II.dwg] [Plot Date: 2/25/2020 5:00:25 PM] [Last Saved: 10/8/2019 2:18:49 PM; Birtenbay]

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APPENDIX K

RUNWAY ALTERNATIVES COST ESTIMATES

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Abilene Municipal Airport - Abilene, Kansas

Engineer's Opinion of Probable Cost
Runway Alternative R-1

Item No.	Description	Unit Quantity	Unit	Price	Total
1	Site Preparation & Mobilization	1	LS	$75,000.00	$75,000.00
2	Traffic Control	1	LS	$15,000.00	$15,000.00
3	Earthwork	855	CY	$10.00	$8,550.00
4	6" P-154 Crushed Aggregate Subbase	7,767	SY	$20.00	$155,340.00
5	6" Concrete Pavement	7,767	SY	$50.00	$388,350.00
7	Seeding	1	EA	$1,500.00	$1,500.00
8	Erosion Control	1	EA	$2,000.00	$2,000.00
9	Land Acquisition	36	ACRE	$2,610.00	$93,960.00
10	County Road Construction	5,514	SY	$40.00	$220,560.00
11	County Road Removal	4,064	SY	$15.00	$60,960.00
12	Runway Lighting	1	EA	$100,000.00	$100,000.00

Consruction Estimate	$1,121,220.00
Design & Construction Adminimstration (18%)	$201,459.60
Total Estimate	**$1,322,679.60**

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Abilene Municipal Airport - Abilene, Kansas

Engineer's Opinion of Probable Cost
Runway Alternative R-2

Item No.	Description	Unit Quantity	Unit	Price	Total
1	Site Preparation & Mobilization	1	LS	$75,000.00	$75,000.00
2	Traffic Control	1	LS	$15,000.00	$15,000.00
3	Earthwork	1,649	CY	$10.00	$16,490.00
4	6" P-154 Crushed Aggregate Subbase	14,994	SY	$20.00	$299,880.00
5	6" Concrete Pavement	14,994	SY	$50.00	$749,700.00
7	Seeding	1	EA	$1,500.00	$1,500.00
8	Erosion Control	1	EA	$2,000.00	$2,000.00
9	Land Acquisition	51	ACRE	$2,610.00	$133,893.00
10	Pavement Removal	7,068	SY	$30.00	$212,034.00
11	County Road Construction	6,732	SY	$40.00	$269,268.00
12	County Road Removal	4,064	SY	$15.00	$60,960.00
13	Runway Lighting	1	EA	$175,000.00	$175,000.00

Consruction Estimate	$2,010,725.00
Design & Construction Adminimstration (18%)	$361,570.50
Total Estimate	**$2,372,295.50**

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Abilene Municipal Airport - Abilene, Kansas

Engineer's Opinion of Probable Cost
Runway Alternative R-3

Item No.	Description	Unit Quantity	Unit	Price	Total
1	Site Preparation & Mobilization	1	LS	$75,000.00	$75,000.00
2	Traffic Control	1	LS	$15,000.00	$15,000.00
3	Earthwork	4,813	CY	$10.00	$48,130.00
4	6" P-154 Crushed Aggregate Subbase	43,757	SY	$20.00	$875,140.00
5	6" Concrete Pavement	43,757	SY	$50.00	$2,187,850.00
7	Seeding	1	EA	$1,500.00	$1,500.00
8	Erosion Control	1	EA	$2,000.00	$2,000.00
9	Land Acquisition	103	ACRE	$2,610.00	$268,308.00
10	Runway Lighting	1	EA	$250,000.00	$250,000.00

Consruction Estimate	$3,722,928.00
Design & Construction Adminimstration (18%)	$669,767.04
Total Estimate	**$4,392,695.04**

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Abilene Municipal Airport - Abilene, Kansas

Engineer's Opinion of Probable Cost
Runway Alternative R-4

Item No.	Description	Unit Quantity	Unit	Price	Total
1	Site Preparation & Mobilization	1	LS	$75,000.00	$75,000.00
2	Traffic Control	1	LS	$15,000.00	$15,000.00
3	Earthwork	1,396	CY	$10.00	$13,960.00
4	6" P-154 Crushed Aggregate Subbase	12,692	SY	$20.00	$253,840.00
5	6" Concrete Pavement	12,692	SY	$50.00	$634,600.00
7	Seeding	1	EA	$1,500.00	$1,500.00
8	Erosion Control	1	EA	$2,000.00	$2,000.00
9	Land Acquisition	43	ACRE	$2,610.00	$111,708.00
10	County Road Construction	6,491	SY	$40.00	$259,640.00
11	County Road Removal	4,064	SY	$15.00	$60,960.00
12	Runway Lighting	1	EA	$125,000.00	$125,000.00

Consruction Estimate	$1,553,208.00
Design & Construction Adminimstration (18%)	$279,217.44
Total Estimate	**$1,832,425.44**

APPENDIX L

{RESERVED}

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APPENDIX M

AIRPORT LAYOUT PLAN (ALP) DRAWINGS

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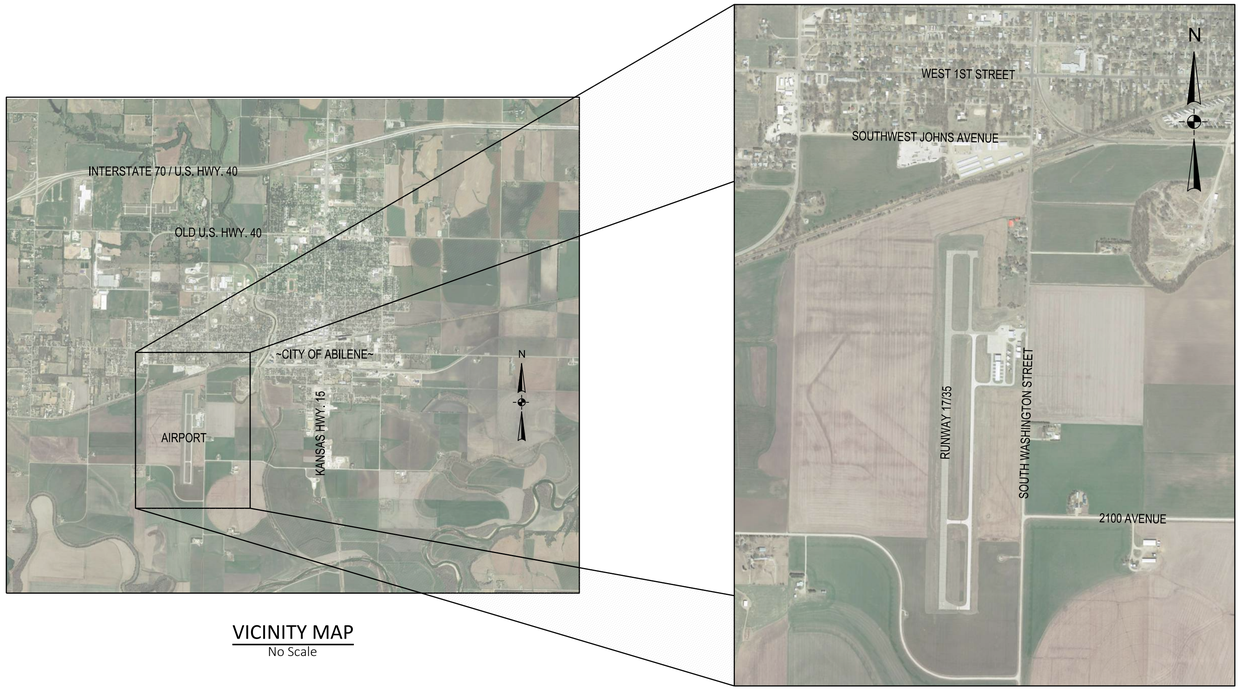
ABILENE MUNICIPAL AIRPORT (K78)

ABILENE, KANSAS

JULY 15, 2020

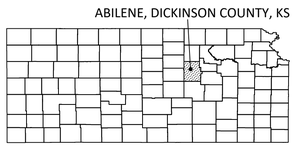
AIRPORT LAYOUT PLAN (ALP) UPDATE

AIP # 3-20-0001-011-2017



VICINITY MAP
No Scale

PROJECT LOCATION MAP
No Scale



INDEX OF SHEETS

SHEET NO.	SHEET TITLE	REV. DATE
1	TITLE SHEET	N/A
2	AIRPORT LAYOUT PLAN	N/A
3	AIRPORT DATA SHEET	N/A
4	AIRPORT AIRSPACE DRAWING	N/A
5	LINE OF SIGHT PROFILES	N/A
6	INNER PORTION APPROACH OF EXISTING RUNWAY 17	N/A
7	EXISTING RUNWAY 17 DATA	N/A
8	INNER PORTION APPROACH OF EXISTING RUNWAY 35	N/A
9	INNER PORTION APPROACH OF ULTIMATE RUNWAY 17	N/A
10	ULTIMATE RUNWAY 17 DATA	N/A
11	INNER PORTION APPROACH OF ULTIMATE RUNWAY 35	N/A
12	TERMINAL AREA DRAWING	N/A
13	RUNWAY 35 EXISTING & ULTIMATE DEPARTURE SURFACE	N/A
14	RUNWAY 17 EXISTING DEPARTURE SURFACE	N/A
15	RUNWAY 17 ULTIMATE DEPARTURE SURFACE	N/A
16	AIRPORT LAND USE - EXISTING	N/A
17	AIRPORT LAND USE - ULTIMATE	N/A
18	EXHIBIT A PROPERTY MAP	N/A
19 - 38	OBSTRUCTIONS	N/A

APPROVAL BY:

CITY OF ABILENE, KANSAS

APPROVED BY:

NAME | TITLE | DATE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

TITLE SHEET

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

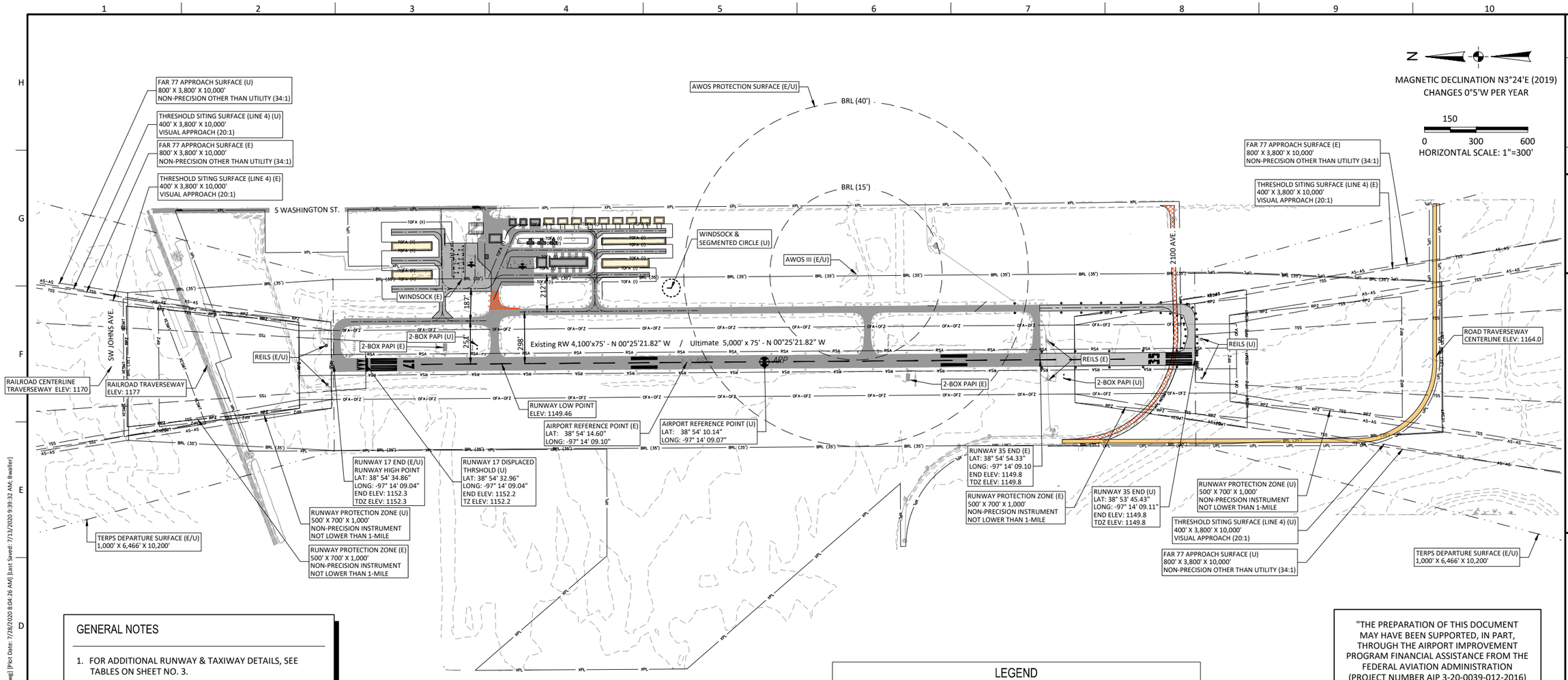
DRAWN BY: JWM | DESIGNED BY: JWM | REVIEWED BY: BJW | QUANTITIES CHECKED BY: N/A

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 1 of 38

[File Location: Y:\Manhattan\130400551130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 TITLE SHEET.dwg] [Plot Date: 7/13/2020 10:22:07 PM] [Last Saved: 7/13/2020 9:25:40 AM; Bwaller]



GENERAL NOTES

1. FOR ADDITIONAL RUNWAY & TAXIWAY DETAILS, SEE TABLES ON SHEET NO. 3.
2. FOR ELEVATIONS OF BUILDING/FACILITIES, SEE TERMINAL AREA DRAWING ON SHEET NO. 12.
3. AIRCRAFT PARKING SHOWN ON TERMINAL AREA DRAWING, SHEET NO. 12.
4. FOR RUNWAY PROFILE DETAILS, SEE SHEET 5.

LEGEND		
DESCRIPTION	EXISTING	ULTIMATE
AIRPORT REFERENCE POINT (ARP)	ARP	ARP
BUILDINGS		
PAVEMENT		
PAVEMENT TO BE REMOVED		
BUILDING RESTRICTION LINE (BRL) W/ HEIGHT	BRL (35')	
PART 77 APPROACH SURFACE	AS–AS	AS–AS
FAA THRESHOLD SITING SURFACE	TSS	TSS
PROPERTY LINES	XPL	UPL
EASEMENTS	XESMT	UESMT
RUNWAY PROTECTION ZONE	RPZ	RPZ
RUNWAY SAFETY AREA	RSA	RSA
OBJECT FREE AREA	OFA	OFA
RUNWAY DEPARTURE SURFACE		
CONTOURS		
RUNWAY VISIBILITY ZONE (RVZ)		RVZ
PACS AND SACS	NONE	
SEGMENTED CIRCLE/WIND CONE		

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FAA APPROVAL BLOCK

AIRPORT LAYOUT PLAN
Scale: 1" = 300' (Full Size)

DATE | REVISIONS | NO.

ALP
PLAN UPDATE
JULY 15, 2020

AIRPORT LAYOUT PLAN

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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SUBMITTED — CHECKED BY: —
REVIEWED — DATE: —
DESIGNED — BY: —
DRAWN — DATE: —

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

SHEET NO. 2 of 38

[File Location: Y:\Manhattan\130400\5\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 AIRPORT LAYOUT PLAN.dwg] [Plot Date: 7/28/2020 8:04:26 AM] [Last Saved: 7/13/2020 9:39:32 AM, Bwaller]

RUNWAY DATA TABLE		
	EXISTING RUNWAY 17/35	ULTIMATE RUNWAY 17/35
AIRPLANE DESIGN GROUP	B-I	B-I
APRC	B/I/5000	B/I/5000
DPRC	B/I	B/I
FAR PART 77 CATEGORY	NON-PRECISION	NON-PRECISION
RUNWAY DIMENSIONS	4,100' X 75'	5,000' X 75'
RUNWAY BEARING (TRUE)	N 00° 25' 21.82" W	N 00° 25' 21.82" W
RUNWAY PROTECTION ZONE (W1XL1XW2)	500'X1,000'X700'	500'X1,000'X700'
RUNWAY SAFETY AREA (RSA) WIDTH	120'	120'
RUNWAY SAFETY AREA (RSA) BEYOND RUNWAY END	240'	240'
RUNWAY OBSTACLE FREE ZONE (OFZ) WIDTH	400'	400'
RUNWAY OBSTACLE FREE ZONE (OFZ) BEYOND RUNWAY END	200'	200'
RUNWAY OBSTACLE FREE AREA (OFA) WIDTH	400'	400'
RUNWAY OBSTACLE FREE AREA (OFA) BEYOND RUNWAY END	240'	240'
PAVEMENT SURFACE MATERIAL	CONCRETE	CONCRETE
PAVEMENT STRENGTH	13,000 SWG/16,000 DWG	13,000 SWG/16,000 DWG
RUNWAY EFFECTIVE GRADIENT	0.069%	0.057%
RUNWAY MARKING	NON-PRECISION	NON-PRECISION
RUNWAY LIGHTING	MIRL	MIRL
TAXIWAY LIGHTING	MITL	MITL
TAXIWAY SURFACE MATERIAL	CONCRETE	CONCRETE
TAXIWAY WIDTH	35'	35'
TAXIWAY SAFETY AREA (TSA) WIDTH	49'	49'
TAXIWAY OBJECT FREE AREA (TOFA)	131'	131'
TAXIWAY CENTERLINE TO RUNWAY CENTERLINE SEPARATION	250' / 300'	250'
TAXIWAY CENTERLINE TO TAXIWAY CENTERLINE SEPARATION	105'	105'
HOLDING POSITION	200'	200'
TAXILANE WIDTH	35'	35'
TAXILANE OBJECT FREE AREA (TOFA)	115'	115'
RUNWAY DEPARTURE SURFACE	1,000' x 6,466' x 10,200'	1,000' x 6,466' x 10,200'
AERONAUTICAL SURVEY REQUIRED	NVGS	NVGS

	17	35	17	35
RUNWAY ELECTRONIC NAVIGATIONAL AIDS	GPS/VOR	GPS/VOR	GPS/VOR	GPS/VOR
RUNWAY VISUAL NAVIGATIONAL AIDS	PAPI(2L)	PAPI(2L)	PAPI(2L)	PAPI(2L)
RUNWAY VISIBILITY MINIMUMS	1-MILE	1-MILE	1-MILE	1-MILE
FAR PART 77 APPROACH SLOPES	34:1	34:1	34:1	34:1
RUNWAY TOUCHDOWN ZONE ELEVATION (TDZE)	1152.3'	1149.8'	1152.2'	1149.8'
RUNWAY THRESHOLD DISPLACEMENT	0'	0'	187'	0'
RUNWAY THRESHOLD DISPLACEMENT ELEVATION	-	-	1152.2'	-
RUNWAY THRESHOLD DISPLACEMENT	0'	0'	187'	0'

DECLARED DISTANCE TABLE				
	EXISTING RUNWAY 17	EXISTING RUNWAY 35	ULTIMATE RUNWAY 17	ULTIMATE RUNWAY 35
TAKEOFF RUN AVAILABLE (TORA)	4,100'	4,100'	5,000'	5,000'
TAKEOFF DISTANCE AVAILABLE (TODA)	4,100'	4,100'	5,000'	5,000'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	4,100'	4,100'	5,000'	5,000'
LANDING DISTANCE AVAILABLE (LDA)	4,100'	4,100'	4,813'	5,000'

AIRPORT DATA		
	EXISTING	ULTIMATE
NPIAS AIRPORT SERVICE LEVEL	GNERAL AVIATION SERVICE	GENERAL AVIATION SERVICE
STATE SYSTEM ROLE	BUSINESS AIRPORT	BUSINESS AIRPORT
AIRPORT ELEVATION - MEAN SEA LEVEL (MSL)	1,152.3	1,152.3
AIRPORT REFERENCE POINT (ARP) COORDINATES (LAT. & LONG.)*	38° 54' 14.60" 97° 14' 09.10"	38° 54' 10.14" 97° 14' 09.07"
AIRPORT ELECTRONIC NAVIGATION AIDS	GPS, ROTATING BEACON	GPS, ROTATING BEACON
AIRPORT REFERENCE CODE (ARC)	B-I	B-I
CRITICAL DESIGN AIRCRAFT	PIPER 31T CHEYENNE II	PIPE 31T CHEYENNE II
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH	93°F	93°F

* THE LATITUDE AND LONGITUDE OF ALL COORDINATES ARE FROM THE NAD 83 COORDINATE SYSTEM

RUNWAY END COORDINATES (NAD 83)			
		EXISTING	ULTIMATE
LATITUDE	RUNWAY 17	38° 54' 34.86"	38° 54' 34.86"
LONGITUDE		97° 14' 09.04"	97° 14' 09.04"
LATITUDE	RUNWAY 17 DISPLACED THRESHOLD	-	38° 54' 32.96"
LONGITUDE		-	97° 14' 09.04"
LATITUDE	RUNWAY 35	38° 53' 54.33"	38° 53' 45.43"
LONGITUDE		97° 14' 09.10"	97° 14' 09.11"

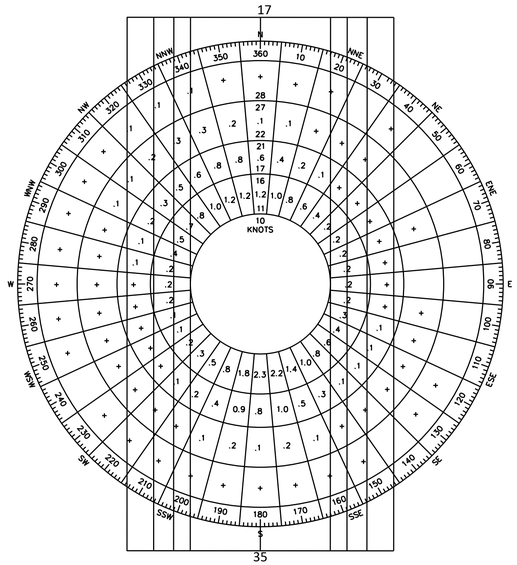
THRESHOLD SITING SURFACE OBJECT PENETRATIONS				
OBJECT/RW END	OBJECT ELEVATION	RW ELEVATION	PENETRATION	DISPOSITION
SEE INNER APPROACH DRAWINGS FOR TSS OBJECT PENETRATION TABLES				

MODIFICATION OF AIRPORT DESIGN STANDARDS			
MODIFICATION	APPROVAL DATE	AIRSPACE CASE NUMBER	DESCRIPTION
NONE REQUIRED			

OBSTACLE FREE ZONE (OFZ) OBJECT PENETRATION		
OBJECT	PENETRATION	DISPOSITION
NONE		

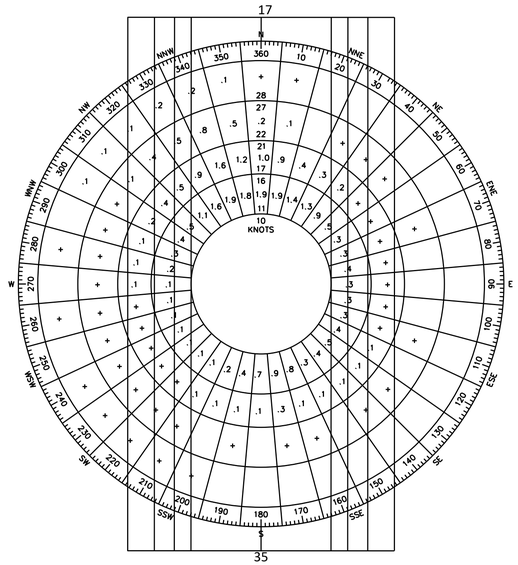
WIND DATA				
RUNWAY DESIGNATION	10.5 KNOTS	13.0 KNOTS	16.0 KNOTS	20.0 KNOTS
EXISTING/ULTIMATE RUNWAY 17/35 (ALL WEATHER)	93.44%	96.83%	98.98%	99.71%
EXISTING/ULTIMATE RUNWAY 17/35 (IFR)	92.45%	96.17%	98.67%	99.5400

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR



WIND ROSE (ALL WEATHER)
SOURCE: NATIONAL CLIMATE DATA CENTER
PERIOD: 2010 TO 2019 FOR SALINA, KANSAS

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR



WIND ROSE (IFR)
SOURCE: NATIONAL CLIMATE DATA CENTER
PERIOD: 2010 TO 2019 FOR SALINA, KANSAS

NOTE: WIND DATA WAS UTILIZED FROM SALINA MUNICIPAL AIRPORT (SLN) AS THE AWOS DATA FROM THE ABILENE MUNICIPAL AIRPORT WAS NOT AVAILABLE AT THIS TIME.

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NO.	REVISIONS	DATE
.	-	-

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JULY 15, 2020

AIRPORT DATA SHEET

AIRPORT LAYOUT PLAN UPDATE
ABILENE MUNICIPAL AIRPORT

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DRAWN BY: ----
DESIGNED BY: ----
REVIEWED BY: ----
SUBMITTED CHECKED BY: ----

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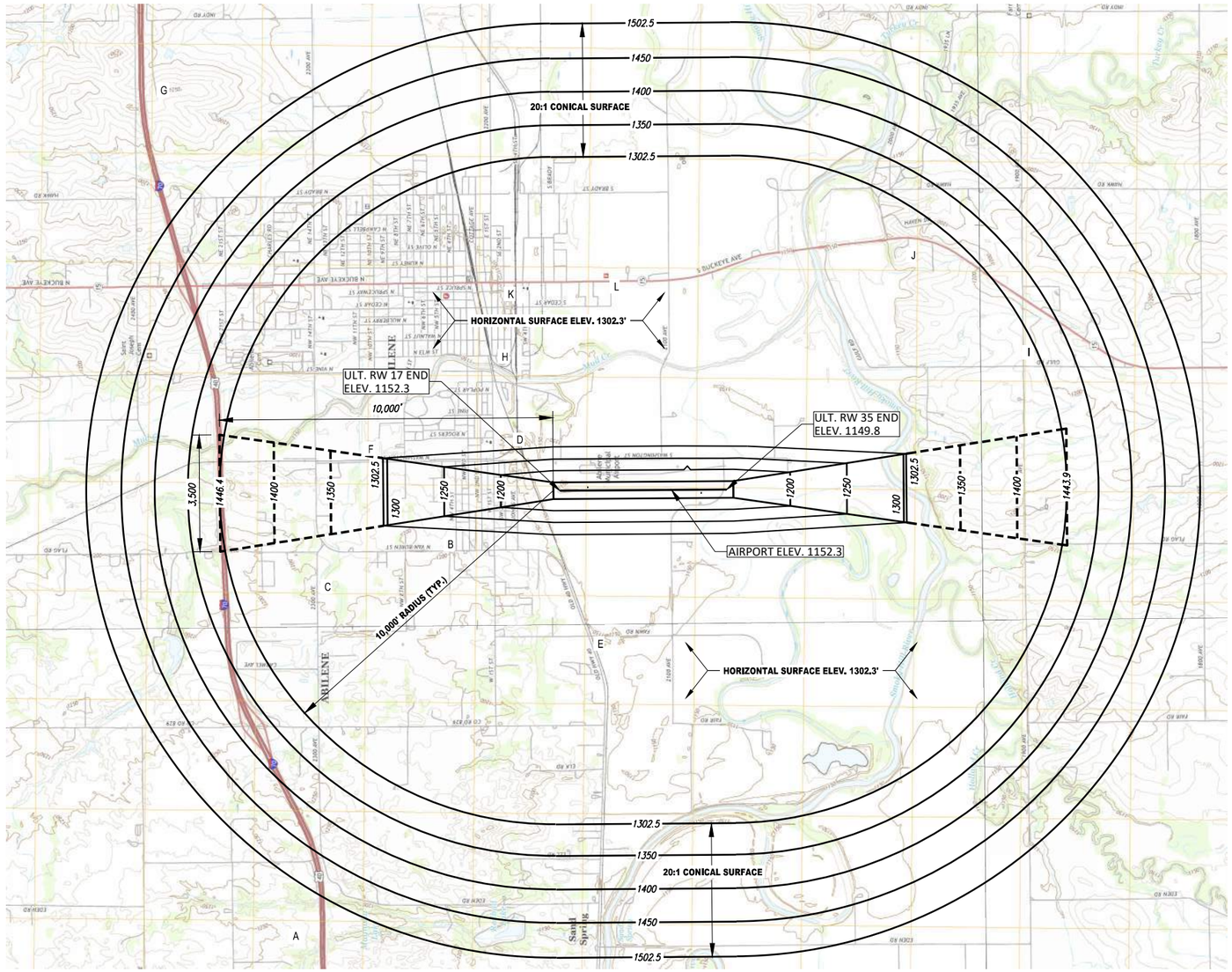
DATE: JULY 15, 2020

SHEET NO. 3 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 AIRPORT DATA.dwg] [Plot Date: 7/13/2020 9:40:57 AM] [Last Saved: 6/17/2020 3:35:48 PM] [Bwaller]



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MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

1000
0 2000 4000
HORIZONTAL SCALE: 1"=2000'

GENERAL NOTES

1. RUNWAYS, CLEARANCES, AND LOCATIONS ARE CALCULATED FROM ULTIMATE RUNWAY END ELEVATIONS AND ULTIMATE APPROACH SURFACES UNLESS OTHERWISE NOTED.
2. DESCRIPTION OF FEATURES AND OBJECTS WITHIN THE INNER PORTION OF APPROACH SURFACES IS ILLUSTRATED ON THE INNER PORTION APPROACH DRAWING ON THESE PLANS.
3. TOWER ELEVATIONS AND INFORMATION WAS OBTAINED FROM THE FAA OBSTRUCTION EVALUATION/AIRPORT AIRSPACE ANALYSIS (OE/AAA) DATABASE.

ABILENE MUNICIPAL AIRPORT - FAA STUDIED TOWERS

FAA CASE STUDY NUMBER	ALP DESIGNATION	TOWER DESCRIPTION	OWNER	LATITUDE	LONGITUDE	SITE ELEVATION	STRUCTURE HEIGHT	TOTAL HEIGHT	DETERMINATION	DISPOSITION	EXISTING MARKING
2012-ACE-2692-OE	A	ANTENNA TOWER	ELITE WIRELESS, LP	38.9323	-97.2834	1241	182	1423	DNH	NONE	NONE
2019-ACE-4582-OE	B	WATER TOWER	CITY OF ABILENE	38.9186	-97.2416	1200	145	1345	NPH	MARK/LIGHT	
2014-ACE-689-OE	C	ANTENNA TOWER	MCC RADIO, LLC	38.9293	-97.2463	1190	163	1353	DNH	NONE	RED LIGHT & PAINTED
2012-ACE-3205-OE	D	POLE / ANTENNA	UNION PACIFIC RAILROAD COMPANY	38.9133	-97.2303	1152	68	1220	DNH	NONE	NONE
2017-ACE-1443-OE	E	COMMUNICATIONS TOWER	AT&T	38.9064	-97.2522	1151	151	1302	DNH	NONE	NONE
2014-ACE-2523-OE	F	WIRELESS SELF SUPPORT TOWER	NEX-TECH WIRELESS	38.9257	-97.2319	1161	137	1298	DNH	NONE	NONE
1998-ACE-1627-OE	G	ANTENNA TOWER	OMNI AMERICA DEVELOPMENT CORP.	38.9425	-97.1940	1240	360	1600		NONE	DUAL RED MEDIUM INTENSITY LIGHTS
2019-ACE-4580-OE	H	GRAIN ELEVATOR	(UNKNOWN)	38.9143	-97.2220	1157	163	1320	DNH	NONE	RED LIGHTS
2014-ACE-2854-OE	I	TRANSMISSION LINE	WESTERN ENERGY	38.8779	-97.2138	1176	105	1281	DNH	NONE	NONE
2019-ACE-4579-OE	J	COMMUNICATIONS TOWER	(UNKNOWN)	38.8805	-97.2113	1175	201	1376	NPH	MARK/LIGHT	
2014-ACE-4674-OE	K	ANTENNA TOWER	BNSF RAILWAY COMPANY	38.9134	-97.2153	1148	120	1268	DNH	NONE	NONE
2007-ACE-4118-OE	L	COMMUNICATIONS TOWER	GREAT PLAINS CHRISTIAN RADIO	38.9053	-97.2139	1145	100	1245	DNH	NONE	NONE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

AIRPORT AIRSPACE DRAWING

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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Alfred Benesch & Company
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Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

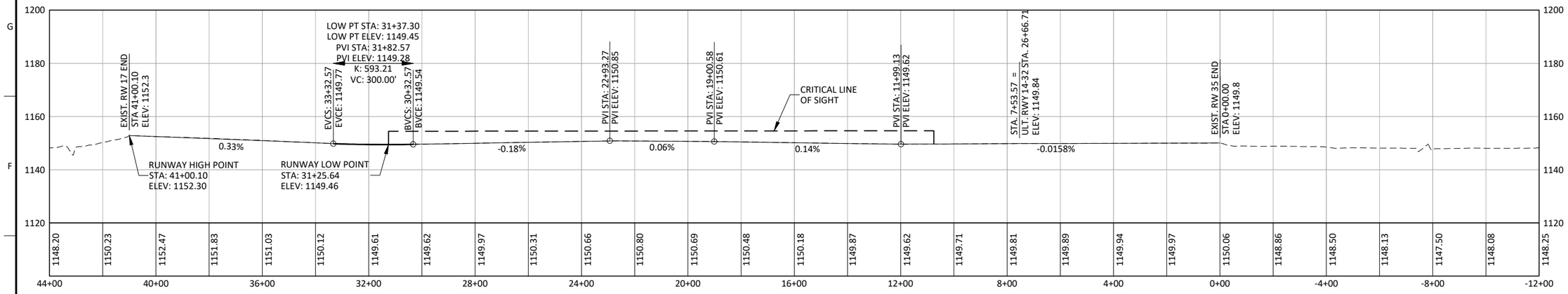
DRAWN BY: JM | DESIGNED BY: JM | REVIEWED BY: BW | SUBMITTED: N/A | CHECKED BY:

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

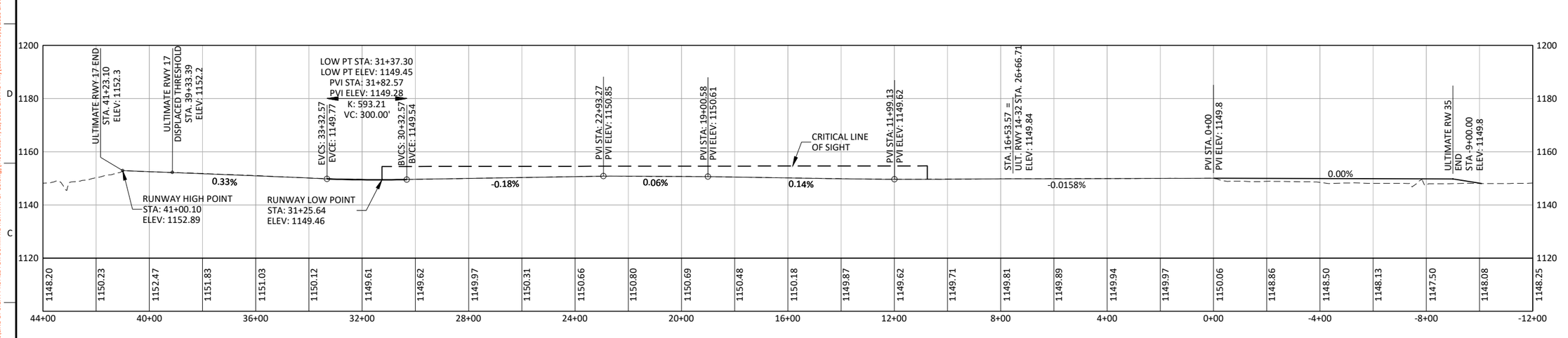
SHEET NO.
4 of 38

[File Location: Y:\manhattan\130400\130492.00_abilene_master_plan\Eng_Docs\Sheet\01 - Airport Layout Plan (ALP)\130492.00 AIRPORT AIRSPACE DRAWING.dwg] [Plot Date: 7/13/2020 9:44:18 AM] [Last Saved: 5/5/2020 2:16:40 PM; jbwalker]



EXISTING PRIMARY RUNWAY 17/35 PROFILE (4,100')

Scale: Horz. 1"=200' Vert. 1"=20'



ULTIMATE PRIMARY RUNWAY 17/35 PROFILE (5,000')

Scale: Horz. 1"=200' Vert. 1"=20'

LEGEND

ELEV = ELEVATION
RW = RUNWAY
STA = STATION

100'
0 200' 400'
HORIZONTAL SCALE: 1"= 200'
VERTICAL SCALE: 1"=20'
0
20'

NO.	REVISIONS	DATE
-	-	-

ALP
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JULY 15, 2020

LINE OF SIGHT PROFILES

AIRPORT LAYOUT PLAN UPDATE

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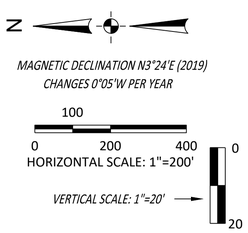
DRAWN BY: JM
DESIGNED BY: JM
REVIEWED BY: BW
SUBMITTED/ RECORDED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

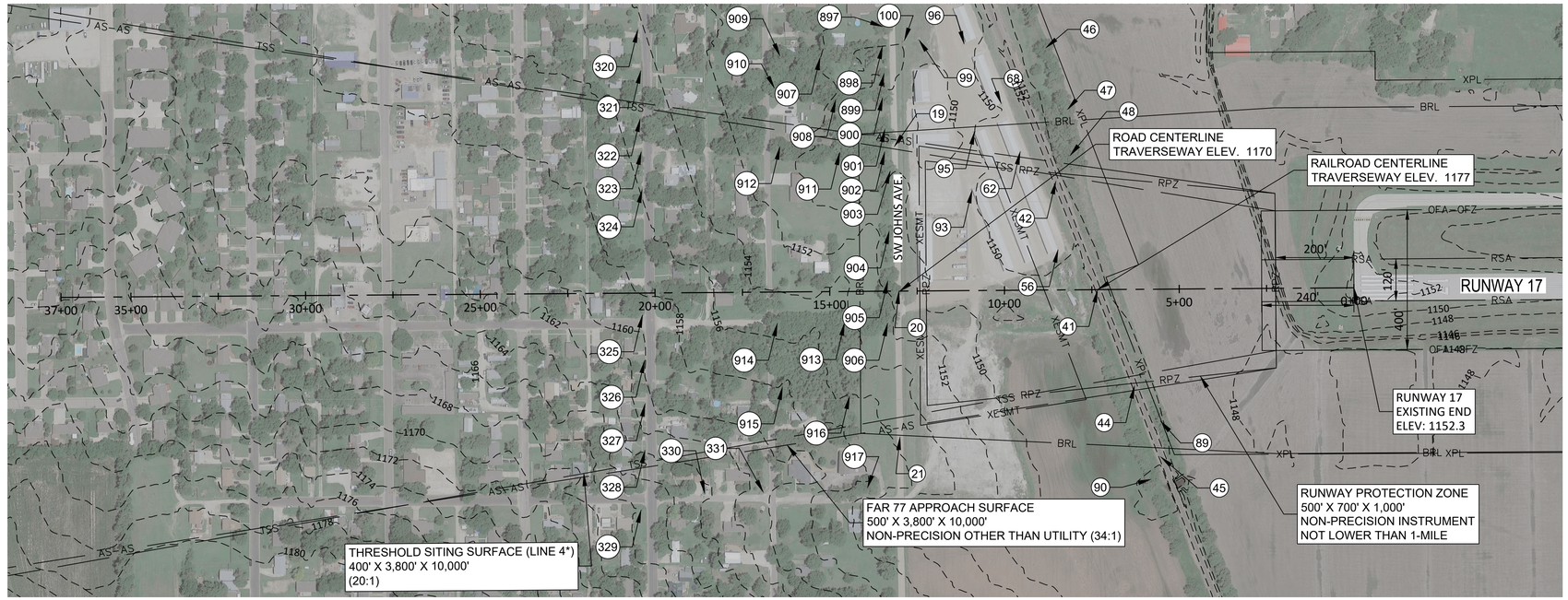
SHEET NO.
5 of 38

[File Location: Y:\manhattan\130400\130492.00_abilene_master_plan\Eng_Docs\Sheets\LINE OF SIGHT PROFILE FOR ULTIMATE RUNWAY 17-35.dwg] [Plot Date: 7/13/2020 1:07:43 PM] [LastSaved: 5/5/2020 2:00:28 PM; Bwaller]

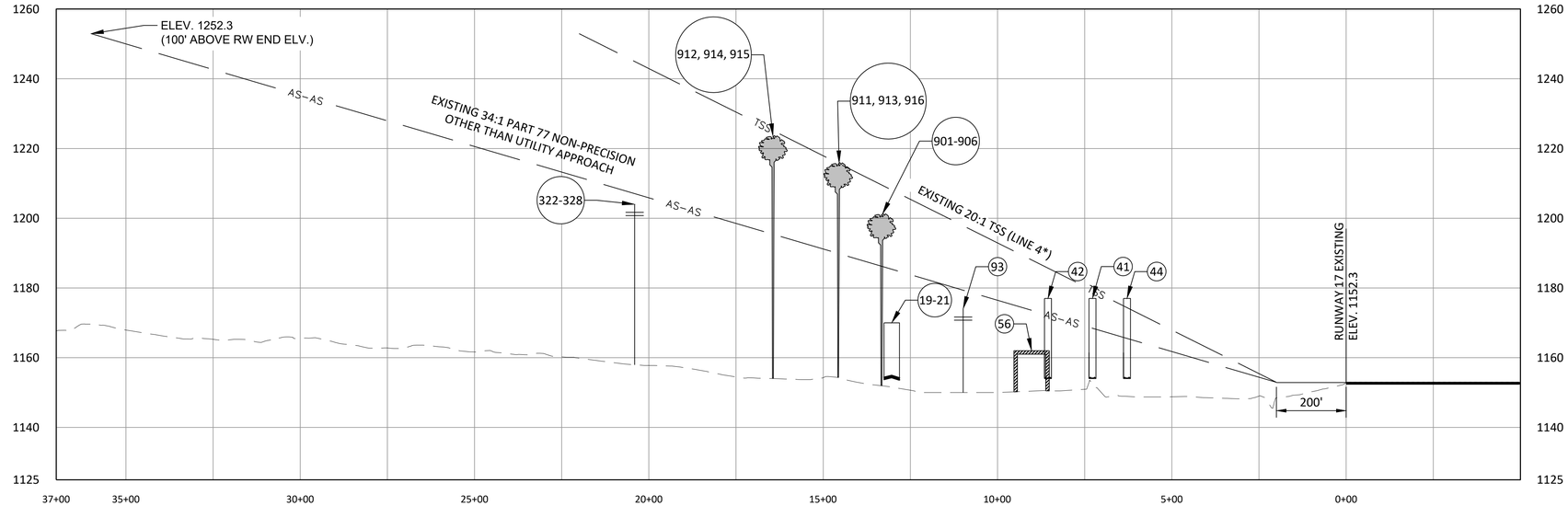


LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS–AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE



PLAN - RUNWAY 17 EXISTING INNER APPROACH



PROFILE - RUNWAY 17 EXISTING INNER APPROACH

NOTES

1. * LINE NUMBERS ARE TAKEN FROM AC 150/5300-13A, TABLE 3-2. APPROACH/DEPARTURE STANDARDS TABLE.
2. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
3. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
4. OBSTRUCTIONS IN THE 7:1 TRANSITIONAL SURFACE ARE NOT SHOWN ON THE PROFILE VIEW.
5. SEE SHEET 7 FOR OBSTRUCTION TABLES.

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

INNER PORTION APPROACH OF EXISTING RUNWAY 17

AIRPORT LAYOUT PLAN UPDATE

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DRAWN BY: JWM
REVIEWED BY: BJW
DOCUMENTS CHECKED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

SHEET NO. 6 of 38

[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\INNER PORTION APPROACH EXISTING RUNWAY 17_35.dwg] [Plot Date: 7/13/2020 1:14:05 PM] [Last Saved: 5/5/2020 3:32:33 PM; Bwaller]

OBSTRUCTION TABLE - PART 77 SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
19	ROADWAY	1168	1184.7	34:1 Approach Surface	-16.7	C	--
20	ROADWAY	1170	1184.7	34:1 Approach Surface	-14.7	C	--
21	ROADWAY	1168	1184.7	34:1 Approach Surface	-16.7	C	--
41	RAILROAD	1177	1167.9	34:1 Approach Surface	9.1	OB	LIGHT
42	RAILROAD	1177	1171.7	34:1 Approach Surface	5.3	OB	LIGHT
44	RAILROAD	1177	1164.9	34:1 Approach Surface	12.1	OB	LIGHT
45	RAILROAD	1177	1191.2	7:1 Transition Surface	-14.2	C	--
46	TREE MASS	1189	1223.1	7:1 Transition Surface	-34.1	C	--
47	TREE MASS	1205	1198.4	7:1 Transition Surface	6.6	OB	REMOVE TREES
56	BUILDING	1162	1171.1	34:1 Approach Surface	-9.1	C	--
62	BUILDING	1160	1197.3	7:1 Transition Surface	-37.3	C	--
68	BUILDING	1162	1172.3	7:1 Transition Surface	-10.3	C	--
89	TREE MASS	1201	1179.3	7:1 Transition Surface	21.7	OB	REMOVE TREES
90	TREE MASS	1192	1202.0	7:1 Transition Surface	-10.0	C	--
93	POWER POLE	1174	1178.5	34:1 Approach Surface	-4.5	C	--
95	POWER POLE	1169	1187.0	7:1 Transition Surface	-18.0	C	--
99	POWER POLE	1172	1223.8	7:1 Transition Surface	-51.8	C	--
100	POWER POLE	1182	1222.2	7:1 Transition Surface	-40.2	C	--
320	POWER POLE	1209	1236.0	7:1 Transition Surface	-27.0	C	--
321	POWER POLE	1192	1221.7	7:1 Transition Surface	-29.7	C	--
322	POWER POLE	1193	1205.2	34:1 Approach Surface	-12.2	C	--
323	POWER POLE	1194	1205.2	34:1 Approach Surface	-11.2	C	--
324	POWER POLE	1192	1205.2	34:1 Approach Surface	-13.2	C	--
325	POWER POLE	1199	1205.2	34:1 Approach Surface	-6.2	C	--
326	POWER POLE	1201	1205.2	34:1 Approach Surface	-4.2	C	--
327	POWER POLE	1203	1205.2	34:1 Approach Surface	-2.2	C	--
328	POWER POLE	1204	1205.2	34:1 Approach Surface	-1.2	C	--
329	POWER POLE	1207	1218.1	7:1 Transition Surface	-11.1	C	--
330	POWER POLE	1207	1211.5	7:1 Transition Surface	-4.5	C	--
331	POWER POLE	1201	1209.8	7:1 Transition Surface	-8.8	C	--
897	TREE	1193	1230.4	7:1 Transition Surface	-37.4	C	--
898	TREE	1204	1221.5	7:1 Transition Surface	-17.5	C	--
899	TREE	1193	1210.4	7:1 Transition Surface	-17.4	C	--
900	TREE	1200	1201.1	7:1 Transition Surface	-1.1	C	--
901	TREE	1194	1188.2	7:1 Transition Surface	5.8	OB	REMOVE/LOWER
902	TREE	1198	1185.4	34:1 Approach Surface	12.6	OB	REMOVE/LOWER
903	TREE	1201	1185.4	34:1 Approach Surface	15.6	OB	REMOVE/LOWER
904	TREE	1193	1185.4	34:1 Approach Surface	7.6	OB	REMOVE/LOWER
905	TREE	1205	1185.4	34:1 Approach Surface	19.6	OB	REMOVE/LOWER
906	TREE	1197	1185.4	34:1 Approach Surface	11.6	OB	REMOVE/LOWER
907	TREE	1215	1215.5	34:1 Approach Surface	-0.5	C	--
908	TREE	1215	1199.7	34:1 Approach Surface	15.3	OB	REMOVE/LOWER
909	TREE	1225	1220.6	7:1 Transition Surface	4.4	OB	REMOVE/LOWER
910	TREE	1225	1206.3	7:1 Transition Surface	18.7	OB	REMOVE/LOWER
911	TREE	1208	1187.6	34:1 Approach Surface	20.4	OB	REMOVE/LOWER
912	TREE	1221	1193.5	34:1 Approach Surface	27.5	OB	REMOVE/LOWER
913	TREE	1216	1187.6	34:1 Approach Surface	28.4	OB	REMOVE/LOWER
914	TREE	1222	1193.5	34:1 Approach Surface	28.5	OB	REMOVE/LOWER
915	TREE	1224	1193.5	34:1 Approach Surface	30.5	OB	REMOVE/LOWER
916	TREE	1216	1187.6	34:1 Approach Surface	28.4	OB	REMOVE/LOWER
917	TREE	1209	1208.4	7:1 Transition Surface	0.6	OB	REMOVE/LOWER

OBSTRUCTION TABLE - 20:1 RUNWAY END SITING SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
19	ROADWAY	1168	1207.3	20:1 Approach Surface	-39.3	C	--
20	ROADWAY	1170	1207.3	20:1 Approach Surface	-37.3	C	--
21	ROADWAY	1168	1207.3	20:1 Approach Surface	-39.3	C	--
41	RAILROAD	1177	1178.8	20:1 Approach Surface	-1.8	C	--
42	RAILROAD	1177	1185.3	20:1 Approach Surface	-8.3	C	--
44	RAILROAD	1177	1173.8	20:1 Approach Surface	3.2	OB	LIGHT
56	BUILDING	1162	1184.3	20:1 Approach Surface	-22.3	C	--
68	BUILDING	1162	1186.3	20:1 Approach Surface	-24.3	C	--
93	POWER POLE	1174	1196.8	20:1 Approach Surface	-22.8	C	--
322	POWER POLE	1193	1242.3	20:1 Approach Surface	-49.3	C	--
323	POWER POLE	1194	1242.3	20:1 Approach Surface	-48.3	C	--
324	POWER POLE	1192	1242.3	20:1 Approach Surface	-50.3	C	--
325	POWER POLE	1199	1242.3	20:1 Approach Surface	-43.3	C	--
326	POWER POLE	1201	1242.3	20:1 Approach Surface	-41.3	C	--
327	POWER POLE	1203	1242.3	20:1 Approach Surface	-39.3	C	--
328	POWER POLE	1204	1242.3	20:1 Approach Surface	-38.3	C	--
902	TREE	1198	1208.6	20:1 Approach Surface	-10.6	C	--
903	TREE	1201	1208.6	20:1 Approach Surface	-7.5	C	--
904	TREE	1193	1208.6	20:1 Approach Surface	-15.6	C	--
905	TREE	1205	1208.6	20:1 Approach Surface	-3.5	C	--
906	TREE	1197	1208.6	20:1 Approach Surface	-11.6	C	--
911	TREE	1208	1212.3	20:1 Approach Surface	-4.3	C	--
912	TREE	1221	1222.3	20:1 Approach Surface	-1.3	C	--
913	TREE	1216	1212.3	20:1 Approach Surface	3.7	OB	REMOVE/LOWER
914	TREE	1222	1222.3	20:1 Approach Surface	-0.3	C	--
915	TREE	1224	1222.3	20:1 Approach Surface	1.7	OB	REMOVE/LOWER
916	TREE	1216	1212.3	20:1 Approach Surface	3.7	OB	REMOVE/LOWER

NO.	REVISIONS	DATE

ALP
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JULY 15, 2020

EXISTING RUNWAY 17 DATA

AIRPORT LAYOUT PLAN UPDATE

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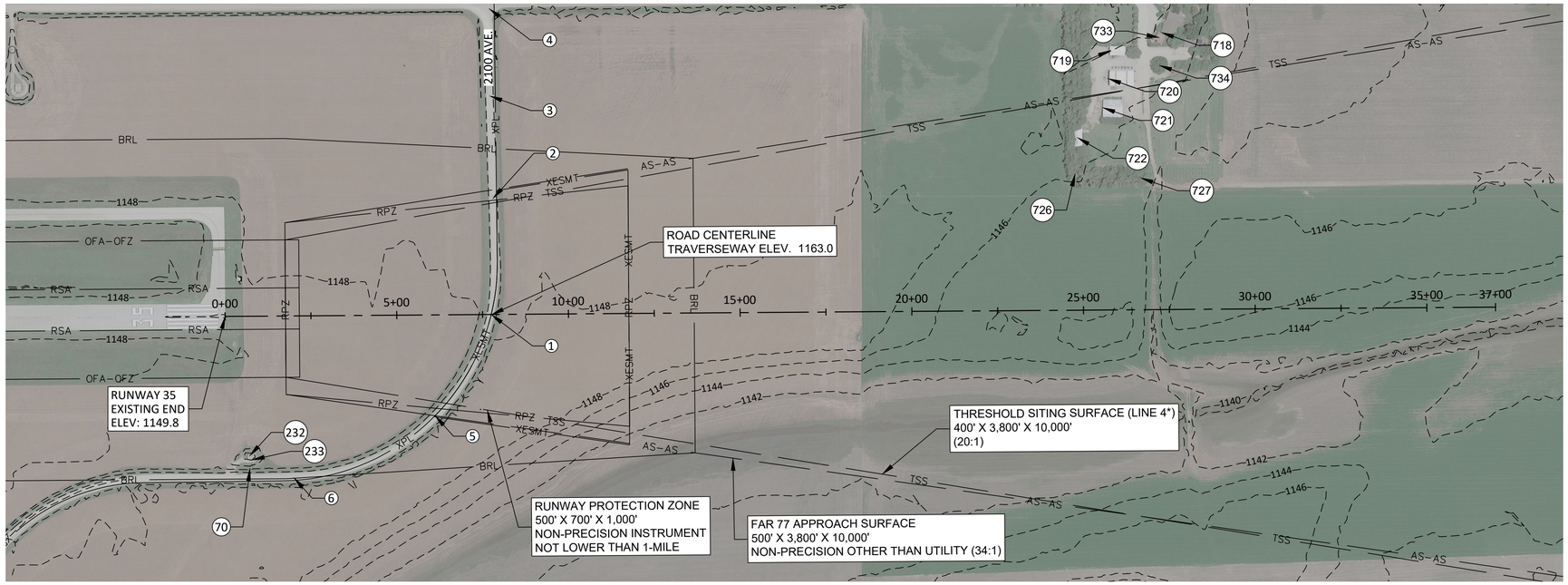
PROJECT
ALP UPDATE

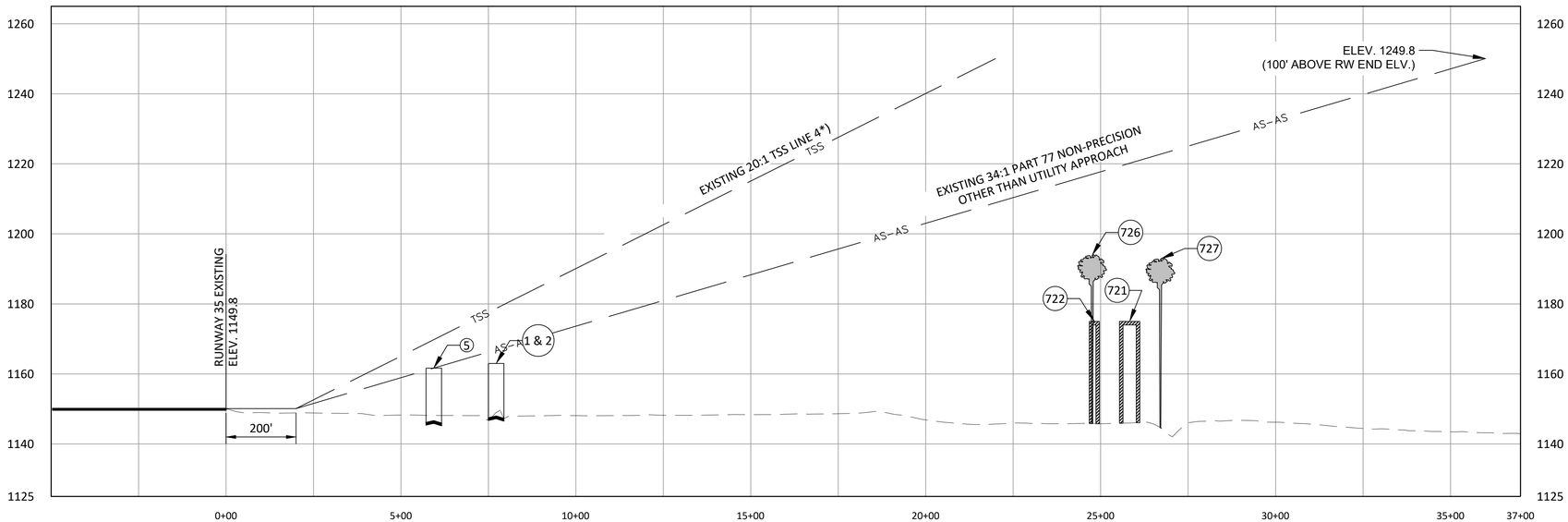
DATE
JULY 15, 2020

SHEET NO.
7 of 38

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 EXISTING RUNWAY DATA.dwg] [Plot Date: 7/13/2020 9:20:05 PM] [Last Saved: 7/13/2020 9:11:49 PM; Bwaller]



PLAN - RUNWAY 35 EXISTING INNER APPROACH



PROFILE - RUNWAY 35 EXISTING INNER APPROACH

NOTES

1. * LINE NUMBERS ARE TAKEN FROM AC 150/5300-13A, TABLE 3-2. APPROACH/DEPARTURE STANDARDS TABLE.
2. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
3. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
4. OBSTRUCTIONS IN THE 7:1 TRANSITIONAL SURFACE ARE NOT SHOWN ON THE PROFILE VIEW.
5. THERE ARE NO OBSTRUCTIONS TO THE THRESHOLD SITING SURFACE (TSS), THEREFORE THAT OBSTRUCTION TABLE IS NOT SHOWN.

OBSTRUCTION TABLE - PART 77 SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C* = Clears 'OB' = Obstructs	
1	EXISTING ROAD CENTERLINE	1163	1166.7	34:1 Approach Surface	-3.7	C	
2	EXISTING ROAD CENTERLINE	1163	1166.7	34:1 Approach Surface	-3.7	C	
3	EXISTING ROAD CENTERLINE	1161	1206.7	34:1 Approach Surface	-45.7	C	
4	EXISTING ROAD CENTERLINE	1161	1243.9	7:1 Transition Surface	-82.9	C	
5	EXISTING ROAD CENTERLINE	1163	1163.0	7:1 Transition Surface	0.0	C	
6	EXISTING ROAD CENTERLINE	1164	1175.3	7:1 Transition Surface	-11.3	C	
70	POWER POLE	1178	1171.1	7:1 Transition Surface	6.9	OB	REMOVE/LOWER/LIGHT
232	BUILDING	1162	1169.6	7:1 Transition Surface	-7.6	C	--
233	ANTENNA	1182	1169.6	7:1 Transition Surface	12.4	OB	LIGHT
718	BUILDING	1169	1249.2	7:1 Transition Surface	-80.2	C	--
719	BUILDING	1175	1240.8	7:1 Transition Surface	-65.8	C	--
720	BUILDING	1175	1229.4	7:1 Transition Surface	-54.4	C	--
721	BUILDING	1175	1219.2	34:1 Approach Surface	-44.2	C	--
722	BUILDING	1175	1217.0	34:1 Approach Surface	-42.0	C	--
726	TREE MASS	1194	1216.9	34:1 Approach Surface	-22.9	C	--
727	TREE MASS	1193	1222.4	34:1 Approach Surface	-29.4	C	--
733	TREE	1203	1245.6	7:1 Transition Surface	-42.6	C	--
734	TREE	1201	1235.9	7:1 Transition Surface	-34.9	C	--

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°05'W PER YEAR

100
0 200 400
HORIZONTAL SCALE: 1"=200'

VERTICAL SCALE: 1"=20' → 0 20

LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS–AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

INNER PORTION APPROACH OF EXISTING RUNWAY 35

AIRPORT LAYOUT PLAN UPDATE

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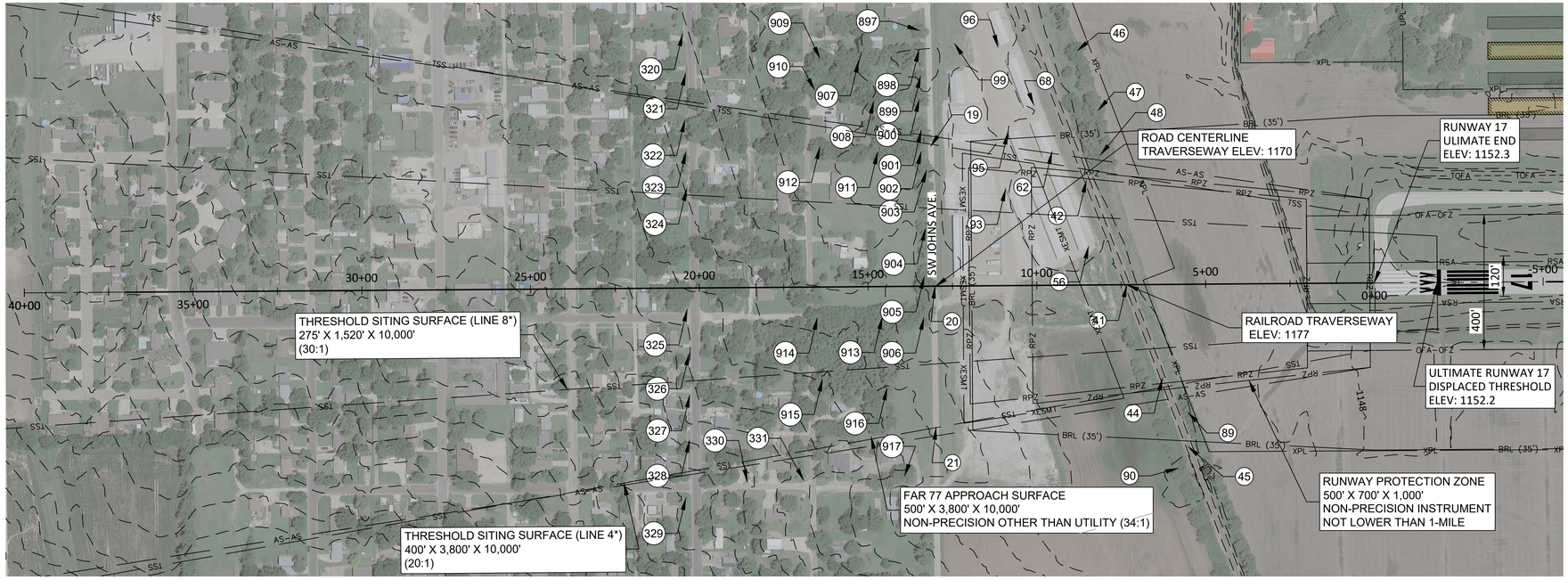
DRAWN BY: JWM
DESIGNED BY: JWM
REVIEWED BY: BLW
DOCUMENTS PREPARED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

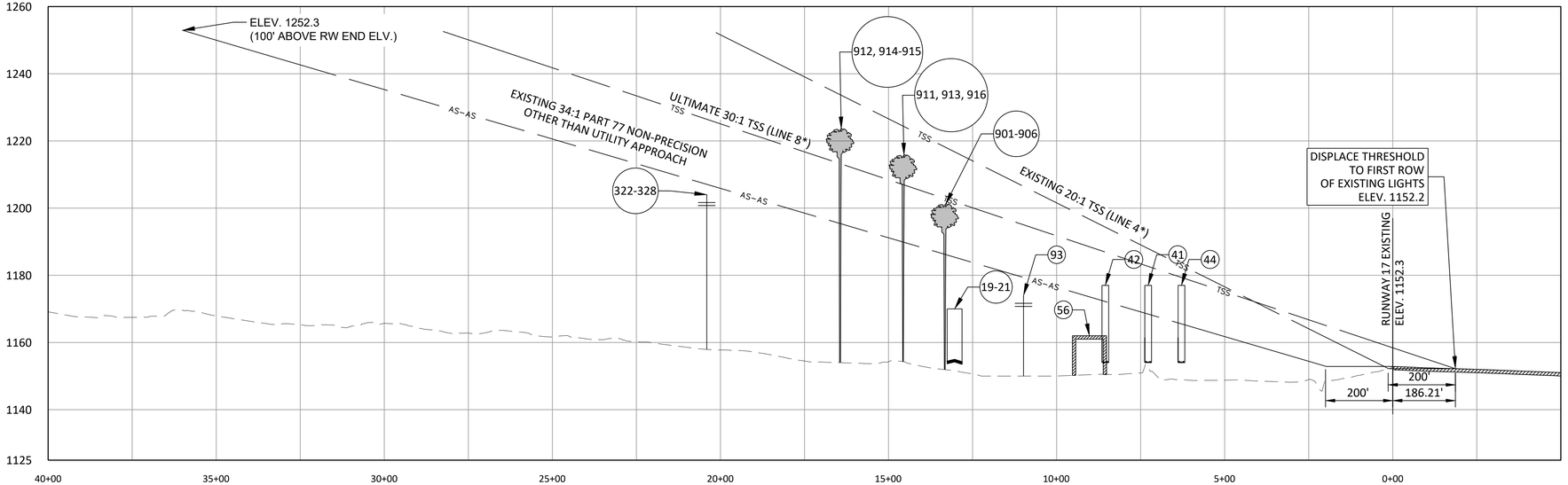
SHEET NO. 8 of 38

[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\INNER PORTION APPROACH EXISTING RUNWAY 17_35.dwg] [Plot Date: 7/13/2020 1:19:47 PM] [Last Saved: 5/5/2020 3:32:33 PM; Bwaller]



PLAN - RUNWAY 17 ULTIMATE INNER APPROACH

Scale: 1" = 200' (Full Size)



PROFILE - RUNWAY 17 ULTIMATE INNER APPROACH

Scale: Horz. 1"=200' Vert. 1"=20'

NOTES

1. * LINE NUMBERS ARE TAKEN FROM AC 150/5300-13A, TABLE 3-2. APPROACH/DEPARTURE STANDARDS TABLE.
2. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
3. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
4. OBSTRUCTIONS IN THE 7:1 TRANSITIONAL SURFACE ARE NOT SHOWN ON THE PROFILE VIEW.
5. SEE SHEET 10 FOR OBSTRUCTION TABLES. THE 30:1 OBSTRUCTION TABLES ARE NOT SHOWN AS THE TREES THAT ARE SHOWN IN THE PROFILE ARE SHOWN TO BE REMOVED WITHIN THE APPROACH SURFACE.

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°05'W PER YEAR

100
0 200 400
HORIZONTAL SCALE: 1"=200'

0
20
VERTICAL SCALE: 1"=20'

LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS–AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE
UPL	ULTIMATE PROPERTY LINE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

INNER PORTION APPROACH OF ULTIMATE RUNWAY 17

AIRPORT LAYOUT PLAN UPDATE

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DRAWN BY:	DESIGNED BY:	REVIEWED BY:	QUANTITIES CHECKED BY:
JWM	JWM	BLW	N/A

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 9 of 38

[File Location: Y:\manhattan\130400\5130492.00_abilene_master_plan\Eng_Docs\Sheets\INNER PORTION APPROACH RUNWAY 17_35_DISPLACED THRESHOLD.dwg] [Plot Date: 7/13/2020 9:16:17 PM] [Last Saved: 5/5/2020 3:48:35 PM; Bwaller]

ULTMIATE RUNWAY 17 APPROACH TABLE - SEE SHEET 9

OBSTRUCTION TABLE - PART 77 SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
19	ROADWAY	1168	1184.7	34:1 Approach Surface	-16.7	C	--
20	ROADWAY	1170	1184.7	34:1 Approach Surface	-14.7	C	--
21	ROADWAY	1168	1184.7	34:1 Approach Surface	-16.7	C	--
41	RAILROAD	1177	1167.9	34:1 Approach Surface	9.1	OB	LIGHT
42	RAILROAD	1177	1171.7	34:1 Approach Surface	5.3	OB	LIGHT
44	RAILROAD	1177	1164.9	34:1 Approach Surface	12.1	OB	LIGHT
45	RAILROAD	1177	1191.2	7:1 Transition Surface	-14.2	C	--
46	TREE MASS	1189	1223.1	7:1 Transition Surface	-34.1	C	--
47	TREE MASS	1205	1198.4	7:1 Transition Surface	6.6	OB	REMOVE TREES
56	BUILDING	1162	1171.1	34:1 Approach Surface	-9.1	C	--
62	BUILDING	1160	1197.3	7:1 Transition Surface	-37.3	C	--
68	BUILDING	1162	1172.3	7:1 Transition Surface	-10.3	C	--
89	TREE MASS	1201	1179.3	7:1 Transition Surface	21.7	OB	REMOVE TREES
90	TREE MASS	1192	1202.0	7:1 Transition Surface	-10.0	C	--
93	POWER POLE	1174	1178.5	34:1 Approach Surface	-4.5	C	--
95	POWER POLE	1169	1187.0	7:1 Transition Surface	-18.0	C	--
99	POWER POLE	1172	1223.8	7:1 Transition Surface	-51.8	C	--
100	POWER POLE	1182	1222.2	7:1 Transition Surface	-40.2	C	--
320	POWER POLE	1209	1236.0	7:1 Transition Surface	-27.0	C	--
321	POWER POLE	1192	1221.7	7:1 Transition Surface	-29.7	C	--
322	POWER POLE	1193	1205.2	34:1 Approach Surface	-12.2	C	--
323	POWER POLE	1194	1205.2	34:1 Approach Surface	-11.2	C	--
324	POWER POLE	1192	1205.2	34:1 Approach Surface	-13.2	C	--
325	POWER POLE	1199	1205.2	34:1 Approach Surface	-6.2	C	--
326	POWER POLE	1201	1205.2	34:1 Approach Surface	-4.2	C	--
327	POWER POLE	1203	1205.2	34:1 Approach Surface	-2.2	C	--
328	POWER POLE	1204	1205.2	34:1 Approach Surface	-1.2	C	--
329	POWER POLE	1207	1218.1	7:1 Transition Surface	-11.1	C	--
330	POWER POLE	1207	1211.5	7:1 Transition Surface	-4.5	C	--
331	POWER POLE	1201	1209.8	7:1 Transition Surface	-8.8	C	--
897	TREE	1193	1230.4	7:1 Transition Surface	-37.4	C	--
898	TREE	1204	1221.5	7:1 Transition Surface	-17.5	C	--
899	TREE	1193	1210.4	7:1 Transition Surface	-17.4	C	--
900	TREE	1200	1201.1	7:1 Transition Surface	-1.1	C	--
901	TREE	1194	1188.2	7:1 Transition Surface	5.8	OB	REMOVE/LOWER
902	TREE	1198	1185.4	34:1 Approach Surface	12.6	OB	REMOVE/LOWER
903	TREE	1201	1185.4	34:1 Approach Surface	15.6	OB	REMOVE/LOWER
904	TREE	1193	1185.4	34:1 Approach Surface	7.6	OB	REMOVE/LOWER
905	TREE	1205	1185.4	34:1 Approach Surface	19.6	OB	REMOVE/LOWER
906	TREE	1197	1185.4	34:1 Approach Surface	11.6	OB	REMOVE/LOWER
907	TREE	1215	1215.5	34:1 Approach Surface	-0.5	C	--
908	TREE	1215	1199.7	34:1 Approach Surface	15.3	OB	REMOVE/LOWER
909	TREE	1225	1220.6	7:1 Transition Surface	4.4	OB	REMOVE/LOWER
910	TREE	1225	1206.3	7:1 Transition Surface	18.7	OB	REMOVE/LOWER
911	TREE	1208	1187.6	34:1 Approach Surface	20.4	OB	REMOVE/LOWER
912	TREE	1221	1193.5	34:1 Approach Surface	27.5	OB	REMOVE/LOWER
913	TREE	1216	1187.6	34:1 Approach Surface	28.4	OB	REMOVE/LOWER
914	TREE	1222	1193.5	34:1 Approach Surface	28.5	OB	REMOVE/LOWER
915	TREE	1224	1193.5	34:1 Approach Surface	30.5	OB	REMOVE/LOWER
916	TREE	1216	1187.6	34:1 Approach Surface	28.4	OB	REMOVE/LOWER
917	TREE	1209	1208.4	7:1 Transition Surface	0.6	OB	REMOVE/LOWER

ULTMIATE RUNWAY 17 DEPARTURE TABLE - SEE SHEET 13

OBSTRUCTION TABLE - 40:1 DEPARTURE SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
19	ROADWAY	1168	1184.8	40:1 Departure Surface	-16.8	C	--
20	ROADWAY	1170	1184.8	40:1 Departure Surface	-14.8	C	--
21	ROADWAY	1168	1184.8	40:1 Departure Surface	-16.8	C	--
41	RAILROAD	1177	1170.6	40:1 Departure Surface	6.5	OB	LIGHT
42	RAILROAD	1177	1173.8	40:1 Departure Surface	3.2	OB	LIGHT
44	RAILROAD	1177	1168.1	40:1 Departure Surface	9.0	OB	LIGHT
45	RAILROAD	1177	1166.1	40:1 Departure Surface	11.0	OB	--
46	TREE MASS	1189	1173.8	40:1 Departure Surface	15.2	OB	--
47	TREE MASS	1205	1172.2	40:1 Departure Surface	32.8	OB	REMOVE TREES
56	BUILDING	1162	1173.3	40:1 Departure Surface	-11.3	C	--
62	BUILDING	1160	1177.3	40:1 Departure Surface	-17.3	C	--
68	BUILDING	1162	1174.3	40:1 Departure Surface	-12.3	C	--
89	TREE MASS	1201	1166.3	40:1 Departure Surface	34.7	OB	REMOVE TREES
90	TREE MASS	1192	1166.8	40:1 Departure Surface	25.2	OB	--
93	POWER POLE	1174	1179.6	40:1 Departure Surface	-5.5	C	--
95	POWER POLE	1169	1179.6	40:1 Departure Surface	-10.6	C	--
99	POWER POLE	1172	1184.1	40:1 Departure Surface	-12.1	C	--
100	POWER POLE	1182	1182.7	40:1 Departure Surface	-0.7	C	--
320	POWER POLE	1209	1202.3	40:1 Departure Surface	6.7	OB	--
321	POWER POLE	1192	1202.3	40:1 Departure Surface	-10.3	C	--
322	POWER POLE	1193	1202.3	40:1 Departure Surface	-9.3	C	--
323	POWER POLE	1194	1202.3	40:1 Departure Surface	-8.3	C	--
324	POWER POLE	1192	1202.3	40:1 Departure Surface	-10.3	C	--
325	POWER POLE	1199	1202.3	40:1 Departure Surface	-3.3	C	--
326	POWER POLE	1201	1202.3	40:1 Departure Surface	-1.3	C	--
327	POWER POLE	1203	1202.3	40:1 Departure Surface	0.7	OB	--
328	POWER POLE	1204	1202.3	40:1 Departure Surface	1.7	OB	--
329	POWER POLE	1207	1202.3	40:1 Departure Surface	4.7	OB	--
330	POWER POLE	1207	1198.6	40:1 Departure Surface	8.5	OB	--
331	POWER POLE	1201	1194.1	40:1 Departure Surface	7.0	OB	--
897	TREE	1193	1185.4	40:1 Departure Surface	7.6	OB	--
898	TREE	1204	1185.4	40:1 Departure Surface	18.6	OB	--
899	TREE	1193	1185.4	40:1 Departure Surface	7.6	OB	--
900	TREE	1200	1185.4	40:1 Departure Surface	14.6	OB	--
901	TREE	1194	1185.4	40:1 Departure Surface	8.6	OB	REMOVE/LOWER
902	TREE	1198	1185.4	40:1 Departure Surface	12.6	OB	REMOVE/LOWER
903	TREE	1201	1185.4	40:1 Departure Surface	15.6	OB	REMOVE/LOWER
904	TREE	1193	1185.4	40:1 Departure Surface	7.6	OB	REMOVE/LOWER
905	TREE	1205	1185.4	40:1 Departure Surface	19.6	OB	REMOVE/LOWER
906	TREE	1197	1185.4	40:1 Departure Surface	11.6	OB	REMOVE/LOWER
907	TREE	1215	1187.3	40:1 Departure Surface	27.7	OB	--
908	TREE	1215	1187.3	40:1 Departure Surface	27.7	OB	REMOVE/LOWER
909	TREE	1225	1192.3	40:1 Departure Surface	32.7	OB	REMOVE/LOWER
910	TREE	1225	1192.3	40:1 Departure Surface	32.7	OB	REMOVE/LOWER
911	TREE	1208	1187.3	40:1 Departure Surface	20.7	OB	REMOVE/LOWER
912	TREE	1221	1192.3	40:1 Departure Surface	28.7	OB	REMOVE/LOWER
913	TREE	1216	1187.3	40:1 Departure Surface	28.7	OB	REMOVE/LOWER
914	TREE	1222	1192.3	40:1 Departure Surface	29.7	OB	REMOVE/LOWER
915	TREE	1224	1192.3	40:1 Departure Surface	31.7	OB	REMOVE/LOWER
916	TREE	1216	1187.3	40:1 Departure Surface	28.7	OB	REMOVE/LOWER
917	TREE	1209	1186.8	40:1 Departure Surface	22.2	OB	REMOVE/LOWER

ULTMIATE RUNWAY 17 TSS TABLE - SEE SHEET 9

OBSTRUCTION TABLE - 20:1 RUNWAY END SITING SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
19	ROADWAY	1168	1216.6	20:1 Approach Surface	-48.6	C	--
20	ROADWAY	1170	1216.6	20:1 Approach Surface	-46.6	C	--
21	ROADWAY	1168	1216.6	20:1 Approach Surface	-48.6	C	--
41	RAILROAD	1177	1188.1	20:1 Approach Surface	-11.1	C	--
42	RAILROAD	1177	1194.6	20:1 Approach Surface	-17.6	C	--
44	RAILROAD	1177	1183.1	20:1 Approach Surface	-6.1	C	--
56	BUILDING	1162	1193.6	20:1 Approach Surface	-31.6	C	--
68	BUILDING	1162	1195.6	20:1 Approach Surface	-33.6	C	--
93	POWER POLE	1174	1206.1	20:1 Approach Surface	-32.1	C	--
322	POWER POLE	1193	1251.6	20:1 Approach Surface	-58.6	C	--
323	POWER POLE	1194	1251.6	20:1 Approach Surface	-57.6	C	--
324	POWER POLE	1192	1251.6	20:1 Approach Surface	-59.6	C	--
325	POWER POLE	1199	1251.6	20:1 Approach Surface	-52.6	C	--
326	POWER POLE	1201	1251.6	20:1 Approach Surface	-50.6	C	--
327	POWER POLE	1203	1251.6	20:1 Approach Surface	-48.6	C	--

OBSTRUCTION TABLE - 20:1 RUNWAY END SITING SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
328	POWER POLE	1204	1251.6	20:1 Approach Surface	-47.6	C	--
902	TREE	1198	1217.9	20:1 Approach Surface	-19.9	C	--
903	TREE	1201	1217.9	20:1 Approach Surface	-16.9	C	--
904	TREE	1193	1217.9	20:1 Approach Surface	-24.9	C	--
905	TREE	1205	1217.9	20:1 Approach Surface	-12.9	C	--
906	TREE	1197	1217.9	20:1 Approach Surface	-20.9	C	--
911	TREE	1208	1221.6	20:1 Approach Surface	-13.6	C	--
912	TREE	1221	1231.6	20:1 Approach Surface	-10.6	C	--
913	TREE	1216	1221.6	20:1 Approach Surface	-5.6	C	--
914	TREE	1222	1231.6	20:1 Approach Surface	-9.6	C	--
915	TREE	1224	1231.6	20:1 Approach Surface	-7.6	C	--
916	TREE	1216	1221.6	20:1 Approach Surface	-5.6	C	--

DATE
REVISIONS
NO.

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JULY 15, 2020

ULTIMATE RUNWAY 17 DATA

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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REVIEWED BY:
QUANTITIES CHECKED BY:

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ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
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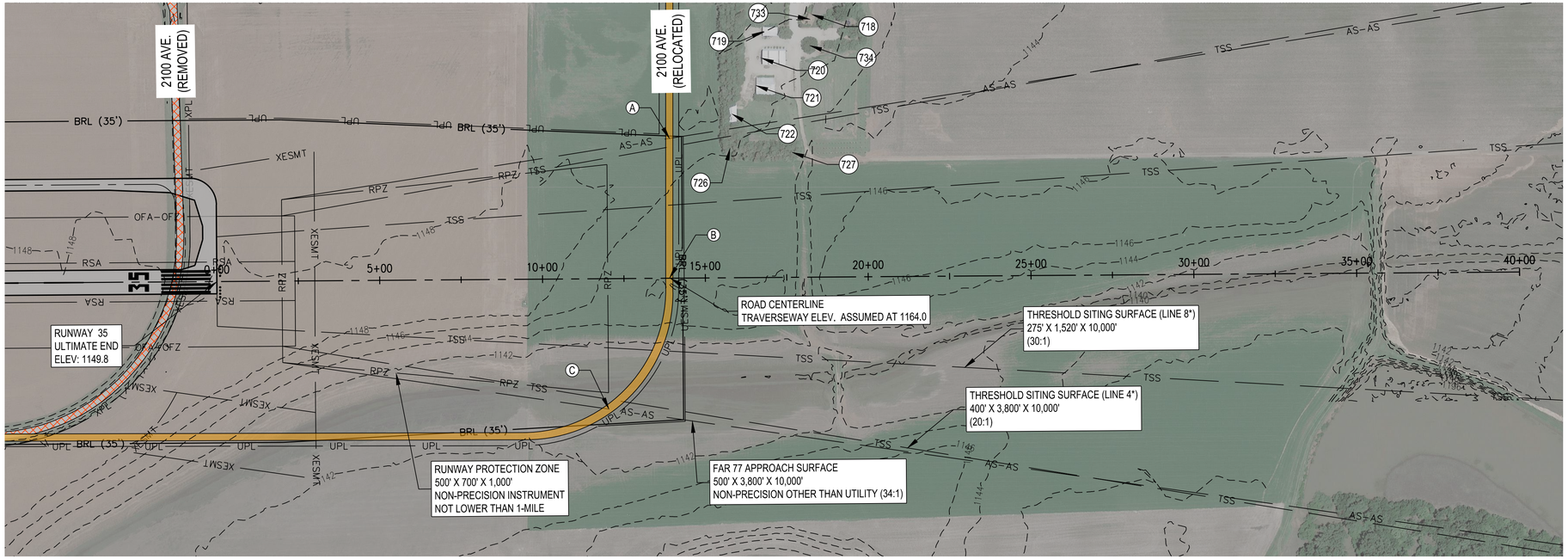
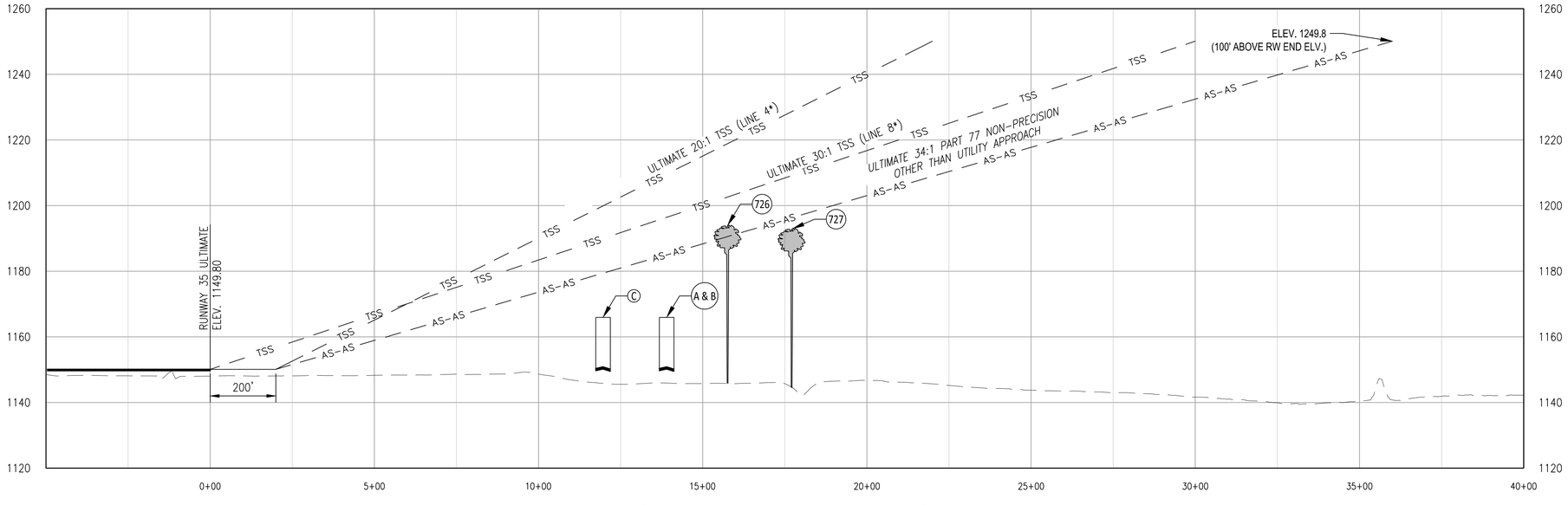


PLAN - RUNWAY 35 ULTIMATE INNER APPROACH



PROFILE - RUNWAY 35 ULTIMATE INNER APPROACH

NOTES

1. * LINE NUMBERS ARE TAKEN FROM AC 150/5300-13A, TABLE 3-2. APPROACH/DEPARTURE STANDARDS TABLE.
2. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
3. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
4. OBSTRUCTIONS IN THE 7:1 TRANSITIONAL SURFACE ARE NOT SHOWN ON THE PROFILE VIEW.
5. THERE ARE NO OBSTRUCTIONS TO THE THRESHOLD SITING SURFACES (TSS), THEREFORE THAT OBSTRUCTION TABLE IS NOT SHOWN.

OBSTRUCTION TABLE - PART 77 SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
A	PROPOSED ROAD CENTERLINE	1164	1178.6	34:1 Approach Surface	-14.6	C	--
B	PROPOSED ROAD CENTERLINE	1164	1184.8	34:1 Approach Surface	-20.8	C	--
C	PROPOSED ROAD CENTERLINE	1164	1184.8	34:1 Approach Surface	-20.8	C	--
718	BUILDING	1169	1245.2	7:1 Transition Surface	-76.2	C	--
719	BUILDING	1175	1235.1	7:1 Transition Surface	-60.1	C	--
720	BUILDING	1175	1225.1	7:1 Transition Surface	-50.1	C	--
721	BUILDING	1175	1211.3	7:1 Transition Surface	-36.3	C	--
722	BUILDING	1175	1201.5	7:1 Transition Surface	-26.5	C	--
726	TREE MASS	1194	1190.4	34:1 Approach Surface	3.6	OB	REMOVE/LOWER
727	TREE MASS	1193	1195.9	34:1 Approach Surface	-2.9	C	--
733	TREE	1203	1243.5	7:1 Transition Surface	-40.5	C	--
734	TREE	1201	1232.3	7:1 Transition Surface	-31.3	C	--

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°05'W PER YEAR

HORIZONTAL SCALE: 1"=200'
0 100 200 400

VERTICAL SCALE: 1"=20'
0 20

LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS-AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE
UPL	ULTIMATE PROPERTY LINE

NO.	REVISIONS	DATE

ALP
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JULY 15, 2020

INNER PORTION
APPROACH OF ULTIMATE
RUNWAY 35

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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QUANTITIES CHECKED BY:

PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
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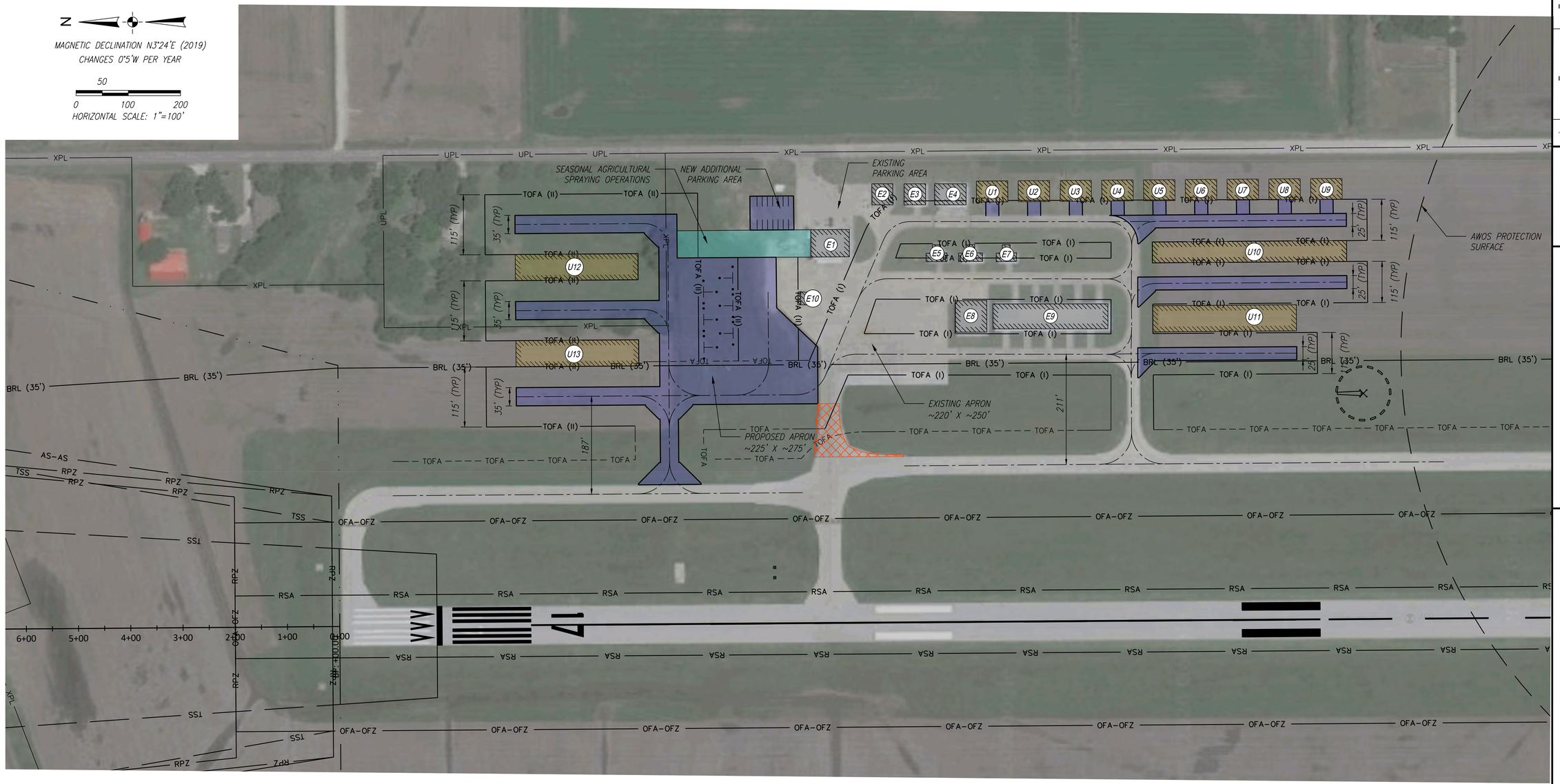

EXISTING TERMINAL BUILDINGS AND FACILITIES

BUILDING NUMBER	DESCRIPTION	BUILDING ELEVATION	DIST TO RUNWAY CENTERLINE	CLOSEST RUNWAY ELEVATION	PART 77 SURFACE ELEVATION	BUILDING CLEARS BY
E1	50' x 50' TERMINAL (BOX) HANGAR	1172	700'	1151	1215	~43'
E2	40' x 40' CONVENTIONAL (BOX) HANGAR	1167	800'	1151	1229	~62'
E3	40' x 40' CONVENTIONAL (BOX) HANGAR	1165	800'	1151	1229	~64'
E4	60' x 40' CONVENTIONAL (BOX) HANGAR	1165	800'	1151	1229	~64'
E5	40' x 30' T-HANGAR	1165	690'	1151	1214	~69'
E6	40' x 30' T-HANGAR	1165	690'	1151	1214	~69'
E7	40' x 30' T-HANGAR	1163	690'	1151	1214	~71'
E8	60' x 60' CONVENTIONAL (BOX) HANGAR	1175	550'	1151	1194	~19'
E9	220' x 45' 10-PLACE NESTED T-HANGAR	1167	560'	1151	1196	~29'
E10	FUELING FACILITY	1161	610'	1151	1202	~41'

ULTIMATE TERMINAL BUILDINGS AND FACILITIES

BUILDING NUMBER	DESCRIPTION	APPROX. GROUND ELEVATION	DIST TO RUNWAY CENTERLINE	CLOSEST RUNWAY ELEVATION	PART 77 SURFACE ELEVATION	OBSTRUCT/ CLEAR
U1	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U2	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U3	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U4	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U5	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U6	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U7	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U8	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U9	60' x 40' EXECUTIVE (BOX) HANGAR	1150	800'	1151	1232	~82'
U10	375' x 40' 10-PLACE NESTED T-HANGAR	1150	685'	1151	1214	~64'
U11	275' x 50' 12-PLACE NESTED T-HANGAR	1150	550'	1151	1194	~44'
U11	235' x 50' 10-PLACE NESTED T-HANGAR	1150	495'	1151	1185	~35'
U11	235' x 50' 10-PLACE NESTED T-HANGAR	1150	660'	1151	1208	~58'

LEGEND

- EXISTING BUILDING
- PROPOSED BUILDING
- REMOVE EXISTING PAVEMENT
- NEW PAVEMENT

- RSA — RUNWAY SAFETY AREA
- BRL (35') — BUILDING RESTRICTION LINE (35')
- RPZ — RUNWAY PROTECTION ZONE
- AS-AS — FAR PART 77 APPROACH SURFACE
- TSS — THRESHOLD SITING SURFACE
- OFA — OBJECT FREE AREA
- XESMT — EXISTING EASEMENT
- XPL — EXISTING PROPERTY LINE
- UPL — ULTIMATE PROPERTY LINE
- TOFA — TAXIWAY (ADG 2) OBJECT FREE AREA (131' CENTERED)
- TOFA (II) — TAXILANE (ADG 2) OBJECT FREE AREA (115' CENTERED)
- TOFA (I) — TAXILANE (ADG 1) OBJECT FREE AREA (79' CENTERED)

NO.	REVISIONS	DATE

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JULY 15, 2020

TERMINAL AREA DRAWING

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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QUANTITIES CHECKED BY:

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DATE: JULY 15, 2020

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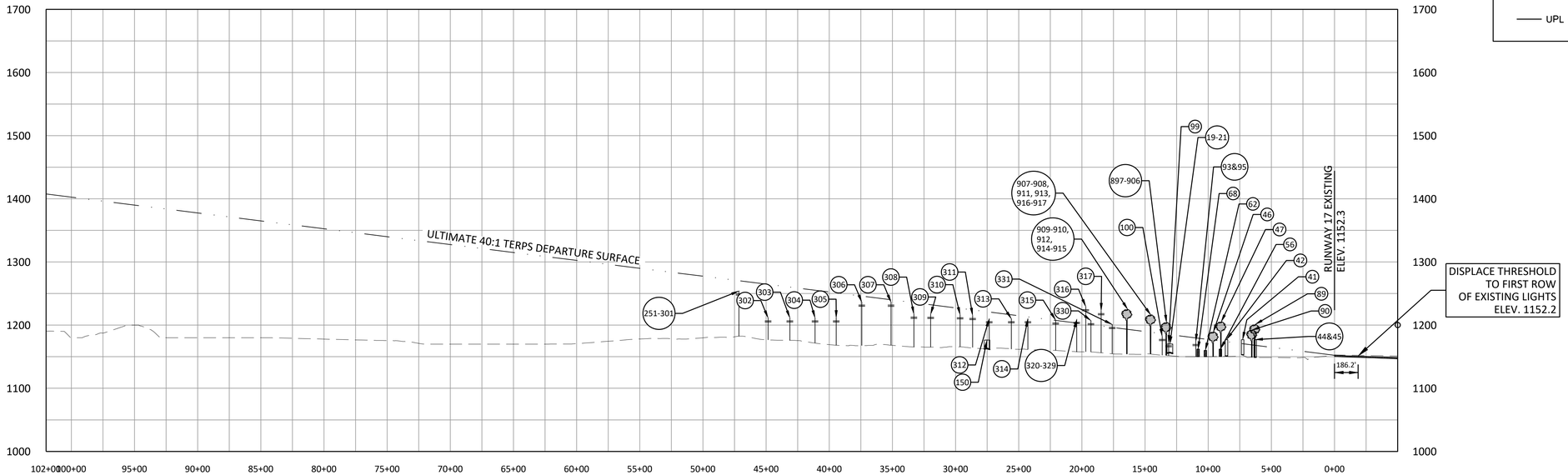
PLAN - RUNWAY 35 EXISTING & ULTIMATE DEPARTURE SURFACE



PROFILE - RUNWAY 35 EXISTING & ULTIMATE DEPARTURE SURFACE

NOTES

1. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
2. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
3. SEE SHEET 10 FOR OBSTRUCTION TABLES.
4. POINTS 251 THROUGH 301 ARE POWER POLES LOCATED ALONG THE NORHT SIDE THE ROADS AS SEEN ON THE AERIAL.

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°05'W PER YEAR

250
0 500 1000
HORIZONTAL SCALE: 1"=500'

VERTICAL SCALE: 1"=100'
0
100

LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS–AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE
UPL	ULTIMATE PROPERTY LINE

NO.	REVISIONS	DATE
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PLAN UPDATE
JULY 15, 2020

RUNWAY 35 EXISTING & ULTIMATE DEPARTURE SURFACE

AIRPORT LAYOUT PLAN UPDATE

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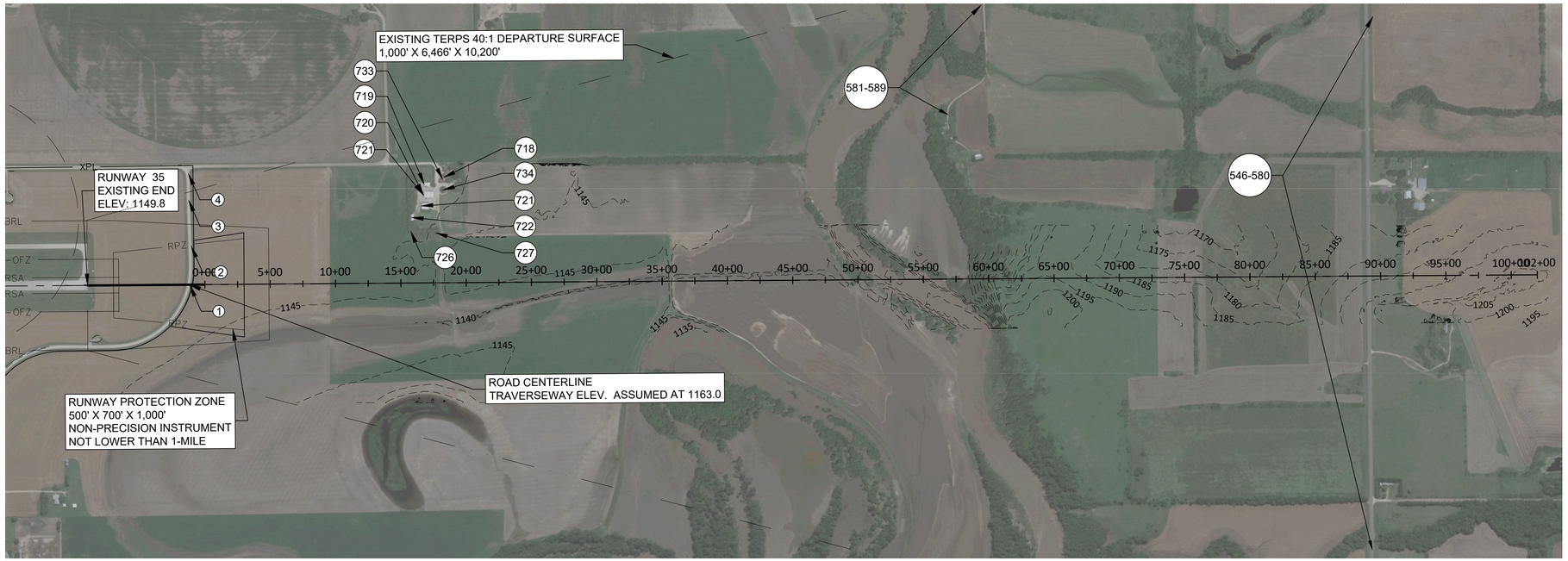
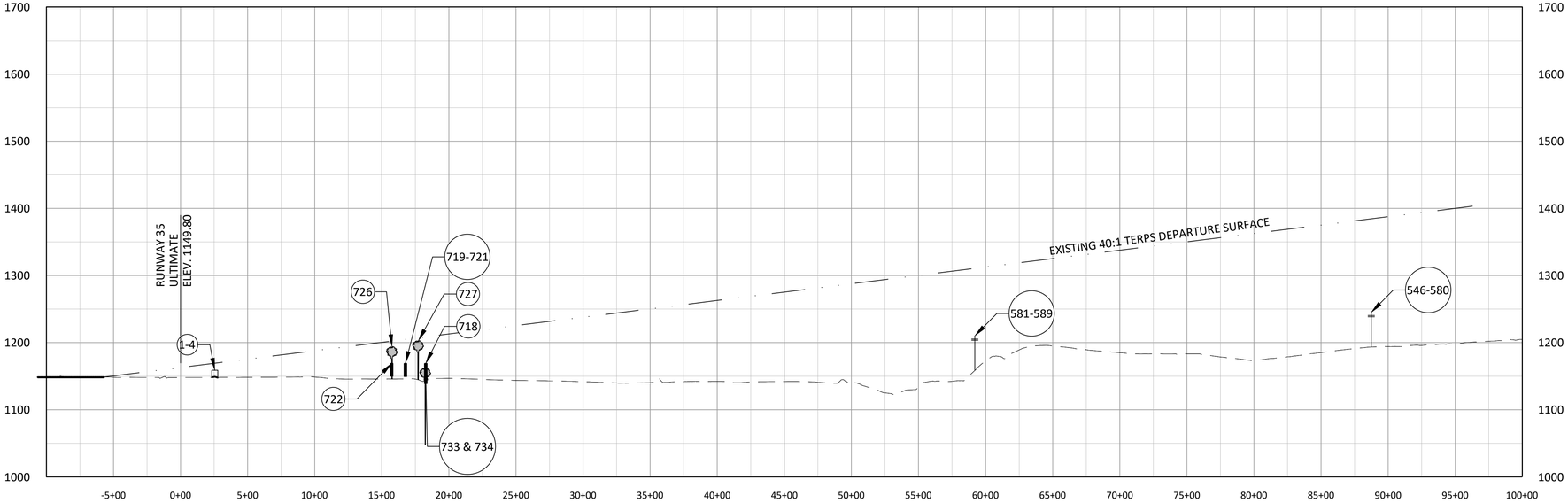
DATE: JULY 15, 2020

SHEET NO. 13 of 38

[File Location: Y:\Manhattan\130400S\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\RUNWAY 35 DEPARTURE SURFACE.dwg] [Plot Date: 7/15/2020 1:06:58 PM] [Last Saved: 7/15/2020 11:29:12 AM; Bwaller]



PLAN - RUNWAY 17 EXISTING DEPARTURE SURFACE



PROFILE - RUNWAY 17 EXISTING DEPARTURE SURFACE

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°05'W PER YEAR

250
0 500 1000
HORIZONTAL SCALE: 1"=500'

VERTICAL SCALE: 1"=100' 0 100

LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS–AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE
UPL	ULTIMATE PROPERTY LINE

NOTES

1. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
2. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
3. POINTS 546 THROUGH 589 ARE POWER POLES LOCATED ALONG THE SOUTH SIDE THE ROADS AS SEEN ON THE AERIAL.

OBSTRUCTION TABLE - 40:1 DEPARTURE SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	C' = Clears 'OB' = Obstructs	
1	EXISTING ROAD CENTERLINE	1163	1169.3	40:1 Departure Surface	-6.3	C	--
2	EXISTING ROAD CENTERLINE	1163	1169.3	40:1 Departure Surface	-6.3	C	--
3	EXISTING ROAD CENTERLINE	1163	1169.3	40:1 Departure Surface	-6.3	C	--
4	EXISTING ROAD CENTERLINE	1163	1169.3	40:1 Departure Surface	-6.3	C	--
718	BUILDING	1169	1218.3	40:1 Departure Surface	-49.3	C	--
719	BUILDING	1175	1214.6	40:1 Departure Surface	-39.6	C	--
720	BUILDING	1175	1214.6	40:1 Departure Surface	-39.6	C	--
721	BUILDING	1175	1213.8	40:1 Departure Surface	-38.8	C	--
722	BUILDING	1175	1211.9	40:1 Departure Surface	-36.9	C	--
726	TREE MASS	1194	1211.8	40:1 Departure Surface	-17.8	C	
727	TREE MASS	1193	1216.5	40:1 Departure Surface	-23.5	C	--
733	TREE	1203	1218.1	40:1 Departure Surface	-15.1	C	--
734	TREE	1201	1218.3	40:1 Departure Surface	-17.3	C	--

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

RUNWAY 17 EXISTING DEPARTURE SURFACE

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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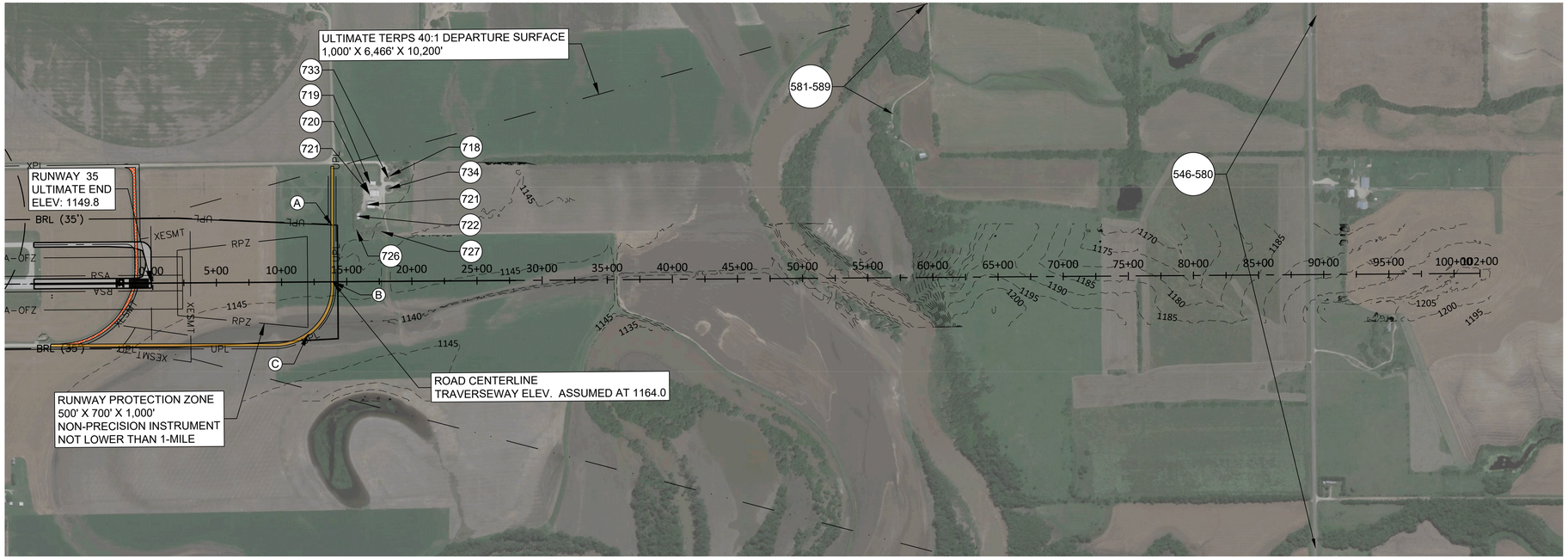
PROJECT: ALP UPDATE

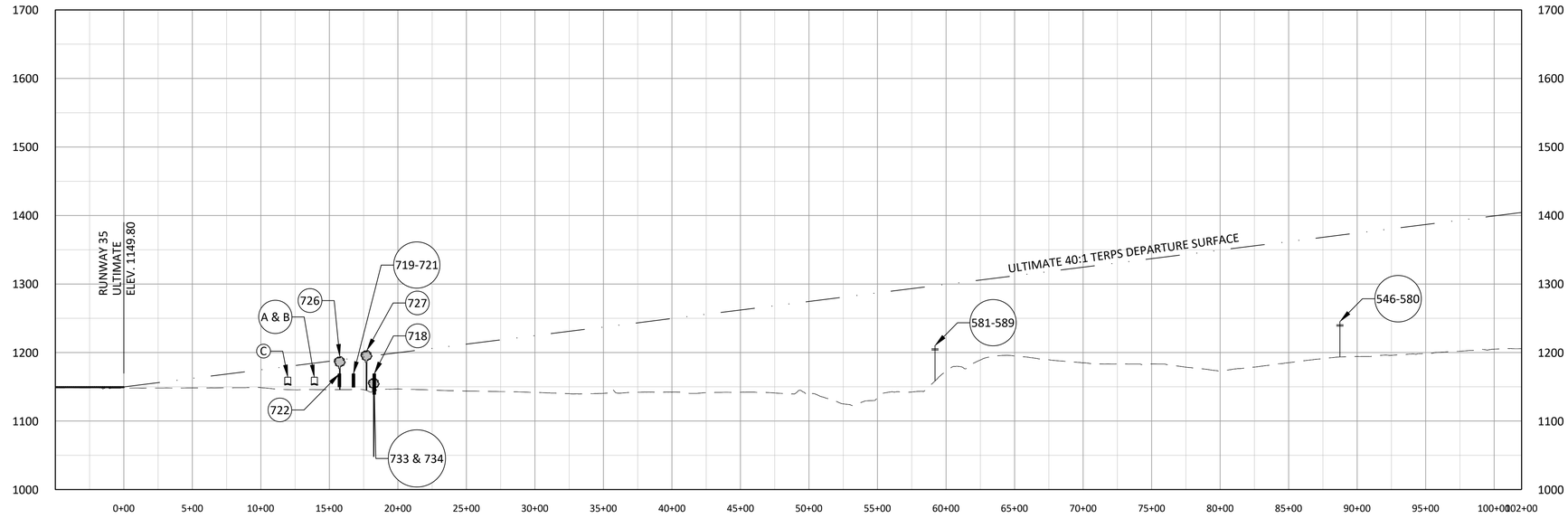
DATE: JULY 15, 2020

SHEET NO. 14 of 38

[File Location: Y:\Manhattan\130405\130492.00_Abilene_Master_Plan\Eng_Doc's\Sheets\RUNWAY 17 DEPARTURE SURFACE EXISTING.dwg] [Plot Date: 7/13/2020 11:10:52 PM] [Last Saved: 7/13/2020 11:03:36 PM: Bwaller]



PLAN - RUNWAY 17 ULTIMATE DEPARTURE SURFACE



PROFILE - RUNWAY 17 ULTIMATE DEPARTURE SURFACE

NOTES

1. OBSTRUCTION SURVEY DATA WAS OBTAINED IN NOVEMBER 2017 TO AN ACCURACY OF 1'.
2. OBJECT ELEVATION INCLUDES HEIGHT OF VEHICLES - 15' ABOVE ROAD CENTERLINE, 23' ABOVE RAILROAD CENTERLINE PER 14 CFR PART 77.9(C).
3. POINTS 546 THROUGH 589 ARE POWER POLES LOCATED ALONG THE SOUTH SIDE THE ROADS AS SEEN ON THE AERIAL.

OBSTRUCTION TABLE - 40:1 DEPARTURE SURFACE

I.D.	Description	Object Elevation	PART 77 SURFACE ELEVATION	PART 77 SURFACE OBJECT IS IN	OBJECT PENETRATION		PROPOSED DISPOSITION
					Depth	'C' = Clears 'OB' = Obstructs	
A	PROPOSED ROAD CENTERLINE	1164	1179.3	40:1 Departure Surface	-15.3	C	--
B	PROPOSED ROAD CENTERLINE	1164	1184.6	40:1 Departure Surface	-20.6	C	--
C	PROPOSED ROAD CENTERLINE	1164	1184.6	40:1 Departure Surface	-20.6	C	--
718	BUILDING	1169	1195.8	40:1 Departure Surface	-26.8	C	--
719	BUILDING	1175	1192.1	40:1 Departure Surface	-17.1	C	--
720	BUILDING	1175	1192.1	40:1 Departure Surface	-17.1	C	--
721	BUILDING	1175	1191.3	40:1 Departure Surface	-16.3	C	--
722	BUILDING	1175	1189.4	40:1 Departure Surface	-14.4	C	--
726	TREE MASS	1194	1189.3	40:1 Departure Surface	4.7	OB	
727	TREE MASS	1193	1194.0	40:1 Departure Surface	-1.0	C	--
733	TREE	1203	1195.6	40:1 Departure Surface	7.5	OB	--
734	TREE	1201	1195.8	40:1 Departure Surface	5.2	OB	--

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°05'W PER YEAR

250
0 500 1000
HORIZONTAL SCALE: 1"=500'

VERTICAL SCALE: 1"=100' → 0 / 100

LEGEND

RSA	RUNWAY SAFETY AREA
BRL	BUILDING RESTRICTION LINE (35')
RPZ	RUNWAY PROTECTION ZONE
AS–AS	FAR PART 77 APPROACH SURFACE
TSS	THRESHOLD SITING SURFACE
OFA	OBJECT FREE AREA
XESMT	EXISTING EASEMENT
XPL	EXISTING PROPERTY LINE
UPL	ULTIMATE PROPERTY LINE

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

RUNWAY 17 ULTIMATE DEPARTURE SURFACE

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DRAWN BY: | DESIGNED BY: | REVIEWED BY: | QUANTITIES CHECKED BY:

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 15 of 38

[File Location: Y:\Manhattan\130405\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\RUNWAY 17 DEPARTURE SURFACE.dwg] [Plot Date: 7/13/2020 10:36:03 PM] [Last Saved: 7/13/2020 10:28:24 PM, Bwaller]

LEGEND

- AVIATION USE
- AGRICULTURAL USE
- AGRICULTURAL USE*
- COMMERCIAL AND INDUSTRIAL
- RESIDENTIAL
- RPZ — RUNWAY PROTECTION ZONE
- RVZ — RUNWAY VISIBILITY ZONE
- BRL — BUILDING RESTRICTION LINE
- XPL — EXISTING PROPERTY LINE
- XESMT — EXISTING EASEMENT
- CROP RESTRICTION LINE

* AERONAUTICAL LAND WITHIN AIRPORT PROPERTY USED FOR REVENUE GENERATION

AGRICULTURAL MINIMUM DISTANCE FROM RUNWAY, TAXIWAY, AND APRON AREAS

RUNWAY	RUNWAY AIRPORT REFERENCE CODE (ARC)	RUNWAY APPROACH PROCEDURES	RUNWAY		TAXIWAY
			DISTANCE IN FEET FROM RUNWAY CENTERLINE TO CROP	DISTANCE IN FEET FROM RUNWAY END TO CROP	DISTANCE IN FEET FROM CENTERLINE OF TAXIWAY TO CROP
PRIMARY 17/35	B-I	NP >3/4 MILE	200	300	45

N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

DRAWING IS AT INTENDED SCALE
WHEN BAR BELOW MEASURES 2"

0 300 600
HORIZONTAL SCALE: 1"=300'

2100 AVE

AWOS PROTECTION SURFACE

WASHINGTON STREET

RUNWAY 17-35

ARP

NW 2ND STREET

SW JOHNS AVE

UNION PACIFIC RAILROAD

2100 AVE

XPL BRL RPZ OFA–OFZ XESMT

AIRPORT LAND USE
(EXISTING)
Scale: 1" = 300' (Full Size)

NO.	REVISIONS	DATE

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JULY 15, 2020

AIRPORT LAND USE - EXISTING

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DRAWN BY: WM
DESIGNED BY: WM
REVIEWED BY: BW
SUBMITTED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

SHEET NO. 16 of 38

[File Location: Y:\manhattan\130400\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 AIRPORT LAND USE - EXISTING.dwg] [Plot Date: 7/13/2020 9:41:18 PM] [Last Saved: 7/13/2020 9:14:13 AM; bwalter]

LEGEND

- AVIATION USE
- AGRICULTURAL USE
- AGRICULTURAL USE*
- COMMERCIAL AND INDUSTRIAL
- RESIDENTIAL
- RPZ — RUNWAY PROTECTION ZONE
- RVZ — RUNWAY VISIBILITY ZONE
- BRL — BUILDING RESTRICTION LINE
- XPL — EXISTING PROPERTY LINE
- XESMT — EXISTING EASEMENT
- UPL — ULTIMATE PROPERTY LINE
- CROP RESTRICTION LINE

* AERONAUTICAL LAND WITHIN AIRPORT PROPERTY USED FOR REVENUE GENERATION

AGRICULTURAL MINIMUM DISTANCE FROM RUNWAY, TAXIWAY, AND APRON AREAS

RUNWAY	RUNWAY AIRPORT REFERENCE CODE (ARC)	RUNWAY APPROACH PROCEDURES	RUNWAY		TAXIWAY
			DISTANCE IN FEET FROM RUNWAY CENTERLINE TO CROP	DISTANCE IN FEET FROM RUNWAY END TO CROP	DISTANCE IN FEET FROM CENTERLINE OF TAXIWAY TO CROP
PRIMARY 17/35	B-I	NP >3/4 MILE	200	300	45

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

150
0 300 600
HORIZONTAL SCALE: 1"=300'

AIRPORT LAND USE
(ULTIMATE)
Scale: 1" = 300' (Full Size)

DATE
REVISIONS
NO.

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JULY 15, 2020

AIRPORT LAND USE - ULTIMATE

AIRPORT LAYOUT PLAN UPDATE

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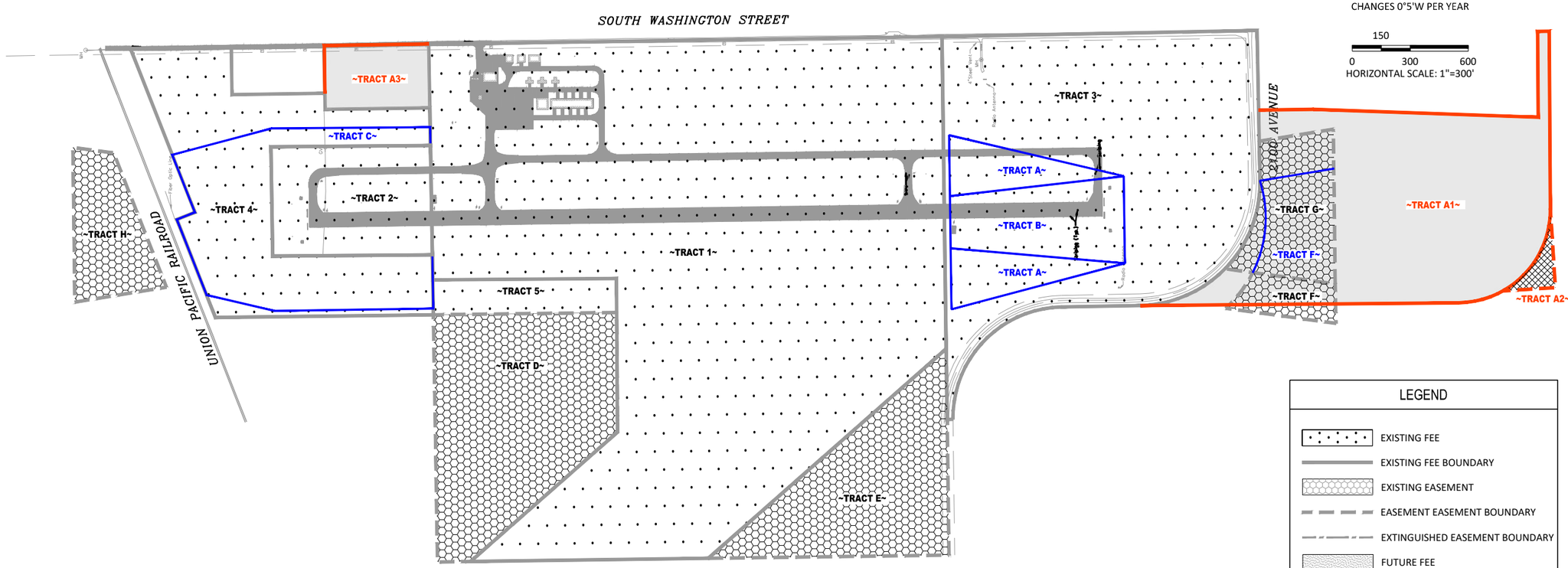
DRAWN BY: MWK
DESIGNED BY: JWM
REVIEWED BY: BJW
SUBMITTED/CHECKED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

SHEET NO. 17 of 38

[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheet\01 - Airport Layout Plan (ALP)\130492.00 AIRPORT LAND USE - ULTIMATE.dwg] [Plot Date: 7/13/2020 9:43:02 PM] [Last Saved: 7/13/2020 9:13:45 AM; Bwaller]



N

MAGNETIC DECLINATION N3°24'E (2019)
CHANGES 0°5'W PER YEAR

150
0 300 600
HORIZONTAL SCALE: 1"=300'

LEGEND

- EXISTING FEE
- EXISTING FEE BOUNDARY
- EXISTING EASEMENT
- EASEMENT EASEMENT BOUNDARY
- EXTINGUISHED EASEMENT BOUNDARY
- FUTURE FEE
- FUTURE FEE BOUNDARY
- FUTURE EASEMENT
- FUTURE EASEMENT BOUNDARY
- EXTINGUISHED EASEMENT BOUNDARY

EXHIBIT A EFFECTIVE DATE: JULY 15, 2020
AIP GRANT NO. 3-20-0001-011-2017

PROPOSED AIRPORT PROPERTY				
TRACT	TITLE	CURRENT PROPERTY OWNER/INTEREST	ACREAGE	TIME FRAME
A1	FEE SIMPLE	UNKNOWN	35.4	LONG TERM
A2	EASEMENT	UNKNOWN	0.8	LONG TERM
A3	FEE SIMPLE	UNKNOWN	4.1	LONG TERM

AIRPORT PROPERTY DATA TABLE

EXISTING AIRPORT PROPERTY

TRACT	FAA PROJECT NO.	TITLE	GRANTOR	CURRENT PROPERTY OWNER/INTEREST	ACQUSITION DATE	CITY DEEDS RECORDS	ORIGINAL ACREAGE	EXISTING PROPERTY ACREAGE	COMMENTS
1	9-14-001-701	FEE SIMPLE	E.A. WARD	CITY OF ABILENE	8/11/1945	BK 118, PG 232	160.0	102.9	PARTIALLY EXTINGUISHED [1]
2	9-14-001-6102	FEE SIMPLE	WILLIAM HOUGH	CITY OF ABILENE	10/8/1960	BK 150, PG 102	10.7	10.7	
A	9-14-001-6102	EASEMENT	WALTER WHITEHAIR	CITY OF ABILENE	10/17/1961	MISC BK 142, PG 643-644	6.5		FULLY EXTINGUISHED [2]
B	9-14-001-6102	EASEMENT	WALTER WHITEHAIR	CITY OF ABILENE	10/17/1961	MISC BK 142, PG 643-644	7.4		FULLY EXTINGUISHED [2]
C	9-14-001-6102	EASEMENT	WILLIAM HOUGH	CITY OF ABILENE	10/17/1961	MISC BK 142, PG 674	15.7		FULLY EXTINGUISHED [3]
D	5-20-0001-01	EASEMENT	DEANNA WHITEHAIR	DEANNA WHITEHAIR	9/21/1983	BK 199, PG 157	25.7	21.8	PARTIALLY EXTINGUISHED [4]
E	5-20-0001-01	EASEMENT	DEANNA WHITEHAIR	DEANNA WHITEHAIR	9/21/1983	BK 199, PG 157		14.5	
3	5-20-0001-01	FEE SIMPLE	KIRK & PHYLLIS NEMECHEK	KIRK & PHYLLIS NEMECHEK	10/11/1983	BK 199, PG 217-218	50.4	50.4	
F	5-20-0001-01	EASEMENT	KIRK & PHYLLIS NEMECHEK	KIRK & PHYLLIS NEMECHEK	10/11/1983	BK 199, PG 217-218	6.7	2.3	PARTIALLY EXTINGUISHED [5]
G		EASEMENT	DARLENE & KENNETH THOMPSON	DARLENE & KENNETH THOMPSON	8/2/1984	BK 200, PG 418	7.2	7.2	
H	LOCAL	EASEMENT	LENA BENSON	NORTHWOOD INC.	6/11/1987	MISC BK 206, PG 405-408	6.0	6.0	
4	3-20-0001-03	FEE SIMPLE	DEANNA WHITEHAIR	CITY OF ABILENE	11/14/2006	BK 238, PG 41-43		24.9	
5	3-20-0001-03	FEE SIMPLE	DEANNA WHITEHAIR	CITY OF ABILENE	11/14/2006	BK 238, PG 41-43		3.9	

[1] TRACT 1 WAS REDUCED FROM 160 ACRES TO 102.9 ACRES WITH TRANSFER OF TRACTS D & E TO EASEMENT.

[2] TRACTS A & B WERE FULLY EXTINGUISHED WITH THE PURCHASE OF TRACT 3.

[3] TRACT C WAS FULLY EXTINGUISHED WITH THE PURCHASE OF TRACT 4.

[4] TRACT D WAS PARTIALLY (3.9 ACRES) EXTINGUISHED WITH PURCHASE OF TRACT 5.

[5] TRACT F WAS PARTIALLY (4.4 ACRES) EXTINGUISHED WITH THE PURCHASE OF TRACT G IN EASEMENT.

PROPERTY QUANTITY SUMMARY	
EXISTING PROPERTY (FEE)	207 ACRES
EXISTING PROPERTY (ESMT)	50 ACRES
PROPOSED PROPERTY (FEE)	39.5 ACRES
PROPOSED PROPERTY (ESMT)	0.8 ACRES

DATE | REVISIONS | NO.

ALP
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JULY 15, 2020

EXHIBIT A PROPERTY MAP

AIRPORT LAYOUT PLAN UPDATE REPORT

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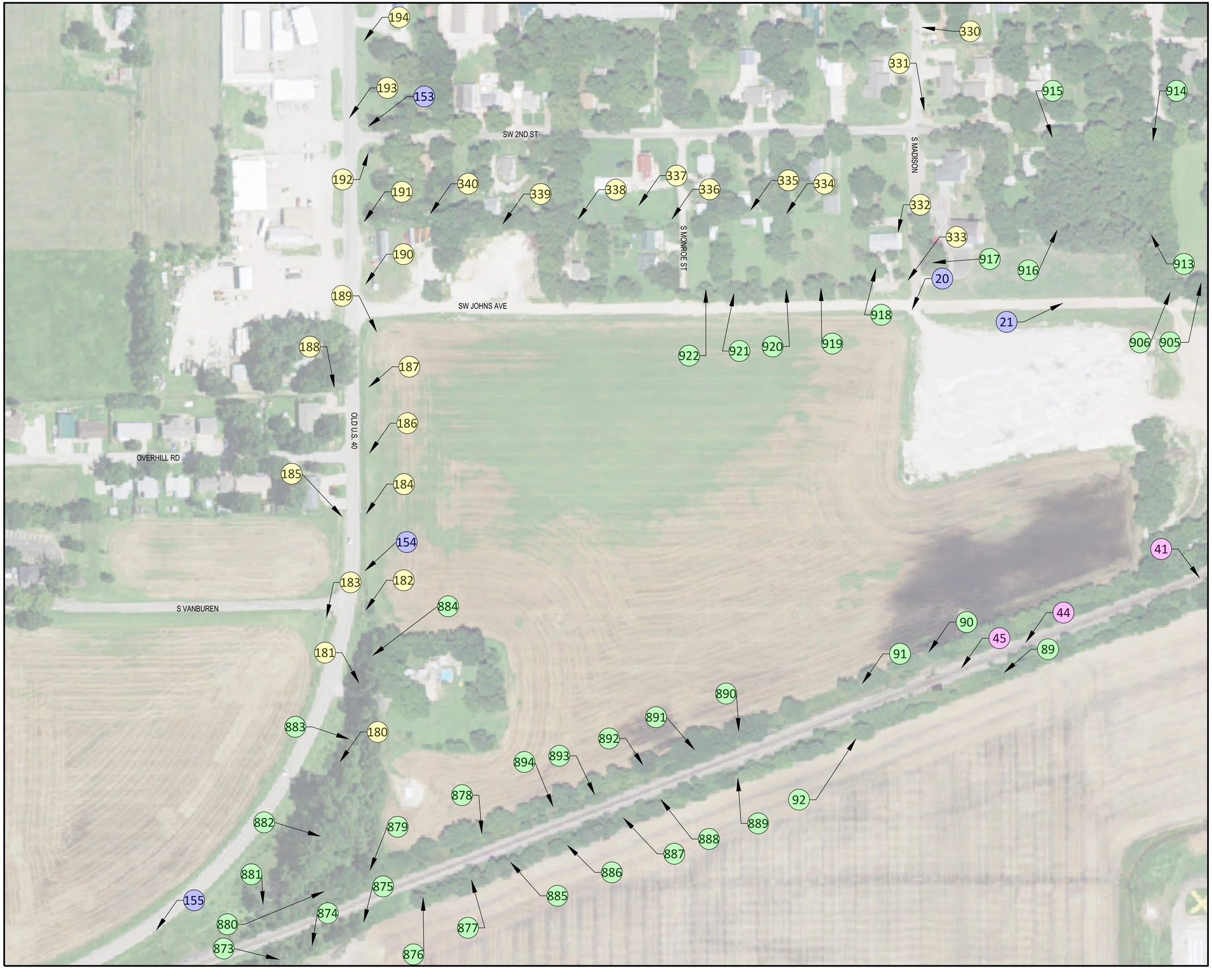
DRAWN BY: JWM | DESIGNED BY: NWM | REVIEWED BY: BJW | DOCUMENTS CHECKED BY: N/A

PROJECT: ALP UPDATE
DATE: JULY 15, 2020

SHEET NO. 17 of 38

[File Location: Y:\Manhattan\130400\130492.00_Abilene_Master_Plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 EXHIBIT A PROPERTY MAP.dwg] [Plot Date: 7/15/2020 9:55:19 AM] [Last Saved: 7/13/2020 9:15:01 AM; Bwaller]



VICINITY MAP

N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 20 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 1

AIRPORT LAYOUT PLAN UPDATE

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REVIEWED BY: ----
QUANTITIES CHECKED BY: ----

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO.
19 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:26:43 AM] [Last Saved: 5/5/2020 2:36:40 PM; Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
20	SW Johns Ave.	38 ° 54 ′ 47.7 " N	97 ° 14 ′ 8.85 " W	1155	15	1170	2018 - ACE - 8251 - OE	DNH	NONE
21	SW Johns Ave.	38 ° 54 ′ 47.7 " N	97 ° 14 ′ 13.2 " W	1153	15	1168	2018 - ACE - 8252 - OE	DNH	NONE
41	Railroad	38 ° 54 ′ 42.1 " N	97 ° 14 ′ 9.04 " W	1154	23	1177	2018 - ACE - 8254 - OE	NPH	INSTALL HAZARAD LIGHTS ON POLES NORTH OF RAILROAD
44	Railroad	38 ° 54 ′ 41 " N	97 ° 14 ′ 13 " W	1154	23	1177	2018 - ACE - 8257 - OE	NPH	INSTALL HAZARAD LIGHTS ON POLES NORTH OF RAILROAD
45	Railroad	38 ° 54 ′ 40.3 " N	97 ° 14 ′ 15.3 " W	1154	23	1177	2018 - ACE - 8259 - OE	NPH	INSTALL HAZARAD LIGHTS ON POLES NORTH OF RAILROAD
89	TreeTop	38 ° 54 ′ 40.3 " N	97 ° 14 ′ 13.6 " W	1151	50	1201	2018 - ACE - 9973 - OE	NPH	REMOVE/LOWER
90	TreeTop	38 ° 54 ′ 40.6 " N	97 ° 14 ′ 16 " W	1151	41	1192	2018 - ACE - 9974 - OE	DNH	NONE
91	TreeTop	38 ° 54 ′ 40.1 " N	97 ° 14 ′ 17.6 " W	1151	43	1194	2018 - ACE - 9975 - OE	DNH	NONE
153	Old US 40	38 ° 54 ′ 51.6 " N	97 ° 14 ′ 31.5 " W	1171	15	1186	2019 - ACE - 2847 - OE	DNH	NONE
154	Old US 40	38 ° 54 ′ 41.8 " N	97 ° 14 ′ 31.6 " W	1155	15	1170	2019 - ACE - 2861 - OE	DNH	NONE
155	Old US 40	38 ° 54 ′ 34.6 " N	97 ° 14 ′ 37.8 " W	1151	15	1166	2019 - ACE - 2849 - OE	DNH	NONE
180	Power Pole	38 ° 54 ′ 38.2 " N	97 ° 14 ′ 32.3 " W	1150	40	1190	2019 - ACE - 3218 - OE	DNH	NONE
181	Power Pole	38 ° 54 ′ 40.1 " N	97 ° 14 ′ 31.6 " W	1153	40	1193	2019 - ACE - 3219 - OE	DNH	NONE
182	Power Pole	38 ° 54 ′ 41.5 " N	97 ° 14 ′ 31.2 " W	1155	40	1195	2019 - ACE - 3220 - OE	DNH	NONE
183	Power Pole	38 ° 54 ′ 41.4 " N	97 ° 14 ′ 32.2 " W	1153	40	1193	2019 - ACE - 3221 - OE	DNH	NONE
184	Power Pole	38 ° 54 ′ 43.6 " N	97 ° 14 ′ 31.1 " W	1158	40	1198	2019 - ACE - 3222 - OE	DNH	NONE
185	Power Pole	38 ° 54 ′ 43.6 " N	97 ° 14 ′ 32.1 " W	1159	40	1199	2019 - ACE - 3223 - OE	DNH	NONE
186	Power Pole	38 ° 54 ′ 44.8 " N	97 ° 14 ′ 31.2 " W	1158	40	1198	2019 - ACE - 3224 - OE	DNH	NONE
187	Power Pole	38 ° 54 ′ 46 " N	97 ° 14 ′ 31.1 " W	1162	40	1202	2019 - ACE - 3225 - OE	DNH	NONE
188	Power Pole	38 ° 54 ′ 46 " N	97 ° 14 ′ 31.8 " W	1165	40	1205	2019 - ACE - 3226 - OE	DNH	NONE
189	Power Pole	38 ° 54 ′ 47.3 " N	97 ° 14 ′ 31.1 " W	1164	40	1204	2019 - ACE - 3227 - OE	DNH	NONE
190	Power Pole	38 ° 54 ′ 48 " N	97 ° 14 ′ 31.1 " W	1165	40	1205	2019 - ACE - 3228 - OE	DNH	NONE
191	Power Pole	38 ° 54 ′ 49.5 " N	97 ° 14 ′ 31.1 " W	1169	40	1209	2019 - ACE - 3229 - OE	DNH	NONE
192	Power Pole	38 ° 54 ′ 50.6 " N	97 ° 14 ′ 31.1 " W	1169	40	1209	2019 - ACE - 3230 - OE	DNH	NONE
193	Power Pole	38 ° 54 ′ 51.6 " N	97 ° 14 ′ 31.1 " W	1169	40	1209	2019 - ACE - 3231 - OE	DNH	NONE
194	Power Pole	38 ° 54 ′ 53 " N	97 ° 14 ′ 31.1 " W	1170	40	1210	2019 - ACE - 3232 - OE	DNH	NONE
330	Power Pole	38 ° 54 ′ 53.3 " N	97 ° 14 ′ 16.3 " W	1167	40	1207	2019 - ACE - 3330 - OE	DNH	NONE
331	Power Pole	38 ° 54 ′ 51.7 " N	97 ° 14 ′ 16.2 " W	1163	55	1218	2019 - ACE - 3331 - OE	DNH	NONE
332	Power Pole	38 ° 54 ′ 48.9 " N	97 ° 14 ′ 17 " W	1155	40	1195	2019 - ACE - 3332 - OE	DNH	NONE
333	Power Pole	38 ° 54 ′ 48.3 " N	97 ° 14 ′ 16.8 " W	1155	40	1195	2019 - ACE - 3333 - OE	DNH	NONE
334	Power Pole	38 ° 54 ′ 49.5 " N	97 ° 14 ′ 20 " W	1162	40	1202	2019 - ACE - 3334 - OE	DNH	NONE
335	Power Pole	38 ° 54 ′ 49.6 " N	97 ° 14 ′ 21.2 " W	1165	40	1205	2019 - ACE - 3335 - OE	DNH	NONE
336	Power Pole	38 ° 54 ′ 49.5 " N	97 ° 14 ′ 23 " W	1162	40	1202	2019 - ACE - 3336 - OE	DNH	NONE
337	Power Pole	38 ° 54 ′ 49.5 " N	97 ° 14 ′ 23.8 " W	1163	40	1203	2019 - ACE - 3337 - OE	DNH	NONE
338	Power Pole	38 ° 54 ′ 49.5 " N	97 ° 14 ′ 25.5 " W	1165	40	1205	2019 - ACE - 3338 - OE	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
339	Power Pole	38 ° 54 ′ 49.53 " N	97 ° 14 ′ 27.52 " W	1166	40	1206	2019 - ACE - 3339 - OE	DNH	NONE
340	Power Pole	38 ° 54 ′ 49.55 " N	97 ° 14 ′ 29.2 " W	1166	40	1206	2019 - ACE - 3340 - OE	DNH	NONE
873	Tree	38 ° 54 ′ 34.52 " N	97 ° 14 ′ 33.58 " W	1150	65	1215	2019 - ACE - 4772 - OE	DNH	NONE
874	Tree	38 ° 54 ′ 34.91 " N	97 ° 14 ′ 31.97 " W	1150	61	1211	2019 - ACE - 4773 - OE	DNH	NONE
875	Tree	38 ° 54 ′ 35.22 " N	97 ° 14 ′ 31.19 " W	1150	62	1212	2019 - ACE - 4774 - OE	DNH	NONE
876	Tree	38 ° 54 ′ 35.72 " N	97 ° 14 ′ 29.75 " W	1152	58	1210	2019 - ACE - 4775 - OE	DNH	NONE
877	Tree	38 ° 54 ′ 36.01 " N	97 ° 14 ′ 28.6 " W	1152	56	1208	2019 - ACE - 4776 - OE	DNH	NONE
878	Tree	38 ° 54 ′ 36.69 " N	97 ° 14 ′ 29.55 " W	1152	66	1218	2019 - ACE - 4777 - OE	DNH	NONE
879	Tree	38 ° 54 ′ 36.33 " N	97 ° 14 ′ 31.15 " W	1152	67	1219	2019 - ACE - 4778 - OE	DNH	NONE
880	Tree	38 ° 54 ′ 35.83 " N	97 ° 14 ′ 32.42 " W	1152	68	1220	2019 - ACE - 4779 - OE	DNH	NONE
881	Tree	38 ° 54 ′ 35.56 " N	97 ° 14 ′ 33.64 " W	1152	70	1222	2019 - ACE - 4780 - OE	DNH	NONE
882	Tree	38 ° 54 ′ 37.04 " N	97 ° 14 ′ 32.62 " W	1153	69	1222	2019 - ACE - 4781 - OE	DNH	NONE
883	Tree	38 ° 54 ′ 38.41 " N	97 ° 14 ′ 31.65 " W	1152	73	1225	2019 - ACE - 4782 - OE	DNH	NONE
884	Tree	38 ° 54 ′ 40.79 " N	97 ° 14 ′ 31.04 " W	1155	72	1227	2019 - ACE - 4783 - OE	DNH	NONE
885	Tree	38 ° 54 ′ 36.36 " N	97 ° 14 ′ 27.34 " W	1152	60	1212	2019 - ACE - 4784 - OE	DNH	NONE
886	Tree	38 ° 54 ′ 36.98 " N	97 ° 14 ′ 25.12 " W	1152	58	1210	2019 - ACE - 4785 - OE	DNH	NONE
887	Tree	38 ° 54 ′ 37.47 " N	97 ° 14 ′ 23.66 " W	1150	62	1212	2019 - ACE - 4786 - OE	DNH	NONE
888	Tree	38 ° 54 ′ 38.12 " N	97 ° 14 ′ 21.2 " W	1150	69	1219	2019 - ACE - 4787 - OE	DNH	NONE
889	Tree	38 ° 54 ′ 38.53 " N	97 ° 14 ′ 19.81 " W	1151	65	1216	2019 - ACE - 4788 - OE	DNH	NONE
890	Tree	38 ° 54 ′ 39.15 " N	97 ° 14 ′ 21.04 " W	1152	59	1211	2019 - ACE - 4789 - OE	DNH	NONE
891	Tree	38 ° 54 ′ 38.8 " N	97 ° 14 ′ 22.32 " W	1153	60	1213	2019 - ACE - 4790 - OE	DNH	NONE
892	Tree	38 ° 54 ′ 38.22 " N	97 ° 14 ′ 24.43 " W	1151	63	1214	2019 - ACE - 4791 - OE	DNH	NONE
893	Tree	38 ° 54 ′ 37.71 " N	97 ° 14 ′ 25.91 " W	1151	65	1216	2019 - ACE - 4792 - OE	DNH	NONE
894	Tree	38 ° 54 ′ 37.23 " N	97 ° 14 ′ 27.57 " W	1150	65	1215	2019 - ACE - 4793 - OE	DNH	NONE
905	Tree	38 ° 54 ′ 48.07 " N	97 ° 14 ′ 8.86 " W	1153	52	1205	2019 - ACE - 4804 - OE	NPH	TRIM/REMOVE
906	Tree	38 ° 54 ′ 48.08 " N	97 ° 14 ′ 10.04 " W	1156	41	1197	2019 - ACE - 4805 - OE	NPH	TRIM/REMOVE
913	Tree	38 ° 54 ′ 49.12 " N	97 ° 14 ′ 10.12 " W	1156	60	1216	2019 - ACE - 4812 - OE	NPH	TRIM/REMOVE
914	Tree	38 ° 54 ′ 51.09 " N	97 ° 14 ′ 10.1 " W	1157	65	1222	2019 - ACE - 4813 - OE	NPH	TRIM/REMOVE
915	Tree	38 ° 54 ′ 51.13 " N	97 ° 14 ′ 12.76 " W	1159	65	1224	2019 - ACE - 4814 - OE	NPH	TRIM/REMOVE
916	Tree	38 ° 54 ′ 49.19 " N	97 ° 14 ′ 12.92 " W	1156	60	1216	2019 - ACE - 4815 - OE	NPH	TRIM/REMOVE
917	Tree	38 ° 54 ′ 48.68 " N	97 ° 14 ′ 16.07 " W	1157	52	1209	2019 - ACE - 4816 - OE	NPH	TRIM/REMOVE
918	Tree	38 ° 54 ′ 48.46 " N	97 ° 14 ′ 17.72 " W	1155	56	1211	2019 - ACE - 4817 - OE	DNH	NONE
919	Tree	38 ° 54 ′ 48.13 " N	97 ° 14 ′ 18.99 " W	1156	50	1206	2019 - ACE - 4818 - OE	DNH	NONE
920	Tree	38 ° 54 ′ 48.12 " N	97 ° 14 ′ 20.03 " W	1156	56	1212	2019 - ACE - 4819 - OE	DNH	NONE
921	Tree	38 ° 54 ′ 48.03 " N	97 ° 14 ′ 21.19 " W	1159	55	1214	2019 - ACE - 4820 - OE	DNH	NONE
922	Tree	38 ° 54 ′ 48.03 " N	97 ° 14 ′ 22.07 " W	1160	53	1213	2019 - ACE - 4821 - OE	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

DATE	REVISIONS	NO.

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 1

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DRAWN BY: —— | DESIGNED BY: —— | REVIEWED BY: —— | QUANTITIES CHECKED BY: ——

PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
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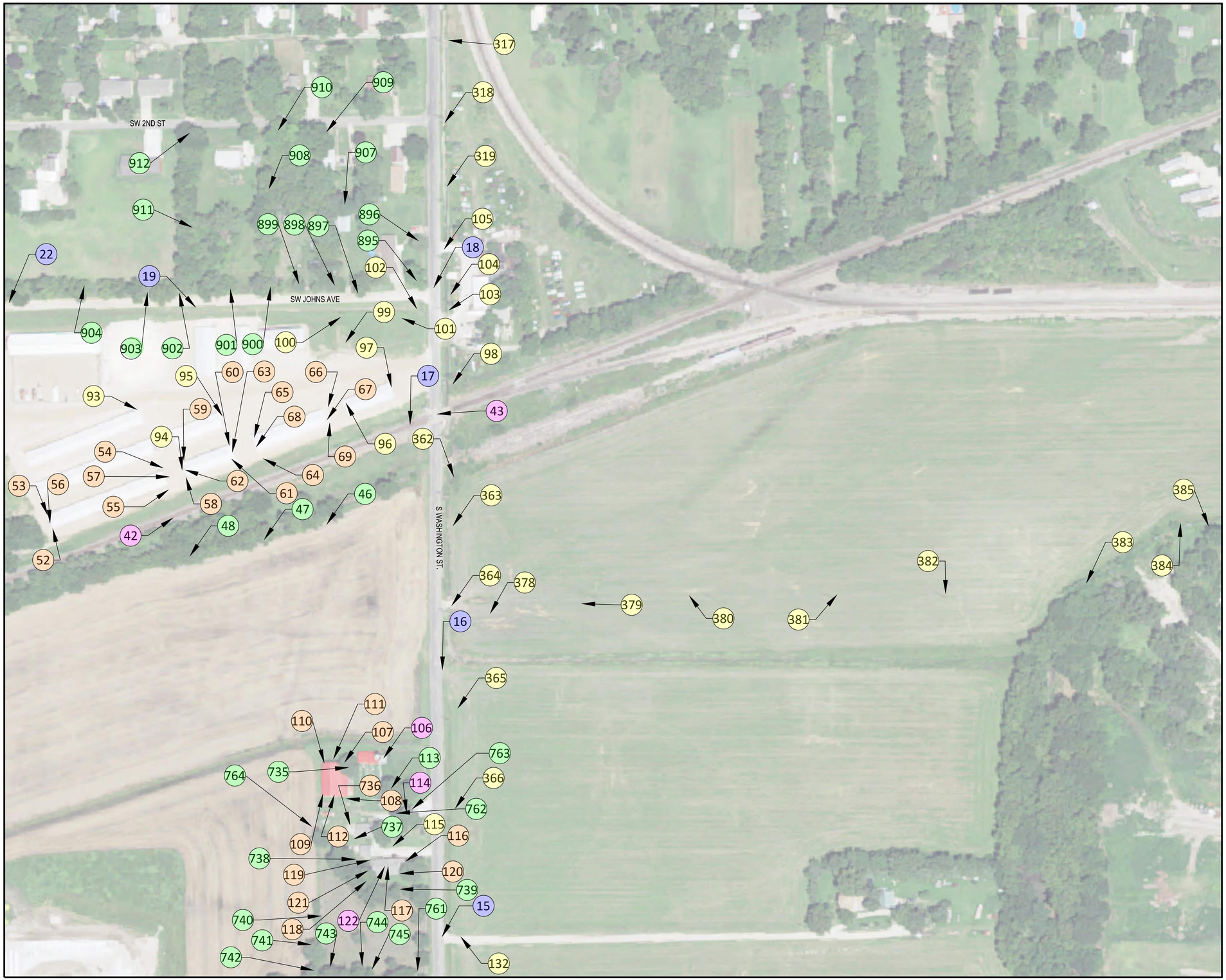
[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:22:19 PM] [Last Saved: 5/5/2020 2:47:25 PM, Bwaller]



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MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

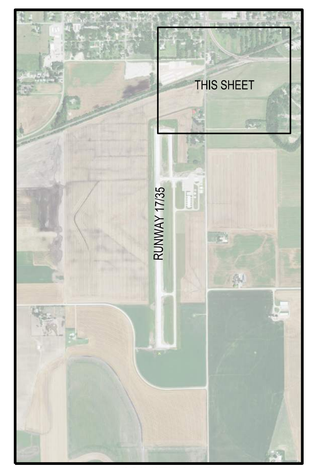
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 22 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 2

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DRAWN BY: ---
REVIEWED BY: ---
DOCUMENTS CHECKED BY: ---

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ALP UPDATE

DATE
JULY 15, 2020

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[File Location: Y:\manhattan\130400\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date - 7/13/2020 9:27:50 AM] [Last Saved - 5/5/2020 2:36:40 PM, Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
15	S. Washington St.	38° 54' 34.8" N	97° 13' 57.6" W	1150	15	1165	2018-ACE-8246-OE	DNH	NONE
16	S. Washington St.	38° 54' 40.4" N	97° 13' 57.7" W	1149	15	1164	2018-ACE-8247-OE	DNH	NONE
17	S. Washington St.	38° 54' 45.4" N	97° 13' 57.6" W	1152	15	1167	2018-ACE-8248-OE	DNH	NONE
18	S. Washington St.	38° 54' 47.9" N	97° 13' 57.7" W	1152	15	1167	2018-ACE-8249-OE	DNH	NONE
19	SW Johns Ave.	38° 54' 47.8" N	97° 14' 2.7" W	1153	15	1168	2018-ACE-8250-OE	DNH	NONE
22	SW Johns Ave.	38° 54' 47.7" N	97° 14' 16.6" W	1153	15	1168	2018-ACE-8253-OE	DNH	NONE
42	Railroad	38° 54' 43.4" N	97° 14' 4.62" W	1154	23	1177	2018-ACE-8255-OE	NPH	INSTALL HAZARAD LIGHTS ON POLES NORTH OF RAILROAD
43	Railroad	38° 54' 45.3" N	97° 13' 58" W	1154	23	1177	2018-ACE-8256-OE	NPH	INSTALL HAZARAD LIGHTS ON POLES NORTH OF RAILROAD
46	Tree	38° 54' 43.3" N	97° 14' 0.29" W	1153	36	1189	2018-ACE-8260-OE	DNH	NONE
47	Tree	38° 54' 42.6" N	97° 14' 2.96" W	1154	51	1205	2018-ACE-8261-OE	NPH	TRIM/REMOVE
48	Tree	38° 54' 42.6" N	97° 14' 4.73" W	1154	40	1194	2018-ACE-8262-OE	NPH	TRIM/REMOVE
52	Building Corner	38° 54' 43.2" N	97° 14' 7.64" W	1151	7	1158	2018-ACE-8288-OE	DNH	NONE
53	Building Corner	38° 54' 43.5" N	97° 14' 7.77" W	1151	7	1158	2018-ACE-8289-OE	DNH	NONE
54	Building Corner	38° 54' 44.4" N	97° 14' 4.82" W	1151	7	1158	2018-ACE-8290-OE	DNH	NONE
55	Building Corner	38° 54' 44.1" N	97° 14' 4.68" W	1151	7	1158	2018-ACE-8291-OE	DNH	NONE
56	Building High Point	38° 54' 43.4" N	97° 14' 7.73" W	1151	11	1162	2018-ACE-8292-OE	DNH	NONE
57	Building High Point	38° 54' 44.2" N	97° 14' 4.76" W	1151	11	1162	2018-ACE-8293-OE	DNH	NONE
58	Building Corner	38° 54' 44.3" N	97° 14' 4.06" W	1151	9	1160	2018-ACE-8294-OE	DNH	NONE
59	Building Corner	38° 54' 44.6" N	97° 14' 4.22" W	1151	9	1160	2018-ACE-8299-OE	DNH	NONE
60	Building Corner	38° 54' 44.9" N	97° 14' 3.02" W	1151	9	1160	2018-ACE-8295-OE	DNH	NONE
61	Building Corner	38° 54' 44.6" N	97° 14' 2.9" W	1151	9	1160	2018-ACE-8296-OE	DNH	NONE
62	Building High Point	38° 54' 44.4" N	97° 14' 4.16" W	1151	11	1162	2018-ACE-8297-OE	DNH	NONE
63	Building High Point	38° 54' 44.8" N	97° 14' 2.97" W	1151	11	1162	2018-ACE-8298-OE	DNH	NONE
64	Building Corner	38° 54' 44.8" N	97° 14' 2.27" W	1151	9	1160	2018-ACE-8302-OE	DNH	NONE
65	Building Corner	38° 54' 45.1" N	97° 14' 2.43" W	1151	9	1160	2018-ACE-8307-OE	DNH	NONE
66	Building Corner	38° 54' 45.6" N	97° 14' 0.66" W	1151	9	1160	2018-ACE-8303-OE	DNH	NONE
67	Building Corner	38° 54' 45.3" N	97° 14' 0.53" W	1151	9	1160	2018-ACE-8304-OE	DNH	NONE
93	Power Pole	38° 54' 45.7" N	97° 14' 5.38" W	1151	23	1174	2018-ACE-9977-OE	DNH	NONE
94	Power Pole	38° 54' 44.6" N	97° 14' 4.24" W	1152	19	1171	2018-ACE-9978-OE	DNH	NONE
95	Power Pole	38° 54' 45.6" N	97° 14' 3.31" W	1152	17	1169	2018-ACE-9979-OE	DNH	NONE
96	Power Pole	38° 54' 45.8" N	97° 14' 0.07" W	1152	30	1182	2018-ACE-9980-OE	DNH	NONE
97	Power Pole	38° 54' 45.8" N	97° 13' 58.7" W	1153	27	1180	2018-ACE-9981-OE	DNH	NONE
98	Power Pole	38° 54' 46.4" N	97° 13' 57.3" W	1152	47	1199	2018-ACE-9982-OE	DNH	NONE
99	Power Pole	38° 54' 47.1" N	97° 13' 59.9" W	1149	23	1172	2018-ACE-9983-OE	DNH	NONE
100	Power Pole	38° 54' 47.5" N	97° 13' 59.9" W	1150	32	1182	2018-ACE-9984-OE	DNH	NONE
101	Power Pole	38° 54' 47.5" N	97° 13' 58.3" W	1151	33	1184	2018-ACE-9985-OE	DNH	NONE
102	Power Pole	38° 54' 47.8" N	97° 13' 58.2" W	1152	27	1179	2018-ACE-9986-OE	DNH	NONE
103	Power Pole	38° 54' 47.6" N	97° 13' 57.3" W	1152	44	1196	2018-ACE-9987-OE	DNH	NONE
104	Power Pole	38° 54' 47.8" N	97° 13' 57.3" W	1152	30	1182	2018-ACE-9988-OE	DNH	NONE
105	Power Pole	38° 54' 48.7" N	97° 13' 57.4" W	1152	40	1192	2018-ACE-9989-OE	DNH	NONE
106	Silo	38° 54' 38.5" N	97° 13' 59.2" W	1150	34	1184	2018-ACE-9990-OE	DNH	NONE
107	Building Corner	38° 54' 38.4" N	97° 14' 0.18" W	1150	12	1162	2018-ACE-9991-OE	DNH	NONE
108	Building Corner	38° 54' 37.8" N	97° 14' 0.19" W	1150	12	1162	2018-ACE-9992-OE	DNH	NONE
109	Building Corner	38° 54' 37.8" N	97° 14' 0.65" W	1150	12	1162	2018-ACE-9993-OE	DNH	NONE
110	Building Corner	38° 54' 38.4" N	97° 14' 0.66" W	1150	12	1162	2018-ACE-9994-OE	DNH	NONE
111	Building Top	38° 54' 38.4" N	97° 14' 0.42" W	1150	18	1168	2018-ACE-9995-OE	DNH	NONE
112	Building Top	38° 54' 37.8" N	97° 14' 0.43" W	1150	18	1168	2018-ACE-9996-OE	DNH	NONE
113	Tree Top	38° 54' 37.9" N	97° 13' 58.8" W	1153	58	1211	2018-ACE-9997-OE	DNH	NONE
114	Windmill	38° 54' 37.6" N	97° 13' 59" W	1151	38	1189	2018-ACE-9998-OE	DNH	NONE
115	Power Pole	38° 54' 36.7" N	97° 13' 59" W	1154	25	1179	2018-ACE-9999-OE	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
117	Building Corner	38° 54' 36.17" N	97° 13' 58.51" W	1153	18	1171	2018-ACE-10001-OE	DNH	NONE
118	Building Corner	38° 54' 36.16" N	97° 13' 59.31" W	1153	18	1171	2018-ACE-10002-OE	DNH	NONE
119	Building Corner	38° 54' 36.48" N	97° 13' 59.3" W	1153	18	1171	2018-ACE-10003-OE	DNH	NONE
120	Building Top	38° 54' 36.31" N	97° 13' 58.69" W	1153	22	1175	2018-ACE-10004-OE	DNH	NONE
121	Building Top	38° 54' 36.32" N	97° 13' 59.29" W	1153	22	1175	2018-ACE-10005-OE	DNH	NONE
122	Antenna	38° 54' 36.31" N	97° 13' 58.96" W	1153	30	1183	2018-ACE-10006-OE	DNH	NONE
132	Power Pole	38° 54' 34.94" N	97° 13' 57.35" W	1149	38	1187	2018-ACE-10017-OE	DNH	NONE
317	Power Pole	38° 54' 53.06" N	97° 13' 57.3" W	1153	75	1228	2019-ACE-3317-OE	DNH	NONE
318	Power Pole	38° 54' 51.49" N	97° 13' 57.13" W	1152	55	1207	2019-ACE-3318-OE	DNH	NONE
319	Power Pole	38° 54' 49.79" N	97° 13' 57.29" W	1152	40	1192	2019-ACE-3319-OE	DNH	NONE
363	Power Pole	38° 54' 43.91" N	97° 13' 57.31" W	1149	75	1224	2019-ACE-3368-OE	DNH	NONE
364	Power Pole	38° 54' 41.44" N	97° 13' 57.28" W	1148	55	1203	2019-ACE-3369-OE	DNH	NONE
365	Power Pole	38° 54' 39.3" N	97° 13' 57.34" W	1148	55	1203	2019-ACE-3370-OE	DNH	NONE
366	Power Pole	38° 54' 37.2" N	97° 13' 57.32" W	1149	55	1204	2019-ACE-3371-OE	DNH	NONE
378	Power Pole	38° 54' 41.7" N	97° 13' 56.34" W	1150	55	1205	2019-ACE-3385-OE	DNH	NONE
379	Power Pole	38° 54' 41.69" N	97° 13' 53.46" W	1151	55	1206	2019-ACE-3386-OE	DNH	NONE
380	Power Pole	38° 54' 41.69" N	97° 13' 50.43" W	1151	55	1206	2019-ACE-3387-OE	DNH	NONE
381	Power Pole	38° 54' 41.69" N	97° 13' 47.35" W	1151	55	1206	2019-ACE-3388-OE	DNH	NONE
382	Power Pole	38° 54' 41.7" N	97° 13' 44.43" W	1152	55	1207	2019-ACE-3389-OE	DNH	NONE
383	Power Pole	38° 54' 41.72" N	97° 13' 41.28" W	1152	55	1207	2019-ACE-3390-OE	DNH	NONE
384	Power Pole	38° 54' 42.86" N	97° 13' 38.77" W	1153	55	1208	2019-ACE-3391-OE	DNH	NONE
385	Power Pole	38° 54' 43.11" N	97° 13' 37.91" W	1154	55	1209	2019-ACE-3392-OE	DNH	NONE
735	Tree	38° 54' 38.44" N	97° 13' 59.89" W	1151	38	1189	2019-ACE-4267-OE	DNH	NONE
737	Tree	38° 54' 36.67" N	97° 14' 0.08" W	1151	39	1190	2019-ACE-4269-OE	DNH	NONE
738	Tree	38° 54' 36.15" N	97° 13' 59.61" W	1152	39	1191	2019-ACE-4270-OE	DNH	NONE
739	Tree	38° 54' 35.92" N	97° 13' 58.8" W	1152	39	1191	2019-ACE-4271-OE	DNH	NONE
740	Tree	38° 54' 35.33" N	97° 14' 0.8" W	1147	30	1177	2019-ACE-4272-OE	DNH	NONE
741	Tree	38° 54' 34.59" N	97° 14' 0.83" W	1150	30	1180	2019-ACE-4273-OE	DNH	NONE
742	Tree	38° 54' 34.11" N	97° 14' 0.77" W	1151	45	1196	2019-ACE-4274-OE	DNH	NONE
743	Tree	38° 54' 34.17" N	97° 14' 0.3" W	1149	47	1196	2019-ACE-4275-OE	DNH	NONE
744	Tree	38° 54' 34.07" N	97° 13' 59.86" W	1151	48	1199	2019-ACE-4276-OE	DNH	NONE
761	Tree	38° 54' 34.01" N	97° 13' 58.59" W	1150	36	1186	2019-ACE-4293-OE	DNH	NONE
762	Tree	38° 54' 37.04" N	97° 13' 58.99" W	1154	38	1192	2019-ACE-4294-OE	DNH	NONE
763	Tree	38° 54' 37.22" N	97° 13' 58.38" W	1151	40	1191	2019-ACE-4295-OE	DNH	NONE
764	Tree	38° 54' 36.9" N	97° 14' 0.65" W	1150	18	1168	2019-ACE-4296-OE	DNH	NONE
895	Tree	38° 54' 48.24" N	97° 13' 58.09" W	1154	45	1199	2019-ACE-4794-OE	DNH	NONE
896	Tree	38° 54' 48.99" N	97° 13' 57.98" W	1154	43	1197	2019-ACE-4795-OE	DNH	NONE
897	Tree	38° 54' 48.1" N	97° 13' 59.51" W	1153	40	1193	2019-ACE-4796-OE	DNH	NONE
898	Tree	38° 54' 48.19" N	97° 14' 0.34" W	1154	50	1204	2019-ACE-4797-OE	DNH	NONE
899	Tree	38° 54' 48.13" N	97° 14' 1.14" W	1153	40	1193	2019-ACE-4798-OE	DNH	NONE
900	Tree	38° 54' 48.14" N	97° 14' 1.99" W	1152	48	1200	2019-ACE-4799-OE	DNH	NONE
901	Tree	38° 54' 48.08" N	97° 14' 3.05" W	1154	40	1194	2019-ACE-4800-OE	NPH	TRIM/REMOVE
902	Tree	38° 54' 48.12" N	97° 14' 3.97" W	1156	42	1198	2019-ACE-4801-OE	NPH	TRIM/REMOVE
903	Tree	38° 54' 48.11" N	97° 14' 5.01" W	1156	45	1201	2019-ACE-4802-OE	NPH	TRIM/REMOVE
904	Tree	38° 54' 48.11" N	97° 14' 6.87" W	1153	40	1193	2019-ACE-4803-OE	NPH	TRIM/REMOVE
907	Tree	38° 54' 49.87" N	97° 14' 0.28" W	1155	60	1215	2019-ACE-4806-OE	DNH	NONE
908	Tree	38° 54' 49.85" N	97° 14' 1.97" W	1155	60	1215	2019-ACE-4807-OE	NPH	TRIM/REMOVE
909	Tree	38° 54' 51.2" N	97° 14' 0.52" W	1155	70	1225	2019-ACE-4808-OE	NPH	TRIM/REMOVE
910	Tree	38° 54' 51.22" N	97° 14' 1.56" W	1155	70	1225	2019-ACE-4809-OE	NPH	TRIM/REMOVE
911	Tree	38° 54' 49.57" N	97° 14' 4.03" W	1153	55	1208	2019-ACE-4810-OE	NPH	TRIM/REMOVE
912	Tree	38° 54' 51.13" N	97° 14' 3.92" W	1156	65	1221	2019-ACE-4811-OE	NPH	TRIM/REMOVE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 2

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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engineers - scientists - planners
Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
PH: 785.539.2202 Job No. - 130614.00

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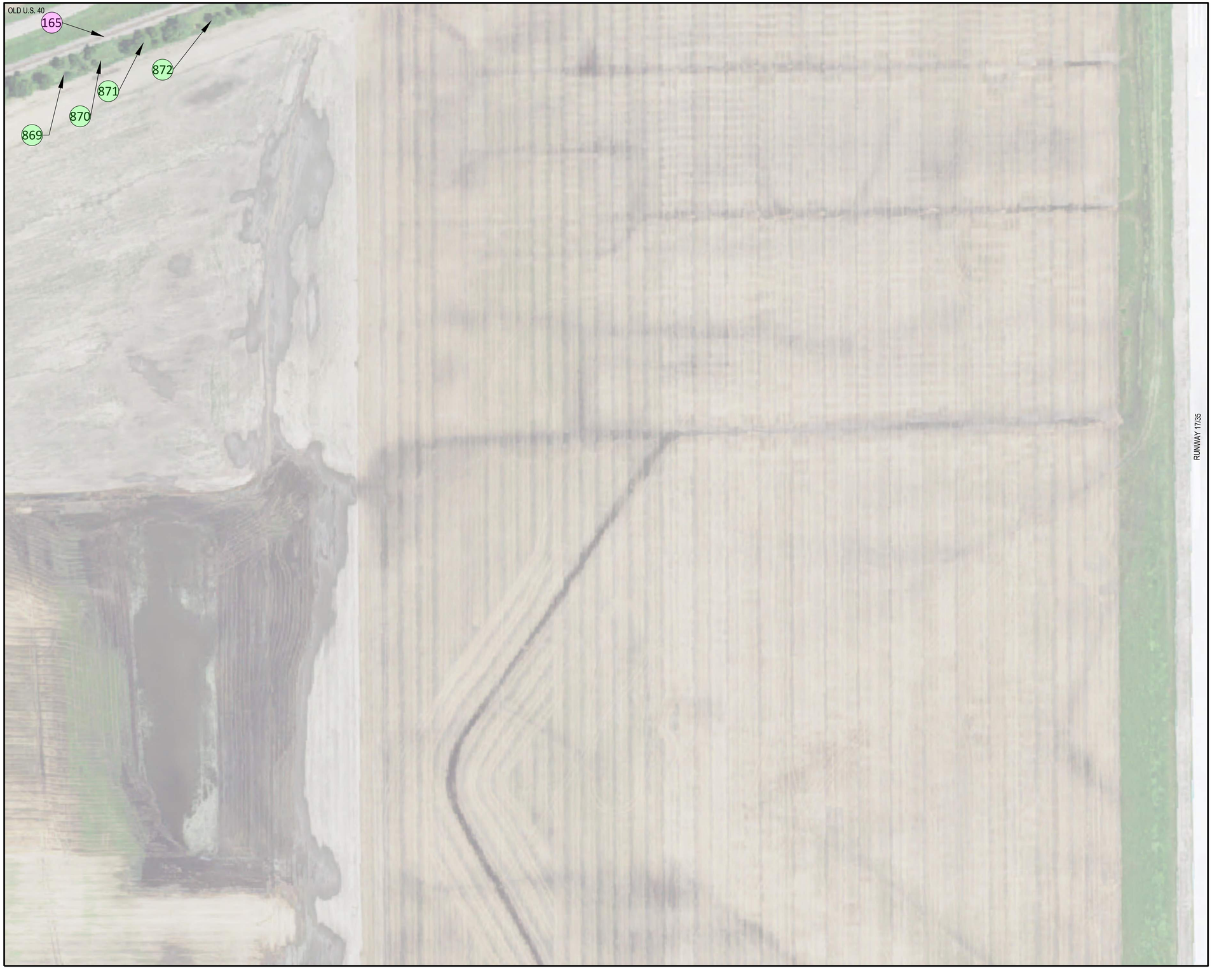
PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 22 of 38

[File Location: X:\manhattan\130400\130492.00_abilene_master_plan\Eng_Doc\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:26:14 PM] [Last Saved: 5/5/2020 2:47:25 PM, Bwaller]



N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

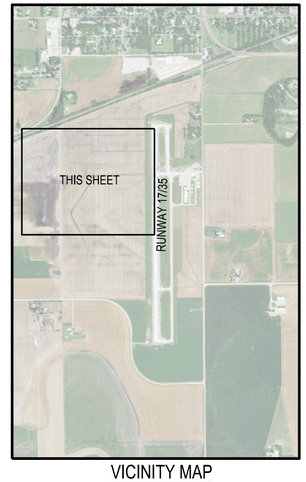
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 24 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 3

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
23 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:29:09 AM] [Last Saved: 5/5/2020 2:36:40 PM; Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
165	Railroad	38 ° 54 ′ 33.5 " N	97 ° 14 ′ 38.6 " W	1151	23	1174	2019 - ACE - 2858 - OE	DNH	NONE
869	Tree	38 ° 54 ′ 32.8 " N	97 ° 14 ′ 39.8 " W	1154	49	1203	2019 - ACE - 4768 - OE	NPH	NONE **
870	Tree	38 ° 54 ′ 33.2 " N	97 ° 14 ′ 38.6 " W	1153	58	1211	2019 - ACE - 4769 - OE	NPH	NONE **
871	Tree	38 ° 54 ′ 33.8 " N	97 ° 14 ′ 36.4 " W	1152	51	1203	2019 - ACE - 4770 - OE	NPH	NONE **
872	Tree	38 ° 54 ′ 34 " N	97 ° 14 ′ 35.2 " W	1151	61	1212	2019 - ACE - 4771 - OE	DNH	NONE

**NO ACTION REQUIRED UNLESS A CROSSWIND RUNWAY IS CONSTRUCTED

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
.	-	-
.	-	-
.	-	-
.	-	-
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ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 3

AIRPORT LAYOUT PLAN UPDATE

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ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
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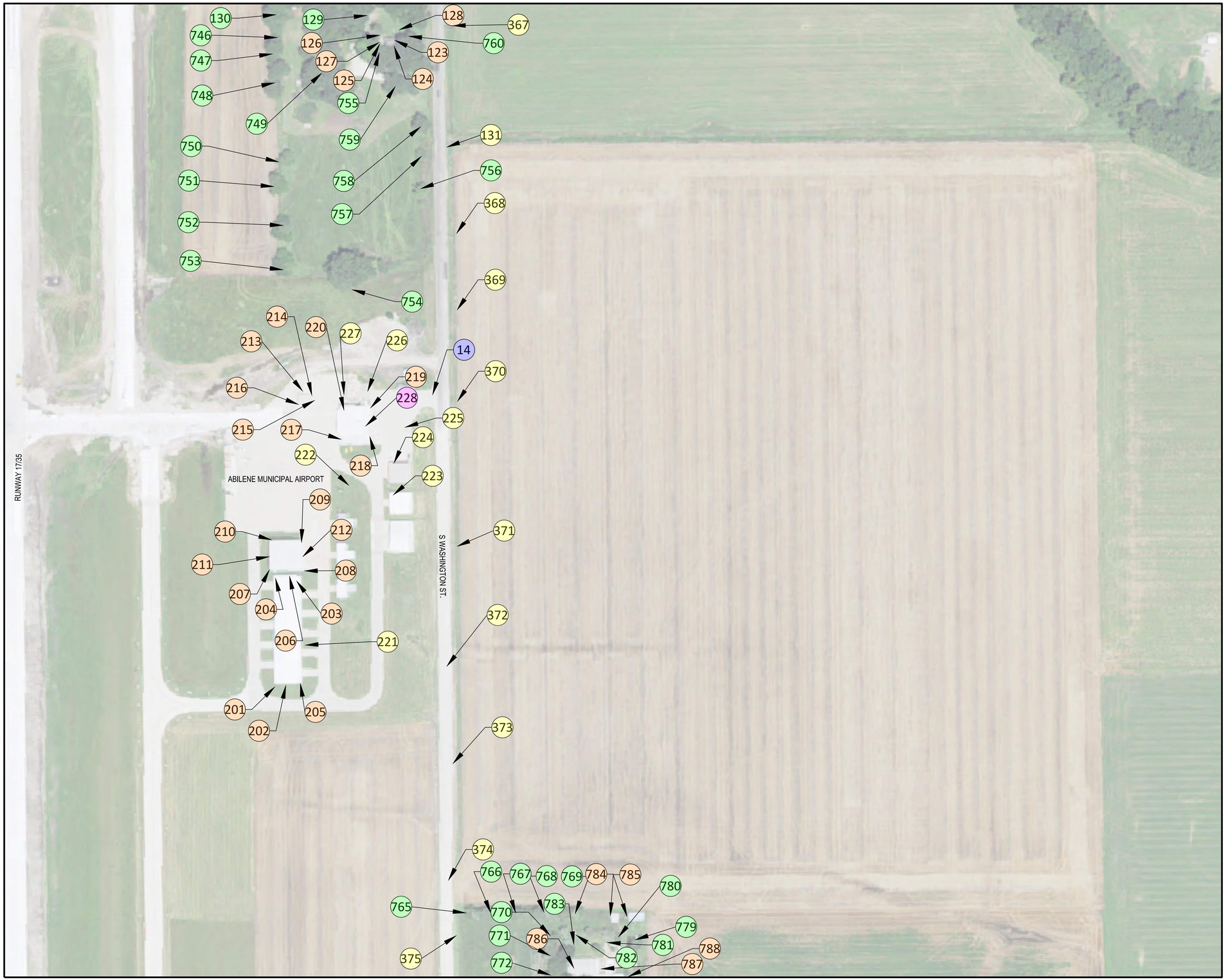


N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

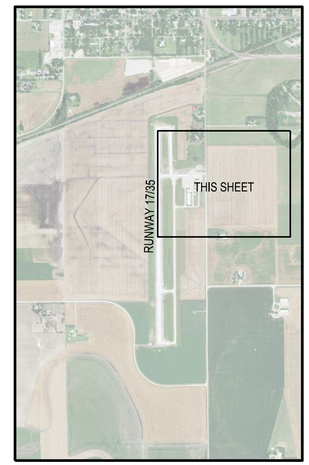
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 26 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 4

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DATE: JULY 15, 2020

SHEET NO. 25 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:30:50 AM] [Last Saved: 5/5/2020 2:36:40 PM, Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
14	S. Washington St.	38° 54' 26" N	97° 13' 57.6" W	1147	15	1162	2018 - ACE - 8245 - OE	DNH	NONE
123	Building Corner	38° 54' 33.3" N	97° 13' 58.7" W	1170	16	1185	2018 - ACE - 10008 - OE	DNH	NONE
124	Building Corner	38° 54' 33.1" N	97° 13' 58.7" W	1170	16	1185	2018 - ACE - 10009 - OE	DNH	NONE
125	Building Corner	38° 54' 33.1" N	97° 13' 59" W	1170	16	1185	2018 - ACE - 10010 - OE	DNH	NONE
126	Building Corner	38° 54' 33.3" N	97° 13' 59" W	1170	16	1185	2018 - ACE - 10011 - OE	DNH	NONE
127	Building Top	38° 54' 33.2" N	97° 13' 59" W	1175	21	1190	2018 - ACE - 10012 - OE	DNH	NONE
128	Building Top	38° 54' 33.2" N	97° 13' 58.7" W	1175	21	1190	2018 - ACE - 10013 - OE	DNH	NONE
129	Tree Top	38° 54' 33.8" N	97° 13' 59.5" W	1153	55	1208	2018 - ACE - 10014 - OE	DNH	NONE
130	Tree Top	38° 54' 33.9" N	97° 14' 1.92" W	1152	48	1200	2018 - ACE - 10015 - OE	NPH	TRIM/REMOVE
131	Power Pole	38° 54' 31.3" N	97° 13' 57.3" W	1147	35	1182	2018 - ACE - 10016 - OE	DNH	NONE
201	Building Corner	38° 54' 20.3" N	97° 14' 2.09" W	1150	14	1164	2018 - ACE - 4396 - NRA	DNH	NONE
202	Building Corner	38° 54' 20.3" N	97° 14' 1.44" W	1150	14	1164	2018 - ACE - 4397 - NRA	DNH	NONE
203	Building Corner	38° 54' 22.5" N	97° 14' 1.44" W	1150	14	1164	2018 - ACE - 4398 - NRA	DNH	NONE
204	Building Corner	38° 54' 22.5" N	97° 14' 2.09" W	1150	14	1164	2018 - ACE - 4399 - NRA	DNH	NONE
205	Building High Point	38° 54' 22.3" N	97° 14' 1.66" W	1150	17	1167	2018 - ACE - 4400 - NRA	DNH	NONE
206	Building High Point	38° 54' 22.5" N	97° 14' 1.66" W	1150	17	1167	2018 - ACE - 4401 - NRA	DNH	NONE
207	Building Corner	38° 54' 22.6" N	97° 14' 2.2" W	1150	20	1170	2018 - ACE - 4402 - NRA	DNH	NONE
208	Building Corner	38° 54' 22.6" N	97° 14' 1.44" W	1150	20	1170	2018 - ACE - 4403 - NRA	DNH	NONE
209	Building Corner	38° 54' 23.2" N	97° 14' 1.44" W	1150	20	1170	2018 - ACE - 4404 - NRA	DNH	NONE
210	Building Corner	38° 54' 23.2" N	97° 14' 2.2" W	1150	20	1170	2018 - ACE - 4405 - NRA	DNH	NONE
211	Building High Point	38° 54' 22.9" N	97° 14' 2.2" W	1150	25	1175	2018 - ACE - 4406 - NRA	DNH	NONE
212	Building High Point	38° 54' 22.9" N	97° 14' 1.44" W	1150	25	1175	2018 - ACE - 4407 - NRA	DNH	NONE
213	Fuel Canopy Corner	38° 54' 26.1" N	97° 14' 1.39" W	1149	8	1157	2018 - ACE - 4412 - NRA	DNH	NONE
214	Fuel Canopy Corner	38° 54' 26.1" N	97° 14' 1.11" W	1149	8	1157	2018 - ACE - 4413 - NRA	DNH	NONE
215	Fuel Canopy Corner/High Point	38° 54' 26" N	97° 14' 1.11" W	1149	11	1160	2018 - ACE - 4414 - NRA	DNH	NONE
216	Fuel Canopy Corner/High Point	38° 54' 26" N	97° 14' 1.39" W	1149	11	1160	2018 - ACE - 4415 - NRA	DNH	NONE
217	Building Corner/High Point	38° 54' 25.3" N	97° 14' 0.31" W	1149	22	1171	2018 - ACE - 4408 - NRA	DNH	NONE
218	Building Corner/High Point	38° 54' 25.3" N	97° 13' 59.6" W	1149	22	1171	2018 - ACE - 4409 - NRA	DNH	NONE
219	Building Corner/High Point	38° 54' 25.9" N	97° 13' 59.6" W	1149	22	1171	2018 - ACE - 4410 - NRA	DNH	NONE
220	Building Corner/High Point	38° 54' 25.9" N	97° 14' 0.31" W	1149	22	1171	2018 - ACE - 4411 - NRA	DNH	NONE
221	Power Pole	38° 54' 21.1" N	97° 14' 1.28" W	1150	30	1180	2018 - ACE - 4416 - NRA	NPH	RELOCATE POLE
222	Power Pole	38° 54' 24.2" N	97° 14' 0.22" W	1149	31	1180	2018 - ACE - 4417 - NRA	DNH	NONE
223	Power Pole	38° 54' 24.2" N	97° 13' 59" W	1149	31	1180	2018 - ACE - 4418 - NRA	DNH	NONE
224	Power Pole	38° 54' 24.8" N	97° 13' 59" W	1149	31	1180	2018 - ACE - 4419 - NRA	DNH	NONE
225	Power Pole	38° 54' 25.3" N	97° 13' 58.5" W	1149	31	1180	2018 - ACE - 4420 - NRA	DNH	NONE
226	Power Pole	38° 54' 26.1" N	97° 13' 59.6" W	1149	31	1180	2018 - ACE - 4421 - NRA	DNH	NONE
227	Power Pole	38° 54' 26.1" N	97° 14' 0.3" W	1149	31	1180	2018 - ACE - 4422 - NRA	DNH	NONE
228	Rotating Beacon	38° 54' 25.6" N	97° 13' 59.8" W	1149	31	1180	2018 - ACE - 4423 - NRA	DNH	NONE
367	Power Pole	38° 54' 33.5" N	97° 13' 57.4" W	1150	55	1205	2019 - ACE - 3372 - OE	DNH	NONE
368	Power Pole	38° 54' 29.3" N	97° 13' 57.3" W	1147	40	1187	2019 - ACE - 3373 - OE	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
369	Power Pole	38° 54' 27.21" N	97° 13' 57.33" W	1147	40	1187	2019 - ACE - 3374 - OE	DNH	NONE
370	Power Pole	38° 54' 25.11" N	97° 13' 57.33" W	1147	55	1202	2019 - ACE - 3375 - OE	DNH	NONE
371	Power Pole	38° 54' 23.05" N	97° 13' 57.34" W	1147	40	1187	2019 - ACE - 3376 - OE	DNH	NONE
372	Power Pole	38° 54' 20.92" N	97° 13' 57.34" W	1146	55	1201	2019 - ACE - 3377 - OE	DNH	NONE
373	Power Pole	38° 54' 18.9" N	97° 13' 57.33" W	1147	40	1187	2019 - ACE - 3378 - OE	DNH	NONE
374	Power Pole	38° 54' 16.83" N	97° 13' 57.31" W	1146	40	1186	2019 - ACE - 3379 - OE	DNH	NONE
375	Power Pole	38° 54' 14.8" N	97° 13' 57.32" W	1148	40	1188	2019 - ACE - 3380 - OE	DNH	NONE
746	Tree	38° 54' 33.24" N	97° 14' 1.9" W	1151	43	1194	2019 - ACE - 4278 - OE	DNH	NONE
747	Tree	38° 54' 32.81" N	97° 14' 1.86" W	1152	40	1192	2019 - ACE - 4279 - OE	DNH	NONE
748	Tree	38° 54' 32.38" N	97° 14' 1.88" W	1151	30	1181	2019 - ACE - 4280 - OE	DNH	NONE
749	Tree Mass	38° 54' 32.62" N	97° 14' 0.54" W	1154	50	1204	2019 - ACE - 4281 - OE	DNH	NONE
750	Tree	38° 54' 30.92" N	97° 14' 1.62" W	1150	38	1188	2019 - ACE - 4282 - OE	DNH	NONE
751	Tree	38° 54' 30.37" N	97° 14' 1.83" W	1150	29	1179	2019 - ACE - 4283 - OE	DNH	NONE
752	Tree	38° 54' 29.5" N	97° 14' 1.79" W	1149	31	1180	2019 - ACE - 4284 - OE	DNH	NONE
753	Tree	38° 54' 28.79" N	97° 14' 1.72" W	1148	26	1174	2019 - ACE - 4285 - OE	DNH	NONE
754	Tree	38° 54' 28.68" N	97° 13' 59.98" W	1148	57	1205	2019 - ACE - 4286 - OE	DNH	NONE
755	Tree	38° 54' 33.17" N	97° 13' 59.4" W	1155	46	1201	2019 - ACE - 4287 - OE	DNH	NONE
756	Tree	38° 54' 30.3" N	97° 13' 58.13" W	1149	34	1183	2019 - ACE - 4288 - OE	DNH	NONE
757	Tree	38° 54' 31.04" N	97° 13' 58.13" W	1149	22	1171	2019 - ACE - 4289 - OE	DNH	NONE
758	Tree	38° 54' 31.55" N	97° 13' 58.04" W	1149	24	1173	2019 - ACE - 4290 - OE	DNH	NONE
759	Tree	38° 54' 32.35" N	97° 13' 58.69" W	1152	45	1197	2019 - ACE - 4291 - OE	DNH	NONE
765	Tree	38° 54' 15.6" N	97° 13' 57.04" W	1148	36	1184	2019 - ACE - 4310 - OE	DNH	NONE
766	Tree	38° 54' 15.61" N	97° 13' 56.34" W	1149	36	1185	2019 - ACE - 4311 - OE	DNH	NONE
767	Tree	38° 54' 15.59" N	97° 13' 55.62" W	1150	36	1186	2019 - ACE - 4312 - OE	DNH	NONE
768	Tree	38° 54' 15.59" N	97° 13' 54.88" W	1151	36	1187	2019 - ACE - 4313 - OE	DNH	NONE
769	Tree	38° 54' 15.58" N	97° 13' 54.23" W	1152	36	1188	2019 - ACE - 4314 - OE	DNH	NONE
770	Tree	38° 54' 15.1" N	97° 13' 54.87" W	1154	33	1187	2019 - ACE - 4315 - OE	DNH	NONE
771	Tree	38° 54' 14.66" N	97° 13' 54.93" W	1153	30	1183	2019 - ACE - 4316 - OE	DNH	NONE
772	Tree	38° 54' 14.32" N	97° 13' 54.74" W	1154	35	1189	2019 - ACE - 4317 - OE	DNH	NONE
779	Tree	38° 54' 14.98" N	97° 13' 52.67" W	1151	35	1186	2019 - ACE - 4324 - OE	DNH	NONE
780	Tree	38° 54' 15.19" N	97° 13' 53.5" W	1151	25	1176	2019 - ACE - 4325 - OE	DNH	NONE
781	Tree	38° 54' 15.17" N	97° 13' 53.89" W	1152	25	1177	2019 - ACE - 4326 - OE	DNH	NONE
782	Tree	38° 54' 15.17" N	97° 13' 54.27" W	1153	25	1178	2019 - ACE - 4327 - OE	DNH	NONE
783	Tree	38° 54' 15.17" N	97° 13' 54.56" W	1154	25	1179	2019 - ACE - 4328 - OE	DNH	NONE
784	Building	38° 54' 15.52" N	97° 13' 53.41" W	1151	12	1163	2019 - ACE - 4329 - OE	DNH	NONE
785	Building	38° 54' 15.46" N	97° 13' 52.93" W	1151	12	1163	2019 - ACE - 4330 - OE	DNH	NONE
786	Building	38° 54' 14.49" N	97° 13' 54.46" W	1154	22	1176	2019 - ACE - 4331 - OE	DNH	NONE
787	Building	38° 54' 14.49" N	97° 13' 53.78" W	1154	22	1176	2019 - ACE - 4332 - OE	DNH	NONE
788	Building	38° 54' 14.27" N	97° 13' 53.1" W	1153	16	1169	2019 - ACE - 4333 - OE	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
.	.	.

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 4

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
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N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

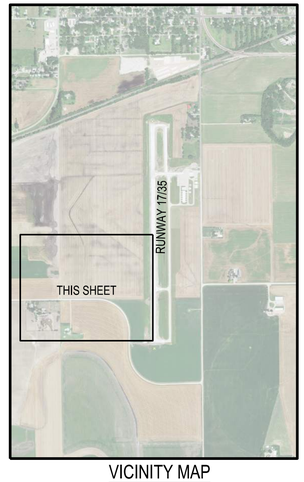
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 28 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 5

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DATE: JULY 15, 2020

SHEET NO.
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[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:32:13 AM] [Last Saved: 5/5/2020 2:36:40 PM; Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
7	2100 Ave.	38 ° 53 ′ 54.4 " N	97 ° 14 ′ 15.1 " W	1149	15	1164	2018 - ACE - 8238 - OE	DNH	NONE
8	2100 Ave.	38 ° 53 ′ 56.7 " N	97 ° 14 ′ 15.1 " W	1149	15	1164	2018 - ACE - 8239 - OE	DNH	NONE
9	2100 Ave.	38 ° 53 ′ 0.43 " N	97 ° 14 ′ 17.1 " W	1149	15	1164	2018 - ACE - 8240 - OE	DNH	NONE
10	2100 Ave.	38 ° 54 ′ 2.45 " N	97 ° 14 ′ 23.6 " W	1150	15	1165	2018 - ACE - 8241 - OE	DNH	NONE
71	Power Pole	38 ° 53 ′ 55.6 " N	97 ° 14 ′ 14.7 " W	1149	29	1178	2018 - ACE - 9523 - OE	DNH	NONE
72	Power Pole	38 ° 53 ′ 57.3 " N	97 ° 14 ′ 14.8 " W	1148	29	1177	2018 - ACE - 9524 - OE	DNH	NONE
73	Power Pole	38 ° 53 ′ 59 " N	97 ° 14 ′ 15.5 " W	1148	29	1177	2018 - ACE - 9525 - OE	DNH	NONE
74	Power Pole	38 ° 54 ′ 0.85 " N	97 ° 14 ′ 17.1 " W	1149	29	1178	2018 - ACE - 9526 - OE	DNH	NONE
75	Power Pole	38 ° 54 ′ 2.11 " N	97 ° 14 ′ 19.1 " W	1148	32	1180	2018 - ACE - 9527 - OE	DNH	NONE
604	Power Pole	38 ° 54 ′ 2.17 " N	97 ° 14 ′ 28.5 " W	1150	40	1190	2019 - ACE - 3633 - OE	DNH	NONE
605	Power Pole	38 ° 54 ′ 2.19 " N	97 ° 14 ′ 31.6 " W	1151	40	1191	2019 - ACE - 3634 - OE	DNH	NONE
606	Power Pole	38 ° 54 ′ 2.2 " N	97 ° 14 ′ 34.9 " W	1153	40	1193	2019 - ACE - 3635 - OE	DNH	NONE
607	Power Pole	38 ° 54 ′ 2.2 " N	97 ° 14 ′ 37.8 " W	1153	40	1193	2019 - ACE - 3636 - OE	DNH	NONE
608	Power Pole	38 ° 54 ′ 2.21 " N	97 ° 14 ′ 39.8 " W	1150	40	1190	2019 - ACE - 3637 - OE	DNH	NONE
694	Silo	38 ° 53 ′ 58.3 " N	97 ° 14 ′ 37.7 " W	1152	60	1212	2019 - ACE - 4147 - OE	DNH	NONE
695	Silo	38 ° 53 ′ 58.4 " N	97 ° 14 ′ 36.6 " W	1152	54	1206	2019 - ACE - 4148 - OE	DNH	NONE
696	Silo	38 ° 53 ′ 59.6 " N	97 ° 14 ′ 36.6 " W	1153	44	1197	2019 - ACE - 4149 - OE	DNH	NONE
697	Building	38 ° 54 ′ 0.65 " N	97 ° 14 ′ 34.9 " W	1151	30	1181	2019 - ACE - 4150 - OE	DNH	NONE
698	Building	38 ° 54 ′ 1.59 " N	97 ° 14 ′ 38.1 " W	1156	35	1191	2019 - ACE - 4151 - OE	DNH	NONE
699	Building	38 ° 53 ′ 59.7 " N	97 ° 14 ′ 34.2 " W	1152	30	1182	2019 - ACE - 4152 - OE	DNH	NONE
700	Tree	38 ° 53 ′ 59.9 " N	97 ° 14 ′ 36.2 " W	1152	50	1202	2019 - ACE - 4153 - OE	DNH	NONE
701	Tree	38 ° 53 ′ 56.7 " N	97 ° 14 ′ 32.2 " W	1151	50	1201	2019 - ACE - 4154 - OE	DNH	NONE
702	Tree	38 ° 54 ′ 0.68 " N	97 ° 14 ′ 38.5 " W	1153	60	1213	2019 - ACE - 4155 - OE	DNH	NONE
703	Tree	38 ° 54 ′ 0.03 " N	97 ° 14 ′ 31.6 " W	1152	55	1207	2019 - ACE - 4156 - OE	DNH	NONE
704	Tree	38 ° 54 ′ 1.68 " N	97 ° 14 ′ 36.7 " W	1153	45	1198	2019 - ACE - 4157 - OE	DNH	NONE
705	Windmill	38 ° 53 ′ 60 " N	97 ° 14 ′ 35.9 " W	1152	55	1207	2019 - ACE - 4158 - OE	DNH	NONE
706	Building	38 ° 53 ′ 57.1 " N	97 ° 14 ′ 29.4 " W	1151	24	1175	2019 - ACE - 4159 - OE	DNH	NONE
707	Building	38 ° 53 ′ 56.4 " N	97 ° 14 ′ 30.3 " W	1151	15	1166	2019 - ACE - 4160 - OE	DNH	NONE
708	Building	38 ° 53 ′ 55.6 " N	97 ° 14 ′ 30.3 " W	1150	20	1170	2019 - ACE - 4161 - OE	DNH	NONE
709	Silo	38 ° 53 ′ 56 " N	97 ° 14 ′ 26.4 " W	1150	30	1180	2019 - ACE - 4162 - OE	DNH	NONE
710	Silo	38 ° 53 ′ 56 " N	97 ° 14 ′ 26.1 " W	1150	30	1180	2019 - ACE - 4163 - OE	DNH	NONE
711	Tree Mass	38 ° 53 ′ 57.9 " N	97 ° 14 ′ 29.3 " W	1152	48	1200	2019 - ACE - 4164 - OE	DNH	NONE
712	Tree Mass	38 ° 53 ′ 57.9 " N	97 ° 14 ′ 30.1 " W	1152	48	1200	2019 - ACE - 4165 - OE	DNH	NONE
713	Tree Mass	38 ° 53 ′ 57.9 " N	97 ° 14 ′ 31.1 " W	1152	48	1200	2019 - ACE - 4166 - OE	DNH	NONE
714	Tree	38 ° 53 ′ 56.4 " N	97 ° 14 ′ 29.9 " W	1151	53	1204	2019 - ACE - 4167 - OE	DNH	NONE
715	Tree Mass	38 ° 53 ′ 56 " N	97 ° 14 ′ 28.3 " W	1151	48	1199	2019 - ACE - 4168 - OE	DNH	NONE
716	Tree Mass	38 ° 53 ′ 56 " N	97 ° 14 ′ 27.5 " W	1150	48	1198	2019 - ACE - 4169 - OE	DNH	NONE
717	Tree	38 ° 53 ′ 56.9 " N	97 ° 14 ′ 28.8 " W	1150	50	1200	2019 - ACE - 4170 - OE	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
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ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 5

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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PROJECT
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DATE
JULY 15, 2020

SHEET NO.
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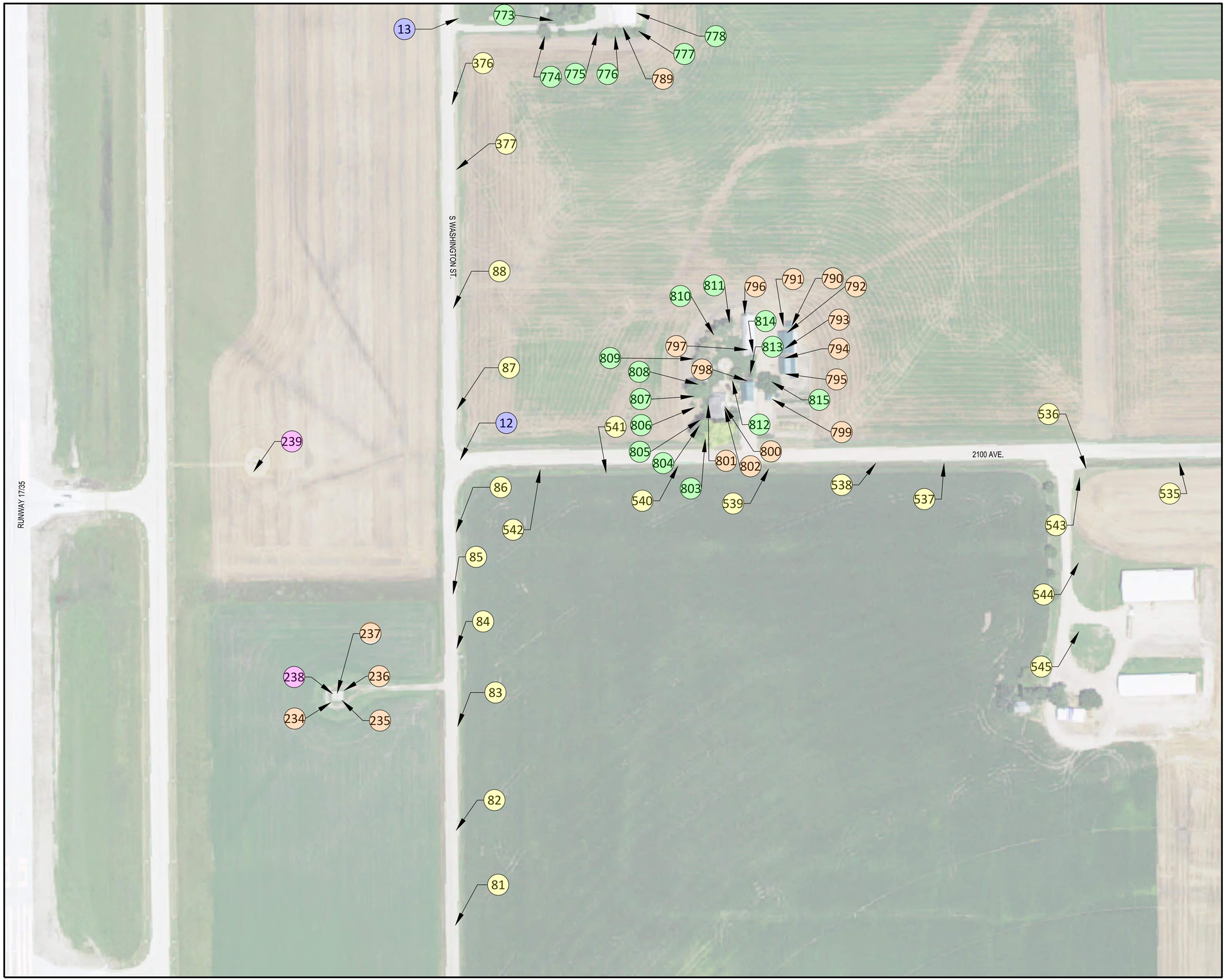
[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:28:11 PM] [Last Saved: 5/5/2020 2:47:25 PM, Bwaller]



N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

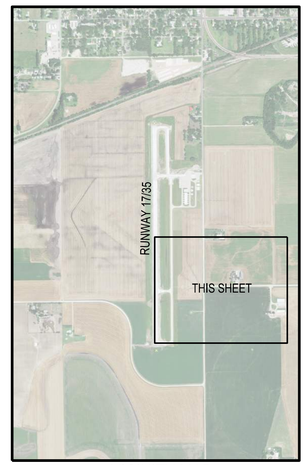
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 30 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 6

AIRPORT LAYOUT PLAN UPDATE

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PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 29 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:34:06 AM] [Last Saved: 5/5/2020 2:36:40 PM; Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
12	S. Washington St.	38 ° 54 ′ 5.02 " N	97 ° 13 ′ 57.6 " W	1148	15	1163	2018 - ACE - 8243 - OE	DNH	NONE
13	S. Washington St.	38 ° 54 ′ 13.8 " N	97 ° 13 ′ 57.7 " W	1148	15	1163	2018 - ACE - 8244 - OE	DNH	NONE
81	Power Pole	38 ° 53 ′ 55.3 " N	97 ° 13 ′ 57.4 " W	1147	30	1177	2018 - ACE - 9536 - OE	NPH	NONE **
82	Power Pole	38 ° 53 ′ 57.6 " N	97 ° 13 ′ 57.4 " W	1147	30	1177	2018 - ACE - 9537 - OE	DNH	NONE
83	Power Pole	38 ° 53 ′ 59.9 " N	97 ° 13 ′ 57.4 " W	1147	30	1177	2018 - ACE - 9538 - OE	DNH	NONE
84	Power Pole	38 ° 54 ′ 1.01 " N	97 ° 13 ′ 57.3 " W	1148	35	1183	2018 - ACE - 9539 - OE	DNH	NONE
85	Power Pole	38 ° 54 ′ 2.41 " N	97 ° 13 ′ 57.4 " W	1148	35	1183	2018 - ACE - 9540 - OE	DNH	NONE
86	Power Pole	38 ° 54 ′ 3.9 " N	97 ° 13 ′ 57.4 " W	1148	35	1183	2018 - ACE - 9541 - OE	DNH	NONE
87	Power Pole	38 ° 54 ′ 5.88 " N	97 ° 13 ′ 57.3 " W	1148	34	1182	2018 - ACE - 9542 - OE	DNH	NONE
88	Power Pole	38 ° 54 ′ 8.12 " N	97 ° 13 ′ 57.3 " W	1147	34	1181	2018 - ACE - 9543 - OE	DNH	NONE
234	Building Corner	38 ° 54 ′ 0.31 " N	97 ° 14 ′ 0.58 " W	1150	10	1160	2018 - ACE - 4471 - NRA	DNH	NONE
235	Building Corner	38 ° 54 ′ 0.16 " N	97 ° 14 ′ 0.56 " W	1150	10	1160	2018 - ACE - 4472 - NRA	DNH	NONE
236	Building Corner	38 ° 54 ′ 0.16 " N	97 ° 14 ′ 0.78 " W	1150	10	1160	2018 - ACE - 4473 - NRA	DNH	NONE
237	Building Corner	38 ° 54 ′ 0.33 " N	97 ° 14 ′ 0.79 " W	1150	10	1160	2018 - ACE - 4474 - NRA	DNH	NONE
238	Antenna	38 ° 54 ′ 0.3 " N	97 ° 14 ′ 0.84 " W	1150	38	1188	2018 - ACE - 4476 - NRA	DNH	NONE
239	Antenna	38 ° 54 ′ 4.94 " N	97 ° 14 ′ 2.77 " W	1148	37	1185	2018 - ACE - 4477 - NRA	DNH	NONE
376	Power Pole	38 ° 54 ′ 12.6 " N	97 ° 13 ′ 57.4 " W	1147	40	1187	2019 - ACE - 3381 - OE	DNH	NONE
377	Power Pole	38 ° 54 ′ 10.4 " N	97 ° 13 ′ 57.3 " W	1148	40	1188	2019 - ACE - 3382 - OE	DNH	NONE
535	Power Pole	38 ° 54 ′ 4.77 " N	97 ° 13 ′ 38.6 " W	1144	55	1199	2019 - ACE - 5342 - OE	DNH	NONE
536	Power Pole	38 ° 54 ′ 4.74 " N	97 ° 13 ′ 41.3 " W	1146	55	1201	2019 - ACE - 5343 - OE	DNH	NONE
537	Power Pole	38 ° 54 ′ 4.74 " N	97 ° 13 ′ 44.2 " W	1146	55	1201	2019 - ACE - 5344 - OE	DNH	NONE
538	Power Pole	38 ° 54 ′ 4.72 " N	97 ° 13 ′ 46.7 " W	1147	55	1202	2019 - ACE - 5345 - OE	DNH	NONE
539	Power Pole	38 ° 54 ′ 4.71 " N	97 ° 13 ′ 49.3 " W	1147	55	1202	2019 - ACE - 5346 - OE	DNH	NONE
540	Power Pole	38 ° 54 ′ 4.65 " N	97 ° 13 ′ 51.7 " W	1147	55	1202	2019 - ACE - 5347 - OE	DNH	NONE
541	Power Pole	38 ° 54 ′ 4.74 " N	97 ° 13 ′ 54.1 " W	1147	55	1202	2019 - ACE - 5348 - OE	DNH	NONE
542	Power Pole	38 ° 54 ′ 4.74 " N	97 ° 13 ′ 56.4 " W	1148	55	1203	2019 - ACE - 5349 - OE	DNH	NONE
543	Power Pole	38 ° 54 ′ 4.43 " N	97 ° 13 ′ 41.4 " W	1147	40	1187	2019 - ACE - 5350 - OE	DNH	NONE
544	Power Pole	38 ° 54 ′ 2.9 " N	97 ° 13 ′ 41.4 " W	1148	40	1188	2019 - ACE - 5351 - OE	DNH	NONE
545	Power Pole	38 ° 54 ′ 1.4 " N	97 ° 13 ′ 41.4 " W	1149	55	1204	2019 - ACE - 5352 - OE	DNH	NONE
773	Tree	38 ° 54 ′ 14 " N	97 ° 13 ′ 54.7 " W	1152	35	1187	2019 - ACE - 4318 - OE	DNH	NONE
774	Tree	38 ° 54 ′ 13.7 " N	97 ° 13 ′ 55.1 " W	1150	25	1175	2019 - ACE - 4319 - OE	DNH	NONE
775	Tree	38 ° 54 ′ 13.7 " N	97 ° 13 ′ 53.9 " W	1152	25	1177	2019 - ACE - 4320 - OE	DNH	NONE
776	Tree	38 ° 54 ′ 13.7 " N	97 ° 13 ′ 53.4 " W	1153	30	1183	2019 - ACE - 4321 - OE	DNH	NONE
777	Tree	38 ° 54 ′ 13.7 " N	97 ° 13 ′ 52.7 " W	1152	30	1182	2019 - ACE - 4322 - OE	DNH	NONE
778	Tree	38 ° 54 ′ 14.4 " N	97 ° 13 ′ 52.7 " W	1151	35	1186	2019 - ACE - 4323 - OE	DNH	NONE
789	Building	38 ° 54 ′ 13.9 " N	97 ° 13 ′ 53.1 " W	1153	16	1169	2019 - ACE - 4334 - OE	DNH	NONE
790	Building	38 ° 54 ′ 7.68 " N	97 ° 13 ′ 48.7 " W	1148	10	1158	2019 - ACE - 4335 - OE	DNH	NONE
791	Building	38 ° 54 ′ 7.68 " N	97 ° 13 ′ 48.9 " W	1148	10	1158	2019 - ACE - 4336 - OE	DNH	NONE
792	Building	38 ° 54 ′ 7.55 " N	97 ° 13 ′ 48.9 " W	1149	22	1171	2019 - ACE - 4337 - OE	DNH	NONE
793	Building	38 ° 54 ′ 7.12 " N	97 ° 13 ′ 48.9 " W	1149	22	1171	2019 - ACE - 4338 - OE	DNH	NONE
794	Building	38 ° 54 ′ 7.03 " N	97 ° 13 ′ 48.9 " W	1149	26	1175	2019 - ACE - 4339 - OE	DNH	NONE
795	Building	38 ° 54 ′ 6.72 " N	97 ° 13 ′ 48.9 " W	1149	26	1175	2019 - ACE - 4340 - OE	DNH	NONE
796	Building	38 ° 54 ′ 7.9 " N	97 ° 13 ′ 49.9 " W	1150	20	1170	2019 - ACE - 4341 - OE	DNH	NONE
797	Building	38 ° 54 ′ 7.22 " N	97 ° 13 ′ 49.9 " W	1150	20	1170	2019 - ACE - 4343 - OE	DNH	NONE
798	Building	38 ° 54 ′ 6.54 " N	97 ° 13 ′ 49.9 " W	1152	18	1170	2019 - ACE - 4344 - OE	DNH	NONE
799	Building	38 ° 54 ′ 6.17 " N	97 ° 13 ′ 49.9 " W	1152	18	1170	2019 - ACE - 4345 - OE	DNH	NONE
800	Building	38 ° 54 ′ 6.08 " N	97 ° 13 ′ 50.6 " W	1152	18	1170	2019 - ACE - 4346 - OE	DNH	NONE
801	Building	38 ° 54 ′ 6.09 " N	97 ° 13 ′ 50.9 " W	1152	18	1170	2019 - ACE - 4347 - OE	DNH	NONE
802	Chimney	38 ° 54 ′ 6.12 " N	97 ° 13 ′ 50.7 " W	1152	25	1177	2019 - ACE - 4348 - OE	DNH	NONE
803	Tree	38 ° 54 ′ 5.6 " N	97 ° 13 ′ 50.5 " W	1152	30	1182	2019 - ACE - 4349 - OE	DNH	NONE
804	Tree	38 ° 54 ′ 5.57 " N	97 ° 13 ′ 50.9 " W	1152	30	1182	2019 - ACE - 4350 - OE	DNH	NONE
805	Tree	38 ° 54 ′ 5.85 " N	97 ° 13 ′ 51.2 " W	1151	18	1169	2019 - ACE - 4351 - OE	DNH	NONE
806	Tree	38 ° 54 ′ 6.1 " N	97 ° 13 ′ 51.2 " W	1152	17	1169	2019 - ACE - 4352 - OE	DNH	NONE
807	Tree	38 ° 54 ′ 6.32 " N	97 ° 13 ′ 1.2 " W	1152	20	1172	2019 - ACE - 4353 - OE	DNH	NONE
808	Tree	38 ° 54 ′ 6.58 " N	97 ° 13 ′ 51.2 " W	1151	43	1194	2019 - ACE - 4354 - OE	DNH	NONE
809	Tree	38 ° 54 ′ 6.96 " N	97 ° 13 ′ 51.1 " W	1150	41	1191	2019 - ACE - 4355 - OE	DNH	NONE
810	Tree	38 ° 54 ′ 7.55 " N	97 ° 13 ′ 50.7 " W	1150	44	1194	2019 - ACE - 4356 - OE	DNH	NONE
811	Tree	38 ° 54 ′ 7.92 " N	97 ° 13 ′ 50.2 " W	1150	44	1194	2019 - ACE - 4358 - OE	DNH	NONE
812	Tree	38 ° 54 ′ 6.7 " N	97 ° 13 ′ 50.2 " W	1151	21	1172	2019 - ACE - 4359 - OE	DNH	NONE
813	Tree	38 ° 54 ′ 6.71 " N	97 ° 13 ′ 49.8 " W	1150	24	1174	2019 - ACE - 4360 - OE	DNH	NONE
814	Tree	38 ° 54 ′ 6.98 " N	97 ° 13 ′ 49.8 " W	1149	27	1176	2019 - ACE - 4361 - OE	DNH	NONE
815	Tree	38 ° 54 ′ 6.52 " N	97 ° 13 ′ 49.3 " W	1150	29	1179	2019 - ACE - 4362 - OE	DNH	NONE

**NO ACTION REQUIRED UNLESS A CROSSWIND RUNWAY IS CONSTRUCTED

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
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ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 6

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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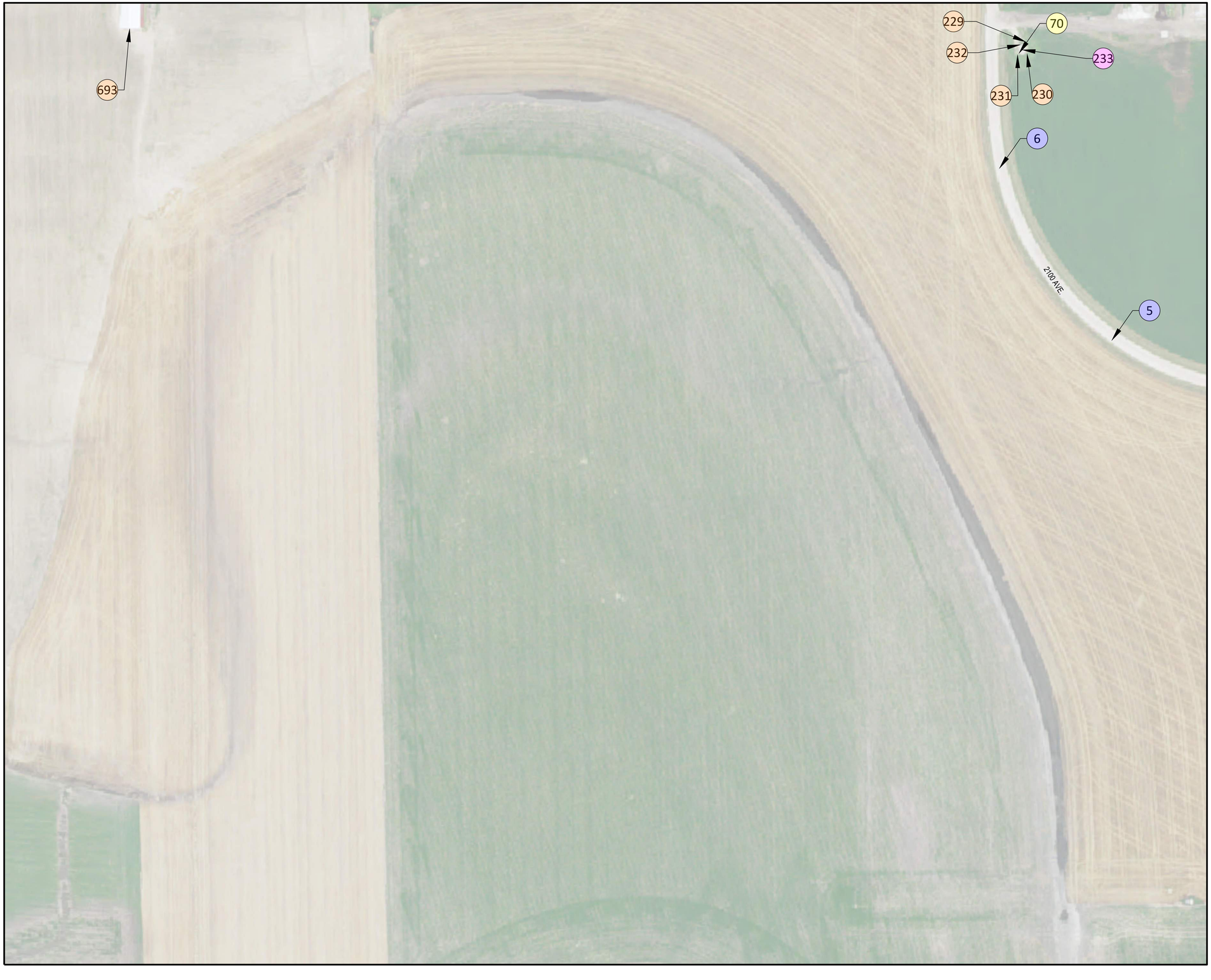
PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
30 of 38

[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:28:35 PM] [Last Saved: 5/5/2020 2:47:25 PM, Bwaller]



N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

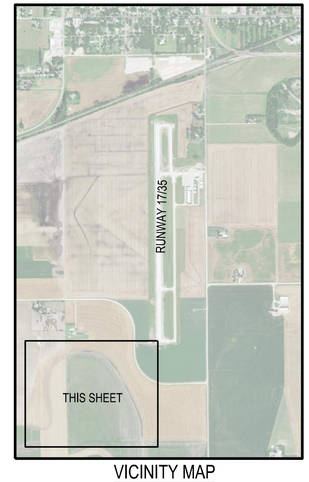
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 32 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 7

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 31 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:34:50 AM] [Last Saved: 5/5/2020 2:36:40 PM; Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
5	2100 Ave.	38 ° 53 ′ 47.5 " N	97 ° 14 ′ 11.6 " W	1148	15	1163	2018 - ACE - 8236 - OE	DNH	NONE
6	2100 Ave.	38 ° 53 ′ 51.9 " N	97 ° 14 ′ 15.1 " W	1149	15	1164	2018 - ACE - 8237 - OE	DNH	NONE
70	Power Pole	38 ° 53 ′ 53.7 " N	97 ° 14 ′ 14.7 " W	1150	28	1178	2018 - ACE - 9522 - OE	DNH	NONE
229	Building Corner	38 ° 53 ′ 53.8 " N	97 ° 14 ′ 14.3 " W	1150	12	1162	2018 - ACE - 4465 - NRA	DNH	NONE
230	Building Corner	38 ° 53 ′ 53.6 " N	97 ° 14 ′ 14.3 " W	1150	12	1162	2018 - ACE - 4466 - NRA	DNH	NONE
231	Building Corner	38 ° 53 ′ 53.6 " N	97 ° 14 ′ 14.4 " W	1150	12	1162	2018 - ACE - 4467 - NRA	DNH	NONE
232	Building Corner	38 ° 53 ′ 53.8 " N	97 ° 14 ′ 14.4 " W	1150	12	1162	2018 - ACE - 4468 - NRA	DNH	NONE
233	Antenna	38 ° 53 ′ 53.6 " N	97 ° 14 ′ 14.4 " W	1150	32	1182	2018 - ACE - 4469 - NRA	NPH	LOWER / REMOVE
693	Building	38 ° 53 ′ 54.8 " N	97 ° 14 ′ 37.4 " W	1151	27	1178	2019 - ACE - 4146 - OE	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
.	-	-

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 7

AIRPORT LAYOUT PLAN UPDATE

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PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
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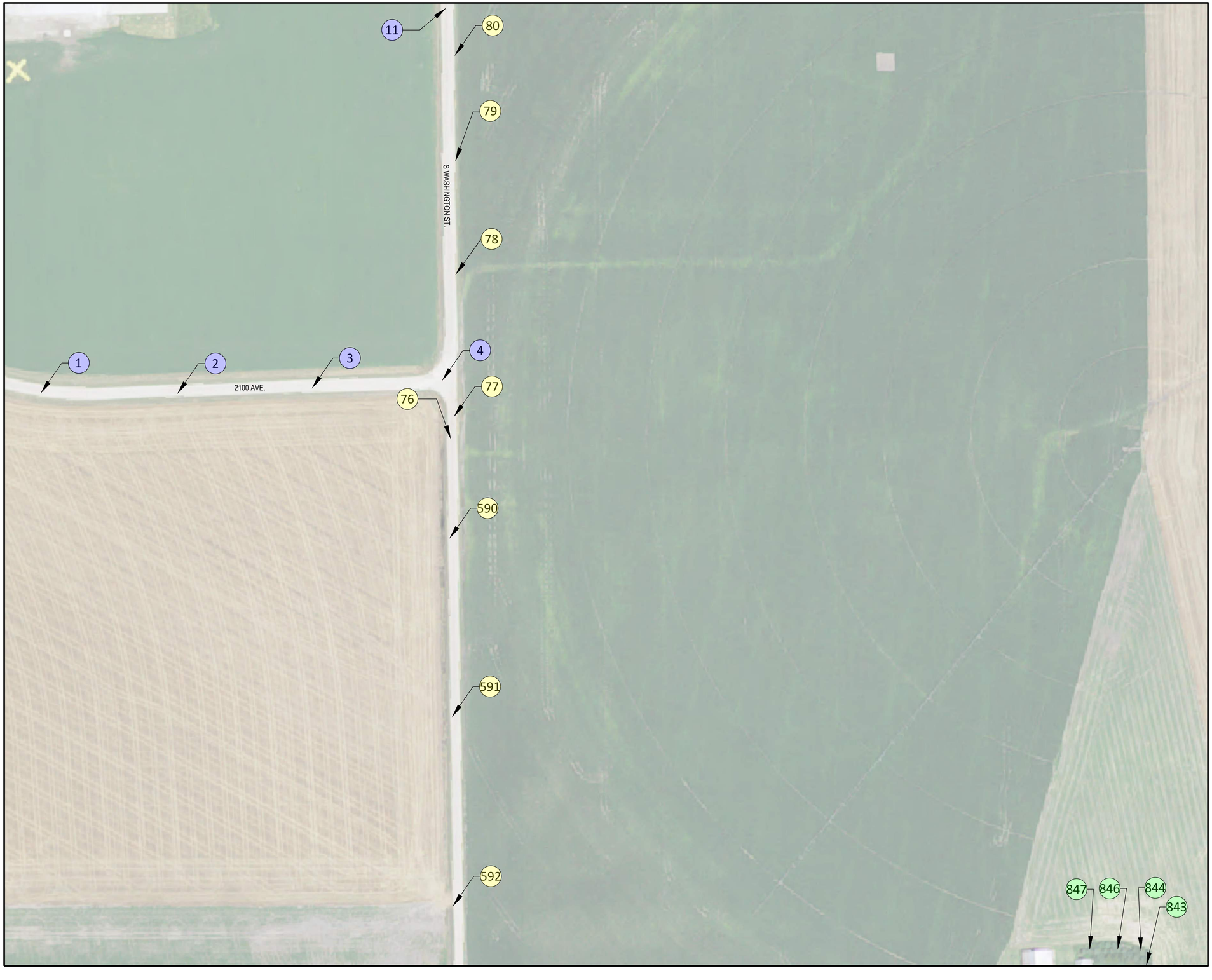
[File Location: Y:\manhattan\130400\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:29:00 PM] [Last Saved: 5/5/2020 2:47:25 PM, Bwaller]



N

MAGNETIC DECLINATION N3°32'E (2017)
CHANGES 0°06'W PER YEAR

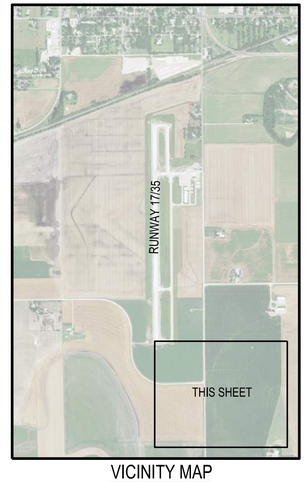
50
0 100 200
HORIZONTAL SCALE: 1"=100'

NOTES

1. SEE SHEET 34 FOR OBSTRUCTION POINT INFORMATION.

LEGEND

- # OTHER
- # POWER POLE
- # BUILDING/STRUCTURE
- # TREE/TREE MASS
- # STREET



VICINITY MAP

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION PLAN 8

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DESIGNED BY: ----
REVIEWED BY: ----
SUBMITTED/ACCEPTED BY: ----

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO.
33 of 38

[File Location: Y:\manhattan\130400\5\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS PLAN.dwg] [Plot Date: 7/13/2020 9:35:59 AM] [Last Saved: 5/5/2020 2:36:40 PM; Bwaller]

Point #	Structure	Latitude	Lomngitude	Ground Elevation	Object Height	Current Height	Study Number	Determination	Proposed Disposition
1	2100 Ave.	38 ° 53 ′ 46.7 " N	97 ° 14 ′ 9.12 " W	1148	15	1163	2018 - ACE - 8232 - OE	DNH	NONE
2	2100 Ave.	38 ° 53 ′ 46.6 " N	97 ° 14 ′ 5.76 " W	1148	15	1163	2018 - ACE - 8233 - OE	DNH	NONE
3	2100 Ave.	38 ° 53 ′ 46.6 " N	97 ° 14 ′ 1.88 " W	1146	15	1161	2018 - ACE - 8235 - OE	DNH	NONE
4	2100 Ave.	38 ° 53 ′ 46.7 " N	97 ° 13 ′ 57.8 " W	1146	15	1161	2018 - ACE - 8234 - OE	DNH	NONE
11	S. Washington St.	38 ° 53 ′ 54.2 " N	97 ° 13 ′ 57.7 " W	1146	15	1161	2018 - ACE - 8242 - OE	DNH	NONE
76	Power Pole	38 ° 53 ′ 45.8 " N	97 ° 13 ′ 57.98 " W	1146	29	1175	2018 - ACE - 9528 - OE	DNH	NONE
77	Power Pole	38 ° 53 ′ 46.3 " N	97 ° 13 ′ 57.5 " W	1146	28	1174	2018 - ACE - 9529 - OE	DNH	NONE
78	Power Pole	38 ° 53 ′ 48.6 " N	97 ° 13 ′ 57.4 " W	1146	29	1175	2018 - ACE - 9533 - OE	DNH	NONE
79	Power Pole	38 ° 53 ′ 50.8 " N	97 ° 13 ′ 57.4 " W	1147	30	1177	2018 - ACE - 9534 - OE	DNH	NONE
80	Power Pole	38 ° 53 ′ 53.1 " N	97 ° 13 ′ 57.4 " W	1147	30	1177	2018 - ACE - 9535 - OE	NPH	NONE**
590	Power Pole	38 ° 53 ′ 42.9 " N	97 ° 13 ′ 58 " W	1146	40	1186	2019 - ACE - 3612 - OE	DNH	NONE
591	Power Pole	38 ° 53 ′ 39.3 " N	97 ° 13 ′ 58 " W	1147	40	1187	2019 - ACE - 3613 - OE	DNH	NONE
592	Power Pole	38 ° 53 ′ 35.8 " N	97 ° 13 ′ 58 " W	1147	40	1187	2019 - ACE - 3614 - OE	DNH	NONE
843	Tree	38 ° 53 ′ 34.3 " N	97 ° 13 ′ 39.5 " W	1155	20	1175	2019 - ACE - 4390 - OE	DNH	NONE
844	Tree	38 ° 53 ′ 34.9 " N	97 ° 13 ′ 39.6 " W	1153	18	1171	2019 - ACE - 4391 - OE	DNH	NONE
846	Tree	38 ° 53 ′ 34.9 " N	97 ° 13 ′ 40.4 " W	1154	24	1178	2019 - ACE - 4393 - OE	DNH	NONE
847	Tree	38 ° 53 ′ 34.9 " N	97 ° 13 ′ 41 " W	1153	27	1180	2019 - ACE - 4394 - OE	DNH	NONE

**NO ACTION REQUIRED UNLESS A CROSSWIND RUNWAY IS CONSTRUCTED

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
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ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 8

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

benesch
engineers - scientists - planners
Alfred Benesch & Company
3226 Kimball Avenue
Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

DRAWN BY: —— DESIGNED BY: —— REVIEWED BY: —— QUANTITIES CHECKED BY: ——

PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
34 of 38

[File Location: Y:\manhattan\130400\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:23:19 PM] [Last Saved: 5/5/2020 2:47:25 PM, Bwaller]

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
68	Building High Point	38 ° 54 ′ 44.93 " N	97 ° 14 ′ 2.36 " W	1151	1162	2018 - ACE - 8305 - OE	SUBMITTED 11-26-2018	DNH	NONE
69	Building High Point	38 ° 54 ′ 45.46 " N	97 ° 14 ′ 0.59 " W	1151	1162	2018 - ACE - 8306 - OE	SUBMITTED 11-26-2018	DNH	NONE
92	TreeTop	38 ° 54 ′ 38.64 " N	97 ° 14 ′ 18.89 " W	1149	1198	2018 - ACE - 9976 - OE	SUBMITTED 12-18-2018	DNH	NONE
116	Building Corner	38 ° 54 ′ 36.47 " N	97 ° 13 ′ 58.52 " W	1153	1171	2018 - ACE - 10000 - OE	SUBMITTED 12-18-2018	DNH	NONE
133	Buckeye Ave.	38 ° 53 ′ 15.84 " N	97 ° 12 ′ 37.75 " W	1150	1165	2019 - ACE - 2827 - OE	SUBMITTED 4-13-2019	DNH	NONE
134	Buckeye Ave.	38 ° 53 ′ 25.69 " N	97 ° 12 ′ 39.15 " W	1150	1165	2019 - ACE - 2828 - OE	SUBMITTED 4-13-2019	DNH	NONE
135	Buckeye Ave.	38 ° 53 ′ 35.81 " N	97 ° 12 ′ 41.05 " W	1145	1160	2019 - ACE - 2829 - OE	SUBMITTED 4-13-2019	DNH	NONE
136	Buckeye Ave.	38 ° 53 ′ 45.35 " N	97 ° 12 ′ 45.21 " W	1145	1160	2019 - ACE - 2830 - OE	SUBMITTED 4-13-2019	DNH	NONE
137	Buckeye Ave.	38 ° 53 ′ 55.02 " N	97 ° 12 ′ 48.75 " W	1146	1161	2019 - ACE - 2831 - OE	SUBMITTED 4-13-2019	DNH	NONE
138	Buckeye Ave.	38 ° 54 ′ 5.08 " N	97 ° 12 ′ 49.95 " W	1145	1160	2019 - ACE - 2832 - OE	SUBMITTED 4-13-2019	DNH	NONE
139	Buckeye Ave.	38 ° 54 ′ 15.21 " N	97 ° 12 ′ 50.11 " W	1145	1160	2019 - ACE - 2833 - OE	SUBMITTED 4-13-2019	DNH	NONE
140	Buckeye Ave.	38 ° 54 ′ 25.37 " N	97 ° 12 ′ 50.13 " W	1143	1158	2019 - ACE - 2834 - OE	SUBMITTED 4-13-2019	DNH	NONE
141	Buckeye Ave.	38 ° 54 ′ 35.22 " N	97 ° 12 ′ 50.08 " W	1145	1160	2019 - ACE - 2835 - OE	SUBMITTED 4-13-2019	DNH	NONE
142	Buckeye Ave.	38 ° 54 ′ 46.03 " N	97 ° 12 ′ 50.08 " W	1145	1160	2019 - ACE - 2836 - OE	SUBMITTED 4-13-2019	DNH	NONE
143	Buckeye Ave.	38 ° 54 ′ 55.99 " N	97 ° 12 ′ 50.08 " W	1151	1166	2019 - ACE - 2837 - OE	SUBMITTED 4-13-2019	DNH	NONE
144	Buckeye Ave.	38 ° 55 ′ 2.27 " N	97 ° 12 ′ 50.13 " W	1156	1171	2019 - ACE - 2838 - OE	SUBMITTED 4-13-2019	DNH	NONE
145	NW 3rd St.	38 ° 55 ′ 2.20 " N	97 ° 13 ′ 3.88 " W	1156	1171	2019 - ACE - 2839 - OE	SUBMITTED 4-13-2019	DNH	NONE
146	NW 3rd St.	38 ° 55 ′ 2.27 " N	97 ° 13 ′ 16.42 " W	1156	1171	2019 - ACE - 2840 - OE	SUBMITTED 4-13-2019	DNH	NONE
147	NW 3rd St.	38 ° 55 ′ 2.27 " N	97 ° 13 ′ 29.31 " W	1157	1172	2019 - ACE - 2841 - OE	SUBMITTED 4-13-2019	DNH	NONE
148	NW 3rd St.	38 ° 55 ′ 2.24 " N	97 ° 13 ′ 41.96 " W	1155	1170	2019 - ACE - 2842 - OE	SUBMITTED 4-13-2019	DNH	NONE
149	NW 3rd St.	38 ° 55 ′ 2.19 " N	97 ° 13 ′ 54.64 " W	1153	1168	2019 - ACE - 2843 - OE	SUBMITTED 4-13-2019	DNH	NONE
150	NW 3rd St.	38 ° 55 ′ 2.21 " N	97 ° 14 ′ 7.19 " W	1162	1177	2019 - ACE - 2844 - OE	SUBMITTED 4-13-2019	DNH	NONE
151	NW 3rd St.	38 ° 55 ′ 2.12 " N	97 ° 14 ′ 19.83 " W	1182	1197	2019 - ACE - 2845 - OE	SUBMITTED 4-13-2019	DNH	NONE
152	NW 3rd St.	38 ° 55 ′ 2.11 " N	97 ° 14 ′ 31.49 " W	1193	1208	2019 - ACE - 2846 - OE	SUBMITTED 4-13-2019	DNH	NONE
156	Old US 40	38 ° 54 ′ 31.24 " N	97 ° 14 ′ 49.71 " W	1156	1171	2019 - ACE - 2850 - OE	SUBMITTED 4-13-2019	DNH	NONE
157	Old US 40	38 ° 54 ′ 27.94 " N	97 ° 15 ′ 1.72 " W	1152	1167	2019 - ACE - 2851 - OE	SUBMITTED 4-13-2019	DNH	NONE
158	Old US 40	38 ° 54 ′ 24.72 " N	97 ° 15 ′ 13.82 " W	1151	1166	2019 - ACE - 2852 - OE	SUBMITTED 4-13-2019	DNH	NONE
159	Old US 40	38 ° 54 ′ 22.34 " N	97 ° 15 ′ 26.41 " W	1157	1172	2019 - ACE - 2853 - OE	SUBMITTED 4-13-2019	DNH	NONE
160	Old US 40	38 ° 54 ′ 22.56 " N	97 ° 15 ′ 38.89 " W	1162	1177	2019 - ACE - 2854 - OE	SUBMITTED 4-13-2019	DNH	NONE
161	Old US 40	38 ° 54 ′ 23.01 " N	97 ° 15 ′ 51.59 " W	1160	1175	2019 - ACE - 2855 - OE	SUBMITTED 4-13-2019	DNH	NONE
162	Old US 40	38 ° 54 ′ 23.35 " N	97 ° 16 ′ 4.24 " W	1163	1178	2019 - ACE - 2856 - OE	SUBMITTED 4-13-2019	DNH	NONE
163	Railroad	38 ° 54 ′ 31.22 " N	97 ° 14 ′ 46.93 " W	1154	1177	2019 - ACE - 2848 - OE	SUBMITTED 4-13-2019	DNH	NONE
164	Railroad	38 ° 54 ′ 31.95 " N	97 ° 14 ′ 44.26 " W	1154	1177	2019 - ACE - 2857 - OE	SUBMITTED 4-13-2019	DNH	NONE
166	Railroad	38 ° 54 ′ 30.56 " N	97 ° 14 ′ 49.27 " W	1154	1177	2019 - ACE - 2859 - OE	SUBMITTED 4-13-2019	DNH	NONE
167	Railroad	38 ° 54 ′ 29.20 " N	97 ° 14 ′ 54.36 " W	1153	1176	2019 - ACE - 2860 - OE	SUBMITTED 4-13-2019	DNH	NONE
168	Power Pole	38 ° 54 ′ 41.01 " N	97 ° 14 ′ 41.58 " W	1166	1206	2019 - ACE - 3206 - OE	SUBMITTED 5-2-2019	DNH	NONE
169	Power Pole	38 ° 54 ′ 38.56 " N	97 ° 14 ′ 41.59 " W	1153	1193	2019 - ACE - 3207 - OE	SUBMITTED 5-2-2019	DNH	NONE
170	Power Pole	38 ° 54 ′ 36.31 " N	97 ° 14 ′ 41.61 " W	1152	1192	2019 - ACE - 3208 - OE	SUBMITTED 5-2-2019	DNH	NONE
171	Power Pole	38 ° 54 ′ 35.42 " N	97 ° 14 ′ 41.67 " W	1152	1192	2019 - ACE - 3209 - OE	SUBMITTED 5-2-2019	DNH	NONE
172	Power Pole	38 ° 54 ′ 35.15 " N	97 ° 14 ′ 43.61 " W	1153	1193	2019 - ACE - 3210 - OE	SUBMITTED 5-2-2019	DNH	NONE
173	Power Pole	38 ° 54 ′ 35.09 " N	97 ° 14 ′ 44.85 " W	1155	1195	2019 - ACE - 3211 - OE	SUBMITTED 5-2-2019	DNH	NONE
174	Power Pole	38 ° 54 ′ 33.88 " N	97 ° 14 ′ 46.32 " W	1157	1197	2019 - ACE - 3212 - OE	SUBMITTED 5-2-2019	DNH	NONE
175	Power Pole	38 ° 54 ′ 32.89 " N	97 ° 14 ′ 46.43 " W	1156	1196	2019 - ACE - 3213 - OE	SUBMITTED 5-2-2019	DNH	NONE
176	Power Pole	38 ° 54 ′ 34.15 " N	97 ° 14 ′ 47.54 " W	1160	1200	2019 - ACE - 3214 - OE	SUBMITTED 5-2-2019	DNH	NONE
177	Power Pole	38 ° 54 ′ 33.33 " N	97 ° 14 ′ 47.57 " W	1162	1202	2019 - ACE - 3215 - OE	SUBMITTED 5-2-2019	DNH	NONE
178	Power Pole	38 ° 54 ′ 33.46 " N	97 ° 14 ′ 49.00 " W	1161	1201	2019 - ACE - 3216 - OE	SUBMITTED 5-2-2019	DNH	NONE
179	Power Pole	38 ° 54 ′ 33.73 " N	97 ° 14 ′ 49.99 " W	1156	1196	2019 - ACE - 3217 - OE	SUBMITTED 5-2-2019	DNH	NONE
195	Power Pole	38 ° 54 ′ 54.95 " N	97 ° 14 ′ 31.15 " W	1175	1230	2019 - ACE - 3233 - OE	SUBMITTED 5-2-2019	DNH	NONE
196	Power Pole	38 ° 54 ′ 56.43 " N	97 ° 14 ′ 31.09 " W	1179	1234	2019 - ACE - 3234 - OE	SUBMITTED 5-2-2019	DNH	NONE
197	Power Pole	38 ° 54 ′ 58.19 " N	97 ° 14 ′ 31.05 " W	1182	1237	2019 - ACE - 3235 - OE	SUBMITTED 5-2-2019	DNH	NONE
198	Power Pole	38 ° 54 ′ 54.89 " N	97 ° 14 ′ 32.16 " W	1179	1234	2019 - ACE - 3236 - OE	SUBMITTED 5-2-2019	DNH	NONE
199	Power Pole	38 ° 54 ′ 54.94 " N	97 ° 14 ′ 29.18 " W	1171	1226	2019 - ACE - 3237 - OE	SUBMITTED 5-2-2019	DNH	NONE
200	Power Pole	38 ° 54 ′ 58.83 " N	97 ° 14 ′ 30.97 " W	1185	1225	2019 - ACE - 3238 - OE	SUBMITTED 5-2-2019	DNH	NONE
240	Power Pole	38 ° 54 ′ 59.67 " N	97 ° 14 ′ 30.94 " W	1187	1227	2019 - ACE - 3239 - OE	SUBMITTED 5-2-2019	DNH	NONE
241	Power Pole	38 ° 55 ′ 1.10 " N	97 ° 14 ′ 30.93 " W	1189	1244	2019 - ACE - 3240 - OE	SUBMITTED 5-2-2019	DNH	NONE
242	Power Pole	38 ° 55 ′ 2.43 " N	97 ° 14 ′ 31.06 " W	1193	1248	2018 - ACE - 3241 - OE	SUBMITTED 5-2-2019	DNH	NONE
243	Power Pole	38 ° 55 ′ 3.99 " N	97 ° 14 ′ 32.16 " W	1196	1251	2018 - ACE - 3242 - OE	SUBMITTED 5-2-2019	DNH	NONE
244	Power Pole	38 ° 55 ′ 5.17 " N	97 ° 14 ′ 32.16 " W	1199	1254	2018 - ACE - 3243 - OE	SUBMITTED 5-2-2019	DNH	NONE
245	Power Pole	38 ° 55 ′ 5.99 " N	97 ° 14 ′ 32.18 " W	1199	1254	2018 - ACE - 3244 - OE	SUBMITTED 5-2-2019	DNH	NONE
246	Power Pole	38 ° 55 ′ 6.87 " N	97 ° 14 ′ 32.17 " W	1199	1254	2018 - ACE - 3245 - OE	SUBMITTED 5-2-2019	DNH	NONE
247	Power Pole	38 ° 55 ′ 7.83 " N	97 ° 14 ′ 32.19 " W	1201	1256	2018 - ACE - 3246 - OE	SUBMITTED 5-2-2019	DNH	NONE
248	Power Pole	38 ° 55 ′ 7.81 " N	97 ° 14 ′ 30.13 " W	1198	1253	2018 - ACE - 3247 - OE	SUBMITTED 5-2-2019	DNH	NONE
249	Power Pole	38 ° 55 ′ 9.86 " N	97 ° 14 ′ 32.20 " W	1199	1239	2018 - ACE - 3248 - OE	SUBMITTED 5-2-2019	DNH	NONE
250	Power Pole	38 ° 55 ′ 11.90 " N	97 ° 14 ′ 32.21 " W	1199	1254	2018 - ACE - 3249 - OE	SUBMITTED 5-2-2019	DNH	NONE
251	Power Pole	38 ° 55 ′ 14.33 " N	97 ° 14 ′ 32.22 " W	1199	1239	2018 - ACE - 3250 - OE	SUBMITTED 5-2-2019	DNH	NONE
252	Power Pole	38 ° 55 ′ 16.75 " N	97 ° 14 ′ 32.24 " W	1200	1240	2018 - ACE - 3251 - OE	SUBMITTED 5-2-2019	DNH	NONE
253	Power Pole	38 ° 55 ′ 19.18 " N	97 ° 14 ′ 32.23 " W	1199	1239	2018 - ACE - 3252 - OE	SUBMITTED 5-2-2019	DNH	NONE
254	Power Pole	38 ° 55 ′ 20.57 " N	97 ° 14 ′ 32.26 " W	1198	1253	2018 - ACE - 3253 - OE	SUBMITTED 5-2-2019	DNH	NONE
255	Power Pole	38 ° 55 ′ 21.73 " N	97 ° 14 ′ 32.22 " W	1198	1253	2018 - ACE - 3254 - OE	SUBMITTED 5-2-2019	DNH	NONE
256	Power Pole	38 ° 55 ′ 23.12 " N	97 ° 14 ′ 32.24 " W	1198	1253	2018 - ACE - 3255 - OE	SUBMITTED 5-2-2019	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
257	Power Pole	38 ° 55 ′ 24.60 " N	97 ° 14 ′ 32.26 " W	1195	1250	2018 - ACE - 3256 - OE	SUBMITTED 5-2-2019	DNH	NONE
258	Power Pole	38 ° 55 ′ 26.38 " N	97 ° 14 ′ 32.31 " W	1190	1245	2018 - ACE - 3257 - OE	SUBMITTED 5-2-2019	DNH	NONE
259	Power Pole	38 ° 55 ′ 27.72 " N	97 ° 14 ′ 32.25 " W	1190	1230	2018 - ACE - 3258 - OE	SUBMITTED 5-2-2019	DNH	NONE
260	Power Pole	38 ° 55 ′ 29.27 " N	97 ° 14 ′ 32.27 " W	1188	1228	2018 - ACE - 3259 - OE	SUBMITTED 5-2-2019	DNH	NONE
261	Power Pole	38 ° 55 ′ 30.65 " N	97 ° 14 ′ 30.93 " W	1186	1241	2018 - ACE - 3260 - OE	SUBMITTED 5-2-2019	DNH	NONE
262	Power Pole	38 ° 55 ′ 33.02 " N	97 ° 14 ′ 30.93 " W	1183	1223	2018 - ACE - 3261 - OE	SUBMITTED 5-2-2019	DNH	NONE
263	Power Pole	38 ° 55 ′ 35.47 " N	97 ° 14 ′ 30.91 " W	1186	1226	2018 - ACE - 3262 - OE	SUBMITTED 5-2-2019	DNH	NONE
264	Power Pole	38 ° 55 ′ 38.20 " N	97 ° 14 ′ 31.12 " W	1189	1229	2018 - ACE - 3263 - OE	SUBMITTED 5-2-2019	DNH	NONE
265	Power Pole	38 ° 55 ′ 21.45 " N	97 ° 14 ′ 33.26 " W	1198	1253	2018 - ACE - 3264 - OE	SUBMITTED 5-2-2019	DNH	NONE
266	Power Pole	38 ° 55 ′ 21.44 " N	97 ° 14 ′ 35.74 " W	1198	1253	2018 - ACE - 3265 - OE	SUBMITTED 5-2-2019	DNH	NONE
267	Power Pole	38 ° 55 ′ 21.45 " N	97 ° 14 ′ 38.13 " W	1201	1256	2018 - ACE - 3266 - OE	SUBMITTED 5-2-2019	DNH	NONE
268	Power Pole	38 ° 55 ′ 21.43 " N	97 ° 14 ′ 40.58 " W	1201	1256	2018 - ACE - 3267 - OE	SUBMITTED 5-2-2019	DNH	NONE
269	Power Pole	38 ° 55 ′ 21.45 " N	97 ° 14 ′ 43.02 " W	1200	1255	2018 - ACE - 3268 - OE	SUBMITTED 5-2-2019	DNH	NONE
270	Power Pole	38 ° 55 ′ 21.42 " N	97 ° 14 ′ 45.39 " W	1201	1256	2018 - ACE - 3269 - OE	SUBMITTED 5-2-2019	DNH	NONE
271	Power Pole	38 ° 55 ′ 21.41 " N	97 ° 14 ′ 47.84 " W	1200	1255	2018 - ACE - 3270 - OE	SUBMITTED 5-2-2019	DNH	NONE
272	Power Pole	38 ° 55 ′ 21.43 " N	97 ° 14 ′ 50.30 " W	1201	1256	2018 - ACE - 3271 - OE	SUBMITTED 5-2-2019	DNH	NONE
273	Power Pole	38 ° 55 ′ 21.41 " N	97 ° 14 ′ 52.68 " W	1201	1256	2018 - ACE - 3272 - OE	SUBMITTED 5-2-2019	DNH	NONE
274	Power Pole	38 ° 55 ′ 21.43 " N	97 ° 14 ′ 55.11 " W	1202	1257	2018 - ACE - 3273 - OE	SUBMITTED 5-2-2019	DNH	NONE
275	Power Pole	38 ° 55 ′ 21.38 " N	97 ° 14 ′ 57.51 " W	1204	1244	2018 - ACE - 3274 - OE	SUBMITTED 5-2-2019	DNH	NONE
276	Power Pole	38 ° 55 ′ 21.40 " N	97 ° 14 ′ 59.94 " W	1205	1260	2018 - ACE - 3275 - OE	SUBMITTED 5-2-2019	DNH	NONE
277	Power Pole	38 ° 55 ′ 21.39 " N	97 ° 15 ′ 1.70 " W	1204	1259	2018 - ACE - 3276 - OE	SUBMITTED 5-2-2019	DNH	NONE
278	Power Pole	38 ° 55 ′ 20.66 " N	97 ° 15 ′ 2.38 " W	1204	1259	2018 - ACE - 3277 - OE	SUBMITTED 5-2-2019	DNH	NONE
279	Power Pole	38 ° 55 ′ 24.70 " N	97 ° 14 ′ 30.43 " W	1196	1251	2019 - ACE - 3279 - OE	SUBMITTED 5-2-2019	DNH	NONE
280	Power Pole	38 ° 55 ′ 24.70 " N	97 ° 14 ′ 28.04 " W	1199	1254	2019 - ACE - 3280 - OE	SUBMITTED 5-2-2019	DNH	NONE
281	Power Pole	38 ° 55 ′ 24.72 " N	97 ° 14 ′ 25.72 " W	1202	1257	2019 - ACE - 3281 - OE	SUBMITTED 5-2-2019	DNH	NONE
282	Power Pole	38 ° 55 ′ 24.71 " N	97 ° 14 ′ 23.46 " W	1196	1251	2019 - ACE - 3282 - OE	SUBMITTED 5-2-2019	DNH	NONE
283	Power Pole	38 ° 55 ′ 24.72 " N	97 ° 14 ′ 21.19 " W	1194	1249	2019 - ACE - 3283 - OE	SUBMITTED 5-2-2019	DNH	NONE
284	Power Pole	38 ° 55 ′ 24.72 " N	97 ° 14 ′ 18.94 " W	1191	1246	2019 - ACE - 3284 - OE	SUBMITTED 5-2-2019	DNH	NONE
285	Power Pole	38 ° 55 ′ 24.72 " N	97 ° 14 ′ 16.67 " W	1188	1243	2019 - ACE - 3285 - OE	SUBMITTED 5-2-2019	DNH	NONE
286	Power Pole	38 ° 55 ′ 24.73 " N	97 ° 14 ′ 14.35 " W	1188	1243	2019 - ACE - 3286 - OE	SUBMITTED 5-2-2019	DNH	NONE
287	Power Pole	38 ° 55 ′ 24.75 " N	97 ° 14 ′ 12.17 " W	1186	1241	2019 - ACE - 3287 - OE	SUBMITTED 5-2-2019	DNH	NONE
288	Power Pole	38 ° 55 ′ 24.23 " N	97 ° 14 ′ 11.82 " W	1186	1241	2019 - ACE - 3288 - OE	SUBMITTED 5-2-2019	DNH	NONE
289	Power Pole	38 ° 55 ′ 23.38 " N	97 ° 14 ′ 11.26 " W	1184	1239	2019 - ACE - 3289 - OE	SUBMITTED 5-2-2019	DNH	NONE
290	Power Pole	38 ° 55 ′ 22.12 " N	97 ° 14 ′ 11.27 " W	1184	1259	2019 - ACE - 3290 - OE	SUBMITTED 5-2-2019	DNH	NONE
291	Power Pole	38 ° 55 ′ 21.14 " N	97 ° 14 ′ 11.27 " W	1185	1240	2019 - ACE - 3291 - OE	SUBMITTED 5-2-2019	DNH	NONE
292	Power Pole	38 ° 55 ′ 21.13 " N	97 ° 14 ′ 9.44 " W	1181	1235	2019 - ACE - 3292 - OE	SUBMITTED 5-2-2019	DNH	NONE
293	Power Pole	38 ° 55 ′ 21.09 " N	97 ° 14 ′ 7.49 " W	1179	1234	2019 - ACE - 3293 - OE	SUBMITTED 5-2-2019	DNH	NONE
294	Power Pole	38 ° 55 ′ 21.15 " N	97 ° 14 ′ 5.28 " W	1176	231	2019 - ACE - 3294 - OE	SUBMITTED 5-2-2019	DNH	NONE
295	Power Pole	38 ° 55 ′ 21.14 " N	97 ° 14 ′ 3.23 " W	1171	1226	2019 - ACE - 3295 - OE	SUBMITTED 5-2-2019	DNH	NONE
296	Power Pole	38 ° 55 ′ 21.16 " N	97 ° 14 ′ 1.04 " W	1168	1223	2019 - ACE - 3296 - OE	SUBMITTED 5-2-2019	DNH	NONE
297	Power Pole	38 ° 55 ′ 21.16 " N	97 ° 13 ′ 58.85 " W	1165	1220	2019 - ACE - 3297 - OE	SUBMITTED 5-2-2019	DNH	NONE
298	Power Pole	38 ° 55 ′ 21.19 " N	97 ° 13 ′ 58.12 " W	1164	1239	2019 - ACE - 3298 - OE	SUBMITTED 5-2-2019	DNH	NONE
299	Power Pole	38 ° 55 ′ 22.73 " N	97 ° 13 ′ 58.10 " W	1165	1240	2019 - ACE - 3299 - OE	SUBMITTED 5-2-2019	DNH	NONE
300	Power Pole	38 ° 55 ′ 11.72 " N	97 ° 13 ′ 58.07 " W	1160	1215	2019 - ACE - 3300 - OE	SUBMITTED 5-2-2019	DNH	NONE
301	Power Pole	38 ° 55 ′ 9.67 " N	97 ° 13 ′ 58.06 " W	1157	1212	2019 - ACE - 3301 - OE	SUBMITTED 5-2-2019	DNH	NONE
302	Power Pole	38 ° 55 ′ 7.89 " N	97 ° 13 ′ 58.07 " W	1157	1212	2019 - ACE - 3302 - OE	SUBMITTED 5-2-2019	DNH	NONE
303	Power Pole	38 ° 55 ′ 6.62 " N	97 ° 13 ′ 58.03 " W	1156	1211	2019 - ACE - 3303 - OE	SUBMITTED 5-2-2019	DNH	NONE
304	Power Pole	38 ° 55 ′ 4.10 " N	97 ° 13 ′ 58.01 " W	1155	1210	2019 - ACE - 3304 - OE	SUBMITTED 5-2-2019	DNH	NONE
305	Power Pole	38 ° 55 ′ 3.05 " N	97 ° 13 ′ 58.02 " W	1155	1210	2019 - ACE - 3305 - OE	SUBMITTED 5-2-2019	DNH	NONE
306	Power Pole	38 ° 55 ′ 24.38 " N	97 ° 13 ′ 58.14 " W	1164	1239	2019 - ACE - 3306 - OE	SUBMITTED 5-2-2019	DNH	NONE
307	Power Pole	38 ° 55 ′ 25.33 " N	97 ° 13 ′ 58.13 " W	1162	1237	2019 - ACE - 3307 - OE	SUBMITTED 5-2-2019	DNH	NONE
308	Power Pole	38 ° 55 ′ 19.03 " N	97 ° 13 ′ 58.10 " W	1164	1219	2019 - ACE - 3308 - OE	SUBMITTED 5-2-2019	DNH	NONE
309	Power Pole	38 ° 55 ′ 17.31 " N	97 ° 13 ′ 58.10 " W	1162	1217	2019 - ACE - 3309 - OE	SUBMITTED 5-2-2019	DNH	NONE
310	Power Pole	38 ° 55 ′ 15.41 " N	97 ° 13 ′ 58.10 " W	1162	1217	2019 - ACE - 3310 - OE	SUBMITTED 5-2-2019	DNH	NONE
311	Power Pole	38 ° 55 ′ 13.51 " N	97 ° 13 ′ 58.09 " W	1160	1215	2019 - ACE - 3311 - OE	SUBMITTED 5-2-2019	DNH	NONE
312	Power Pole	38 ° 55 ′ 1.74 " N	97 ° 13 ′ 58.02 " W	1156	1211	2019 - ACE - 3312 - OE	SUBMITTED 5-2-2019	DNH	NONE
313	Power Pole	38 ° 55 ′ 0.21 " N	97 ° 13 ′ 57.99 " W	1155	1210	2019 - ACE - 3313 - OE	SUBMITTED 5-2-2019	DNH	NONE
314	Power Pole	38 ° 54 ′ 58.94 " N	97 ° 13 ′ 58.02 " W	1155	1210	2019 - ACE - 3314 - OE	SUBMITTED 5-2-2019	DNH	NONE
315	Power Pole	38 ° 54 ′ 56.83 " N	97 ° 13 ′ 57.98 " W	1153	1208	2019 - ACE - 3315 - OE	SUBMITTED 5-2-2019	DNH	NONE
316	Power Pole	38 ° 54 ′ 54.51 " N	97 ° 13 ′ 58.04 " W	1155	1230	2019 - ACE - 3316 - OE	SUBMITTED 5-2-2019	DNH	NONE
320	Power Pole	38 ° 54 ′ 55.04 " N	97 ° 13 ′ 59.97 " W	1154	1209	2019 - ACE - 3320 - OE	SUBMITTED 5-2-2019	DNH	NONE
321	Power Pole	38 ° 54 ′ 55.00 " N	97 ° 14 ′ 1.03 " W	1152	1192	2019 - ACE - 3321 - OE	SUBMITTED 5-2-2019	DNH	NONE
322	Power Pole	38 ° 54 ′ 54.99 " N	97 ° 14 ′ 2.70 " W	1153	1193	2019 - ACE - 3322 - OE	SUBMITTED 5-2-2019	DNH	NONE
323	Power Pole	38 ° 54 ′ 54.99 " N	97 ° 14 ′ 3.97 " W	1154	1194	2019 - ACE - 3323 - OE	SUBMITTED 5-2-2019	DNH	NONE
324	Power Pole	38 ° 54 ′ 54.98 " N	97 ° 14 ′ 5.31 " W	1159	1214	2019 - ACE - 3324 - OE	SUBMITTED 5-2-2019	DNH	NONE
325	Power Pole	38 ° 54 ′ 54.98 " N	97 ° 14 ′ 9.86 " W	1160	1215	2019 - ACE - 3325 - OE	SUBMITTED 5-2-2019	DNH	NONE
326	Power Pole	38 ° 54 ′ 54.95 " N	97 ° 14 ′ 11.44 " W	1161	1201	2019 - ACE - 3326 - OE	SUBMITTED 5-2-2019	DNH	NONE
327	Power Pole	38 ° 54 ′ 54.95 " N	97 ° 14 ′ 13.04 " W	1163	1203	2019 - ACE - 3327 - OE	SUBMITTED 5-2-2019	DNH	NONE
328	Power Pole	38 ° 54 ′ 54.97 " N	97 ° 14 ′ 14.65 " W	1164	1204	2019 - ACE - 3328 - OE	SUBMITTED 5-2-2019	DNH	NONE
329	Power Pole	38 ° 54 ′ 54.99 " N	97 ° 14 ′ 16.82 " W	1167	1207	2019 - ACE - 3329 - OE	SUBMITTED 5-2-2019	DNH	NONE
341	Power Pole	38 ° 54 ′ 54.54 " N	97 ° 13 ′ 56.36 " W	1153	1208	2019 - ACE - 3346 - OE	SUBMITTED 5-3-2019	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

DATE	REVISIONS	NO.

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 9

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

benesch
engineers - scientists - planners
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Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

DRAWN BY: | DESIGNED BY: | REVIEWED BY: | QUANTITIES CHECKED BY:

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 35 of 38

[File Location: X:\manhattan\130400\S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:29:46 PM] [Last Saved: 5/6/2020 2:47:25 PM] [Author: BWaller]

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
342	Power Pole	38° 54′ 54.59" N	97° 13′ 55.22" W	1153	1193	2019-ACE-3347-OE	SUBMITTED 5-3-2019	DNH	NONE
343	Power Pole	38° 54′ 54.59" N	97° 13′ 54.02" W	1153	1193	2019-ACE-3348-OE	SUBMITTED 5-3-2019	DNH	NONE
344	Power Pole	38° 54′ 54.57" N	97° 13′ 52.46" W	1153	1208	2019-ACE-3349-OE	SUBMITTED 5-3-2019	DNH	NONE
345	Power Pole	38° 54′ 54.58" N	97° 13′ 50.79" W	1152	1192	2019-ACE-3350-OE	SUBMITTED 5-3-2019	DNH	NONE
346	Power Pole	38° 54′ 54.58" N	97° 13′ 48.73" W	1153	1193	2019-ACE-3351-OE	SUBMITTED 5-3-2019	DNH	NONE
347	Power Pole	38° 54′ 54.60" N	97° 13′ 47.10" W	1152	1192	2019-ACE-3352-OE	SUBMITTED 5-3-2019	DNH	NONE
348	Power Pole	38° 54′ 54.62" N	97° 13′ 44.73" W	1152	1192	2019-ACE-3353-OE	SUBMITTED 5-3-2019	DNH	NONE
349	Power Pole	38° 54′ 54.59" N	97° 13′ 43.61" W	1153	1193	2019-ACE-3354-OE	SUBMITTED 5-3-2019	DNH	NONE
350	Power Pole	38° 54′ 54.63" N	97° 13′ 41.78" W	1153	1193	2019-ACE-3355-OE	SUBMITTED 5-3-2019	DNH	NONE
351	Power Pole	38° 54′ 54.63" N	97° 13′ 40.08" W	1152	1192	2019-ACE-3356-OE	SUBMITTED 5-3-2019	DNH	NONE
352	Power Pole	38° 54′ 54.64" N	97° 13′ 38.91" W	1152	1192	2019-ACE-3357-OE	SUBMITTED 5-3-2019	DNH	NONE
353	Power Pole	38° 54′ 54.61" N	97° 13′ 37.38" W	1155	1195	2019-ACE-3358-OE	SUBMITTED 5-3-2019	DNH	NONE
354	Power Pole	38° 54′ 54.63" N	97° 13′ 35.39" W	1154	1194	2019-ACE-3359-OE	SUBMITTED 5-3-2019	DNH	NONE
355	Power Pole	38° 54′ 54.65" N	97° 13′ 34.04" W	1155	1195	2019-ACE-3360-OE	SUBMITTED 5-3-2019	DNH	NONE
356	Power Pole	38° 54′ 54.63" N	97° 13′ 32.27" W	1154	1194	2019-ACE-3361-OE	SUBMITTED 5-3-2019	DNH	NONE
357	Power Pole	38° 54′ 54.63" N	97° 13′ 30.68" W	1155	1195	2019-ACE-3362-OE	SUBMITTED 5-3-2019	DNH	NONE
358	Power Pole	38° 54′ 54.66" N	97° 13′ 29.28" W	1156	1196	2019-ACE-3363-OE	SUBMITTED 5-3-2019	DNH	NONE
359	Power Pole	38° 54′ 54.64" N	97° 13′ 27.90" W	1155	1210	2019-ACE-3364-OE	SUBMITTED 5-3-2019	DNH	NONE
360	Power Pole	38° 54′ 54.65" N	97° 13′ 26.67" W	1155	1210	2019-ACE-3365-OE	SUBMITTED 5-3-2019	DNH	NONE
361	Power Pole	38° 54′ 54.78" N	97° 13′ 24.19" W	1158	1198	2019-ACE-3366-OE	SUBMITTED 5-3-2019	DNH	NONE
362	Power Pole	38° 54′ 44.98" N	97° 13′ 57.27" W	1152	1227	2019-ACE-3367-OE	SUBMITTED 5-3-2019	DNH	NONE
386	Power Pole	38° 54′ 43.27" N	97° 13′ 35.93" W	1156	1211	2019-ACE-3393-OE	SUBMITTED 5-4-2019	DNH	NONE
387	Power Pole	38° 54′ 43.47" N	97° 13′ 33.56" W	1155	1210	2019-ACE-3394-OE	SUBMITTED 5-4-2019	DNH	NONE
388	Power Pole	38° 54′ 43.67" N	97° 13′ 31.15" W	1155	1210	2019-ACE-3395-OE	SUBMITTED 5-4-2019	DNH	NONE
389	Power Pole	38° 54′ 43.97" N	97° 13′ 28.74" W	1153	1208	2019-ACE-3396-OE	SUBMITTED 5-4-2019	DNH	NONE
390	Power Pole	38° 54′ 44.11" N	97° 13′ 25.48" W	1153	1208	2019-ACE-3397-OE	SUBMITTED 5-4-2019	DNH	NONE
391	Power Pole	38° 54′ 44.18" N	97° 13′ 24.32" W	1155	1210	2019-ACE-3398-OE	SUBMITTED 5-4-2019	DNH	NONE
392	Power Pole	38° 54′ 43.58" N	97° 13′ 22.75" W	1156	1211	2019-ACE-3399-OE	SUBMITTED 5-4-2019	DNH	NONE
393	Power Pole	38° 54′ 43.59" N	97° 13′ 21.46" W	1155	1210	2019-ACE-3400-OE	SUBMITTED 5-4-2019	DNH	NONE
394	Power Pole	38° 54′ 43.63" N	97° 13′ 19.80" W	1154	1209	2019-ACE-3401-OE	SUBMITTED 5-4-2019	DNH	NONE
395	Power Pole	38° 54′ 43.59" N	97° 13′ 18.12" W	1154	1209	2019-ACE-3402-OE	SUBMITTED 5-4-2019	DNH	NONE
396	Power Pole	38° 54′ 43.61" N	97° 13′ 16.87" W	1153	1208	2019-ACE-3403-OE	SUBMITTED 5-4-2019	DNH	NONE
397	Power Pole	38° 54′ 43.62" N	97° 13′ 15.19" W	1154	1209	2019-ACE-3404-OE	SUBMITTED 5-4-2019	DNH	NONE
398	Power Pole	38° 54′ 43.61" N	97° 13′ 13.55" W	1152	1207	2019-ACE-3405-OE	SUBMITTED 5-4-2019	DNH	NONE
399	Power Pole	38° 54′ 43.61" N	97° 13′ 12.06" W	1148	1203	2019-ACE-3406-OE	SUBMITTED 5-4-2019	DNH	NONE
400	Power Pole	38° 54′ 43.62" N	97° 13′ 10.94" W	1147	1202	2019-ACE-3407-OE	SUBMITTED 5-4-2019	DNH	NONE
401	Power Pole	38° 54′ 43.60" N	97° 13′ 9.64" W	1147	1202	2019-ACE-3408-OE	SUBMITTED 5-4-2019	DNH	NONE
402	Power Pole	38° 54′ 43.62" N	97° 13′ 7.74" W	1147	1222	2019-ACE-3409-OE	SUBMITTED 5-4-2019	DNH	NONE
403	Power Pole	38° 54′ 43.62" N	97° 13′ 5.31" W	1146	1221	2019-ACE-3410-OE	SUBMITTED 5-4-2019	DNH	NONE
404	Power Pole	38° 54′ 45.71" N	97° 13′ 5.32" W	1147	1202	2019-ACE-3411-OE	SUBMITTED 5-4-2019	DNH	NONE
405	Power Pole	38° 54′ 47.03" N	97° 13′ 5.39" W	1150	1205	2019-ACE-3412-OE	SUBMITTED 5-4-2019	DNH	NONE
406	Power Pole	38° 54′ 48.37" N	97° 13′ 5.32" W	1150	1205	2019-ACE-3413-OE	SUBMITTED 5-4-2019	DNH	NONE
407	Power Pole	38° 54′ 49.69" N	97° 13′ 5.35" W	1151	1206	2019-ACE-3414-OE	SUBMITTED 5-4-2019	DNH	NONE
408	Power Pole	38° 54′ 50.95" N	97° 13′ 5.40" W	1152	1207	2019-ACE-3415-OE	SUBMITTED 5-4-2019	DNH	NONE
409	Power Pole	38° 54′ 53.18" N	97° 13′ 6.02" W	1150	1205	2019-ACE-3416-OE	SUBMITTED 5-4-2019	DNH	NONE
410	Power Pole	38° 54′ 54.52" N	97° 13′ 6.00" W	1153	1208	2019-ACE-3417-OE	SUBMITTED 5-4-2019	DNH	NONE
411	Power Pole	38° 54′ 55.68" N	97° 13′ 6.02" W	1153	1208	2019-ACE-3418-OE	SUBMITTED 5-4-2019	DNH	NONE
412	Power Pole	38° 54′ 57.96" N	97° 13′ 6.01" W	1155	1210	2019-ACE-3419-OE	SUBMITTED 5-4-2019	DNH	NONE
413	Power Pole	38° 54′ 59.32" N	97° 13′ 6.02" W	1154	1209	2019-ACE-3420-OE	SUBMITTED 5-4-2019	DNH	NONE
414	Power Pole	38° 55′ 0.43" N	97° 13′ 6.04" W	1154	1209	2019-ACE-3421-OE	SUBMITTED 5-4-2019	DNH	NONE
415	Power Pole	38° 55′ 1.55" N	97° 13′ 6.06" W	1154	1209	2019-ACE-3422-OE	SUBMITTED 5-4-2019	DNH	NONE
416	Power Pole	38° 55′ 2.77" N	97° 13′ 6.05" W	1155	1210	2019-ACE-3423-OE	SUBMITTED 5-4-2019	DNH	NONE
417	Power Pole	38° 55′ 4.13" N	97° 13′ 6.04" W	1157	1212	2019-ACE-3424-OE	SUBMITTED 5-4-2019	DNH	NONE
418	Power Pole	38° 55′ 5.69" N	97° 13′ 5.98" W	1155	1210	2019-ACE-3425-OE	SUBMITTED 5-4-2019	DNH	NONE
419	Power Pole	38° 55′ 6.32" N	97° 13′ 5.94" W	1156	1211	2019-ACE-3426-OE	SUBMITTED 5-4-2019	DNH	NONE
420	Power Pole	38° 55′ 7.98" N	97° 13′ 5.94" W	1157	1212	2019-ACE-3427-OE	SUBMITTED 5-4-2019	DNH	NONE
421	Power Pole	38° 55′ 9.70" N	97° 13′ 6.00" W	1155	1210	2019-ACE-3428-OE	SUBMITTED 5-4-2019	DNH	NONE
422	Power Pole	38° 55′ 10.85" N	97° 13′ 5.96" W	1157	1212	2019-ACE-3429-OE	SUBMITTED 5-4-2019	DNH	NONE
423	Power Pole	38° 55′ 12.02" N	97° 13′ 5.98" W	1156	1211	2019-ACE-3430-OE	SUBMITTED 5-4-2019	DNH	NONE
424	Power Pole	38° 55′ 12.00" N	97° 13′ 12.05" W	1155	1210	2019-ACE-3431-OE	SUBMITTED 5-4-2019	DNH	NONE
425	Power Pole	38° 55′ 13.63" N	97° 13′ 12.06" W	1155	1210	2019-ACE-3432-OE	SUBMITTED 5-4-2019	DNH	NONE
426	Power Pole	38° 55′ 14.95" N	97° 13′ 12.03" W	1160	1215	2019-ACE-3433-OE	SUBMITTED 5-4-2019	DNH	NONE
427	Power Pole	38° 55′ 15.98" N	97° 13′ 12.06" W	1156	1211	2019-ACE-3434-OE	SUBMITTED 5-4-2019	DNH	NONE
428	Power Pole	38° 55′ 17.40" N	97° 13′ 12.08" W	1158	1213	2019-ACE-3435-OE	SUBMITTED 5-4-2019	DNH	NONE
429	Power Pole	38° 55′ 18.54" N	97° 13′ 12.07" W	1158	1213	2019-ACE-3436-OE	SUBMITTED 5-4-2019	DNH	NONE
430	Power Pole	38° 55′ 19.67" N	97° 13′ 12.07" W	1158	1213	2019-ACE-3437-OE	SUBMITTED 5-4-2019	DNH	NONE
431	Power Pole	38° 55′ 21.55" N	97° 13′ 12.10" W	1157	1212	2019-ACE-3438-OE	SUBMITTED 5-4-2019	DNH	NONE
432	Power Pole	38° 55′ 22.85" N	97° 13′ 12.09" W	1159	1214	2019-ACE-3439-OE	SUBMITTED 5-4-2019	DNH	NONE
433	Power Pole	38° 55′ 24.46" N	97° 13′ 12.13" W	1159	1214	2019-ACE-3440-OE	SUBMITTED 5-4-2019	DNH	NONE
434	Power Pole	38° 55′ 25.72" N	97° 13′ 12.10" W	1159	1214	2019-ACE-3441-OE	SUBMITTED 5-4-2019	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
435	Power Pole	38° 55′ 26.99" N	97° 13′ 12.12" W	1160	1215	2019-ACE-3442-OE	SUBMITTED 5-4-2019	DNH	NONE
436	Power Pole	38° 55′ 28.14" N	97° 13′ 12.10" W	1159	1214	2019-ACE-3443-OE	SUBMITTED 5-4-2019	DNH	NONE
437	Power Pole	38° 55′ 29.51" N	97° 13′ 12.23" W	1159	1214	2019-ACE-3444-OE	SUBMITTED 5-4-2019	DNH	NONE
438	Power Pole	38° 55′ 30.97" N	97° 13′ 12.10" W	1160	1215	2019-ACE-3445-OE	SUBMITTED 5-4-2019	DNH	NONE
439	Power Pole	38° 55′ 32.08" N	97° 13′ 12.09" W	1160	1215	2019-ACE-3446-OE	SUBMITTED 5-4-2019	DNH	NONE
440	Power Pole	38° 55′ 33.11" N	97° 13′ 12.09" W	1163	1218	2019-ACE-3447-OE	SUBMITTED 5-4-2019	DNH	NONE
441	Power Pole	38° 55′ 33.87" N	97° 13′ 12.10" W	1162	1217	2019-ACE-3448-OE	SUBMITTED 5-4-2019	DNH	NONE
442	Power Pole	38° 55′ 34.50" N	97° 13′ 11.64" W	1162	1217	2019-ACE-3449-OE	SUBMITTED 5-4-2019	DNH	NONE
443	Power Pole	38° 55′ 35.92" N	97° 13′ 11.61" W	1165	1220	2019-ACE-3450-OE	SUBMITTED 5-4-2019	DNH	NONE
444	Power Pole	38° 55′ 37.24" N	97° 13′ 11.72" W	1166	1221	2019-ACE-3451-OE	SUBMITTED 5-4-2019	DNH	NONE
445	Power Pole	38° 55′ 38.60" N	97° 13′ 11.68" W	1167	1222	2019-ACE-3452-OE	SUBMITTED 5-4-2019	DNH	NONE
446	Power Pole	38° 55′ 40.17" N	97° 13′ 11.66" W	1168	1223	2019-ACE-3453-OE	SUBMITTED 5-4-2019	DNH	NONE
447	Power Pole	38° 55′ 41.59" N	97° 13′ 11.68" W	1170	1225	2019-ACE-3454-OE	SUBMITTED 5-4-2019	DNH	NONE
448	Power Pole	38° 55′ 43.30" N	97° 13′ 11.63" W	1171	1226	2019-ACE-3455-OE	SUBMITTED 5-4-2019	DNH	NONE
449	Power Pole	38° 55′ 44.80" N	97° 13′ 11.62" W	1172	1227	2019-ACE-3456-OE	SUBMITTED 5-4-2019	DNH	NONE
450	Power Pole	38° 55′ 46.44" N	97° 13′ 11.65" W	1171	1226	2019-ACE-3457-OE	SUBMITTED 5-4-2019	DNH	NONE
451	Power Pole	38° 54′ 43.56" N	97° 12′ 59.34" W	1148	1223	2019-ACE-3458-OE	SUBMITTED 5-4-2019	DNH	NONE
452	Power Pole	38° 54′ 41.95" N	97° 12′ 59.32" W	1148	1203	2019-ACE-3459-OE	SUBMITTED 5-4-2019	DNH	NONE
453	Power Pole	38° 54′ 40.31" N	97° 12′ 59.35" W	1148	1203	2019-ACE-3460-OE	SUBMITTED 5-4-2019	DNH	NONE
454	Power Pole	38° 54′ 39.40" N	97° 12′ 59.34" W	1148	1203	2019-ACE-3461-OE	SUBMITTED 5-4-2019	DNH	NONE
455	Power Pole	38° 54′ 38.67" N	97° 12′ 59.33" W	1147	1202	2019-ACE-3462-OE	SUBMITTED 5-4-2019	DNH	NONE
456	Power Pole	38° 54′ 37.62" N	97° 12′ 59.32" W	1149	1204	2019-ACE-3463-OE	SUBMITTED 5-4-2019	DNH	NONE
457	Power Pole	38° 54′ 35.40" N	97° 12′ 59.33" W	1149	1189	2019-ACE-3464-OE	SUBMITTED 5-4-2019	DNH	NONE
458	Power Pole	38° 54′ 33.97" N	97° 12′ 59.26" W	1147	1187	2019-ACE-3465-OE	SUBMITTED 5-4-2019	DNH	NONE
459	Power Pole	38° 54′ 32.75" N	97° 12′ 59.33" W	1146	1186	2019-ACE-3466-OE	SUBMITTED 5-4-2019	DNH	NONE
460	Power Pole	38° 54′ 31.44" N	97° 12′ 59.34" W	1149	1189	2019-ACE-3467-OE	SUBMITTED 5-4-2019	DNH	NONE
461	Power Pole	38° 54′ 28.09" N	97° 12′ 59.26" W	1146	1186	2019-ACE-3468-OE	SUBMITTED 5-4-2019	DNH	NONE
462	Power Pole	38° 54′ 25.75" N	97° 12′ 59.11" W	1145	1185	2019-ACE-3469-OE	SUBMITTED 5-4-2019	DNH	NONE
463	Power Pole	38° 54′ 23.47" N	97° 12′ 59.00" W	1145	1185	2019-ACE-3470-OE	SUBMITTED 5-4-2019	DNH	NONE
464	Power Pole	38° 54′ 22.07" N	97° 12′ 58.97" W	1145	1185	2019-ACE-3471-OE	SUBMITTED 5-4-2019	DNH	NONE
465	Power Pole	38° 54′ 20.51" N	97° 12′ 58.98" W	1145	1220	2019-ACE-3472-OE	SUBMITTED 5-4-2019	DNH	NONE
466	Power Pole	38° 54′ 40.14" N	97° 12′ 49.76" W	1146	1201	2019-ACE-3473-OE	SUBMITTED 5-4-2019	DNH	NONE
467	Power Pole	38° 54′ 38.39" N	97° 12′ 49.81" W	1145	1200	2019-ACE-3474-OE	SUBMITTED 5-4-2019	DNH	NONE
468	Power Pole	38° 54′ 37.92" N	97° 12′ 49.79" W	1145	1200	2019-ACE-3475-OE	SUBMITTED 5-4-2019	DNH	NONE
469	Power Pole	38° 54′ 36.64" N	97° 12′ 49.79" W	1145	1200	2019-ACE-3476-OE	SUBMITTED 5-4-2019	DNH	NONE
470	Power Pole	38° 54′ 34.99" N	97° 12′ 49.79" W	1144	1199	2019-ACE-3477-OE	SUBMITTED 5-4-2019	DNH	NONE
471	Power Pole	38° 54′ 33.94" N	97° 12′ 49.79" W	1143	1198	2019-ACE-3478-OE	SUBMITTED 5-4-2019	DNH	NONE
472	Power Pole	38° 54′ 33.10" N	97° 12′ 49.79" W	1144	1199	2019-ACE-3479-OE	SUBMITTED 5-4-2019	DNH	NONE
473	Power Pole	38° 54′ 32.00" N	97° 12′ 49.77" W	1143	1198	2019-ACE-3480-OE	SUBMITTED 5-4-2019	DNH	NONE
474	Power Pole	38° 54′ 30.31" N	97° 12′ 49.78" W	1144	1199	2019-ACE-3481-OE	SUBMITTED 5-4-2019	DNH	NONE
475	Power Pole	38° 54′ 29.24" N	97° 12′ 49.77" W	1144	1199	2019-ACE-3482-OE	SUBMITTED 5-4-2019	DNH	NONE
476	Power Pole	38° 54′ 26.76" N	97° 12′ 49.40" W	1144	1199	2019-ACE-3483-OE	SUBMITTED 5-4-2019	DNH	NONE
477	Power Pole	38° 54′ 24.81" N	97° 12′ 49.36" W	1144	1199	2019-ACE-3484-OE	SUBMITTED 5-4-2019	DNH	NONE
478	Power Pole	38° 54′ 23.12" N	97° 12′ 49.34" W	1144	1199	2019-ACE-3485-OE	SUBMITTED 5-4-2019	DNH	NONE
479	Power Pole	38° 54′ 21.19" N	97° 12′ 49.34" W	1144	1199	2019-ACE-3486-OE	SUBMITTED 5-4-2019	DNH	NONE
480	Power Pole	38° 54′ 19.28" N	97° 12′ 49.38" W	1144	1199	2019-ACE-3487-OE	SUBMITTED 5-4-2019	DNH	NONE
481	Power Pole	38° 54′ 17.55" N	97° 12′ 49.32" W	1144	1199	2019-ACE-3488-OE	SUBMITTED 5-4-2019	DNH	NONE
482	Power Pole	38° 54′ 15.80" N	97° 12′ 49.32" W	1144	1199	2019-ACE-3489-OE	SUBMITTED 5-4-2019	DNH	NONE
483	Power Pole	38° 54′ 14.09" N	97° 12′ 49.30" W	1147	1202	2019-ACE-3490-OE	SUBMITTED 5-4-2019	DNH	NONE
484	Power Pole	38° 54′ 12.42" N	97° 12′ 49.29" W	1146	1201	2019-ACE-3491-OE	SUBMITTED 5-4-2019	DNH	NONE
485	Power Pole	38° 54′ 10.70" N	97° 12′ 49.25" W	1146	1201	2019-ACE-3492-OE	SUBMITTED 5-4-2019	DNH	NONE
486	Power Pole	38° 54′ 8.81" N	97° 12′ 49.19" W	1146	1201	2019-ACE-3493-OE	SUBMITTED 5-4-2019	DNH	NONE
487	Power Pole	38° 54′ 6.85" N	97° 12′ 49.11" W	1146	1201	2019-ACE-3494-OE	SUBMITTED 5-4-2019	DNH	NONE
488	Power Pole	38° 54′ 5.48" N	97° 12′ 49.08" W	1146	1201	2019-ACE-3495-OE	SUBMITTED 5-4-2019	DNH	NONE
489	Power Pole	38° 54′ 3.96" N	97° 12′ 49.02" W	1146	1201	2019-ACE-3496-OE	SUBMITTED 5-4-2019	DNH	NONE
490	Power Pole	38° 54′ 2.28" N	97° 12′ 48.95" W	1146	1201	2019-ACE-3497-OE	SUBMITTED 5-4-2019	DNH	NONE
491	Power Pole	38° 54′ 0.80" N	97° 12′ 48.89" W	1146	1201	2019-ACE-3498-OE	SUBMITTED 5-4-2019	DNH	NONE
492	Power Pole	38° 53′ 58.71" N	97° 12′ 48.68" W	1146	1201	2019-ACE-3499-OE	SUBMITTED 5-4-2019	DNH	NONE
493	Power Pole	38° 53′ 57.23" N	97° 12′ 48.43" W	1146	1201	2019-ACE-3500-OE	SUBMITTED 5-4-2019	DNH	NONE
494	Power Pole	38° 53′ 55.64" N	97° 12′ 48.10" W	1146	1201	2019-ACE-3501-OE	SUBMITTED 5-4-2019	DNH	NONE
495	Power Pole	38° 53′ 53.87" N	97° 12′ 47.65" W	1146	1201	2019-ACE-3502-OE	SUBMITTED 5-4-2019	DNH	NONE
496	Power Pole	38° 53′ 51.97" N	97° 12′ 47.07" W	1146	1201	2019-ACE-3503-OE	SUBMITTED 5-4-2019	DNH	NONE
497	Power Pole	38° 53′ 50.31" N	97° 12′ 46.51" W	1147	1202	2019-ACE-3504-OE	SUBMITTED 5-4-2019	DNH	NONE
498	Power Pole	38° 53′ 48.52" N	97° 12′ 45.86" W	1145	1200	2019-ACE-3505-OE	SUBMITTED 5-4-2019	DNH	NONE
499	Power Pole	38° 53′ 46.91" N	97° 12′ 45.14" W	1145	1200	2019-ACE-3506-OE	SUBMITTED 5-4-2019	DNH	NONE
500	Power Pole	38° 53′ 45.27" N	97° 12′ 44.38" W	1144	1199	2019-ACE-3507-OE	SUBMITTED 5-4-2019	DNH	NONE
501	Power Pole	38° 53′ 43.60" N	97° 12′ 43.57" W	1144	1199	2019-ACE-3508-OE	SUBMITTED 5-4-2019	DNH	NONE
502	Power Pole	38° 53′ 41.96" N	97° 12′ 42.81" W	1144	1199	2019-ACE-3509-OE	SUBMITTED 5-4-2019	DNH	NONE
503	Power Pole	38° 53′ 40.29" N	97° 12′ 42.01" W	1147	1202	2019-ACE-3510-OE	SUBMITTED 5-4-2019	DNH	NONE
504	Power Pole	38° 53′ 38.73" N	97° 12′ 41.36" W	1147	1202	2019-ACE-3511-OE	SUBMITTED 5-4-2019	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 10

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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Manhattan, Kansas 66503
Ph: 785.539.2202 Job No. - 130614.00

DRAWN BY: | DESIGNED BY: | REVIEWED BY: | QUANTITIES CHECKED BY:

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 36 of 38

[File Location: Y:\manhattan\130400\S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:30:21 PM] [Last Saved: 5/5/2020 2:47:25 PM] [Author]

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
505	Power Pole	38° 53′ 36.94" N	97° 12′ 40.64" W	1145	1200	2019-ACE-3512-OE	SUBMITTED 5-4-2019	DNH	NONE
506	Power Pole	38° 53′ 35.59" N	97° 12′ 40.04" W	1146	1201	2019-ACE-3513-OE	SUBMITTED 5-4-2019	DNH	NONE
507	Power Pole	38° 53′ 34.13" N	97° 12′ 39.16" W	1144	1199	2019-ACE-3514-OE	SUBMITTED 5-4-2019	DNH	NONE
508	Power Pole	38° 53′ 32.62" N	97° 12′ 38.73" W	1141	1196	2019-ACE-3515-OE	SUBMITTED 5-4-2019	DNH	NONE
509	Power Pole	38° 53′ 31.18" N	97° 12′ 38.32" W	1139	1194	2019-ACE-3516-OE	SUBMITTED 5-4-2019	DNH	NONE
510	Power Pole	38° 53′ 29.68" N	97° 12′ 37.97" W	1141	1196	2019-ACE-3517-OE	SUBMITTED 5-4-2019	DNH	NONE
511	Power Pole	38° 53′ 28.13" N	97° 12′ 37.81" W	1140	1195	2019-ACE-3518-OE	SUBMITTED 5-4-2019	DNH	NONE
512	Power Pole	38° 53′ 25.61" N	97° 12′ 37.51" W	1138	1213	2019-ACE-3519-OE	SUBMITTED 5-4-2019	DNH	NONE
513	Power Pole	38° 53′ 18.26" N	97° 12′ 36.54" W	1142	1217	2019-ACE-3520-OE	SUBMITTED 5-4-2019	DNH	NONE
514	Power Pole	38° 54′ 2.69" N	97° 12′ 51.49" W	1146	1201	2019-ACE-5321-OE	SUBMITTED 5-4-2019	DNH	NONE
515	Power Pole	38° 54′ 2.69" N	97° 12′ 53.87" W	1144	1199	2019-ACE-5322-OE	SUBMITTED 5-4-2019	DNH	NONE
516	Power Pole	38° 54′ 2.67" N	97° 12′ 56.38" W	1144	1199	2019-ACE-5323-OE	SUBMITTED 5-4-2019	DNH	NONE
517	Power Pole	38° 54′ 2.67" N	97° 12′ 58.79" W	1146	1201	2019-ACE-5324-OE	SUBMITTED 5-4-2019	DNH	NONE
518	Power Pole	38° 54′ 2.71" N	97° 13′ 1.28" W	1145	1200	2019-ACE-5325-OE	SUBMITTED 5-4-2019	DNH	NONE
519	Power Pole	38° 54′ 2.72" N	97° 13′ 3.70" W	1146	1201	2019-ACE-5326-OE	SUBMITTED 5-4-2019	DNH	NONE
520	Power Pole	38° 54′ 2.69" N	97° 13′ 6.13" W	1147	1202	2019-ACE-5327-OE	SUBMITTED 5-4-2019	DNH	NONE
521	Power Pole	38° 54′ 2.71" N	97° 13′ 8.59" W	1147	1202	2019-ACE-5328-OE	SUBMITTED 5-4-2019	DNH	NONE
522	Power Pole	38° 54′ 2.73" N	97° 13′ 11.05" W	1147	1202	2019-ACE-5329-OE	SUBMITTED 5-4-2019	DNH	NONE
523	Power Pole	38° 54′ 2.72" N	97° 13′ 13.52" W	1147	1202	2019-ACE-5330-OE	SUBMITTED 5-4-2019	DNH	NONE
524	Power Pole	38° 54′ 2.73" N	97° 13′ 15.90" W	1148	1203	2019-ACE-5331-OE	SUBMITTED 5-4-2019	DNH	NONE
525	Power Pole	38° 54′ 2.72" N	97° 13′ 18.22" W	1149	1204	2019-ACE-5332-OE	SUBMITTED 5-4-2019	DNH	NONE
526	Power Pole	38° 54′ 3.19" N	97° 13′ 20.69" W	1146	1201	2019-ACE-5333-OE	SUBMITTED 5-4-2019	DNH	NONE
527	Power Pole	38° 54′ 3.56" N	97° 13′ 22.31" W	1144	1199	2019-ACE-5334-OE	SUBMITTED 5-4-2019	DNH	NONE
528	Power Pole	38° 54′ 4.30" N	97° 13′ 23.93" W	1146	1201	2019-ACE-5335-OE	SUBMITTED 5-4-2019	DNH	NONE
529	Power Pole	38° 54′ 4.75" N	97° 13′ 25.60" W	1144	1199	2019-ACE-5336-OE	SUBMITTED 5-4-2019	DNH	NONE
530	Power Pole	38° 54′ 4.78" N	97° 13′ 27.17" W	1146	1201	2019-ACE-5337-OE	SUBMITTED 5-4-2019	DNH	NONE
531	Power Pole	38° 54′ 4.75" N	97° 13′ 29.27" W	1147	1202	2019-ACE-5338-OE	SUBMITTED 5-4-2019	DNH	NONE
532	Power Pole	38° 54′ 4.76" N	97° 13′ 31.63" W	1148	1203	2019-ACE-5339-OE	SUBMITTED 5-4-2019	DNH	NONE
533	Power Pole	38° 54′ 4.74" N	97° 13′ 33.93" W	1147	1202	2019-ACE-5340-OE	SUBMITTED 5-4-2019	DNH	NONE
534	Power Pole	38° 54′ 4.75" N	97° 13′ 36.24" W	1147	1202	2019-ACE-5341-OE	SUBMITTED 5-4-2019	DNH	NONE
546	Power Pole	38° 52′ 16.99" N	97° 13′ 20.31" W	1190	1245	2019-ACE-5353-OE	SUBMITTED 5-4-2019	DNH	NONE
547	Power Pole	38° 52′ 17.01" N	97° 13′ 22.36" W	1190	1245	2019-ACE-5354-OE	SUBMITTED 5-4-2019	DNH	NONE
548	Power Pole	38° 52′ 17.02" N	97° 13′ 24.35" W	1190	1245	2019-ACE-5355-OE	SUBMITTED 5-4-2019	DNH	NONE
549	Power Pole	38° 52′ 17.03" N	97° 13′ 26.73" W	1190	1230	2019-ACE-5356-OE	SUBMITTED 5-4-2019	DNH	NONE
550	Power Pole	38° 52′ 16.98" N	97° 13′ 29.32" W	1187	1242	2019-ACE-5357-OE	SUBMITTED 5-4-2019	DNH	NONE
551	Power Pole	38° 52′ 16.98" N	97° 13′ 32.16" W	1186	1226	2019-ACE-5358-OE	SUBMITTED 5-4-2019	DNH	NONE
552	Power Pole	38° 52′ 17.02" N	97° 13′ 34.64" W	1185	1240	2019-ACE-5359-OE	SUBMITTED 5-4-2019	DNH	NONE
553	Power Pole	38° 52′ 16.99" N	97° 13′ 37.46" W	1177	1232	2019-ACE-5360-OE	SUBMITTED 5-4-2019	DNH	NONE
554	Power Pole	38° 52′ 16.98" N	97° 13′ 39.98" W	1173	1213	2019-ACE-5361-OE	SUBMITTED 5-4-2019	DNH	NONE
555	Power Pole	38° 52′ 16.98" N	97° 13′ 42.86" W	1171	1211	2019-ACE-5362-OE	SUBMITTED 5-4-2019	DNH	NONE
556	Power Pole	38° 52′ 17.02" N	97° 13′ 45.67" W	1172	1212	2019-ACE-5363-OE	SUBMITTED 5-4-2019	DNH	NONE
557	Power Pole	38° 52′ 16.96" N	97° 13′ 48.33" W	1171	1211	2019-ACE-5364-OE	SUBMITTED 5-4-2019	DNH	NONE
558	Power Pole	38° 52′ 16.94" N	97° 13′ 50.99" W	1164	1219	2019-ACE-5365-OE	SUBMITTED 5-4-2019	DNH	NONE
559	Power Pole	38° 52′ 16.96" N	97° 13′ 53.92" W	1161	1216	2019-ACE-5366-OE	SUBMITTED 5-4-2019	DNH	NONE
560	Power Pole	38° 52′ 16.97" N	97° 13′ 56.45" W	1166	1221	2019-ACE-5367-OE	SUBMITTED 5-4-2019	DNH	NONE
561	Power Pole	38° 52′ 16.97" N	97° 13′ 59.24" W	1171	1226	2019-ACE-5368-OE	SUBMITTED 5-4-2019	DNH	NONE
562	Power Pole	38° 52′ 16.98" N	97° 14′ 1.94" W	1179	1219	2019-ACE-5369-OE	SUBMITTED 5-4-2019	DNH	NONE
563	Power Pole	38° 52′ 16.94" N	97° 14′ 4.48" W	1184	1224	2019-ACE-5370-OE	SUBMITTED 5-4-2019	DNH	NONE
564	Power Pole	38° 52′ 16.92" N	97° 14′ 7.19" W	1189	1229	2019-ACE-5371-OE	SUBMITTED 5-4-2019	DNH	NONE
565	Power Pole	38° 52′ 16.93" N	97° 14′ 9.86" W	1195	1235	2019-ACE-5372-OE	SUBMITTED 5-4-2019	DNH	NONE
566	Power Pole	38° 52′ 16.95" N	97° 14′ 12.93" W	1203	1258	2019-ACE-5373-OE	SUBMITTED 5-4-2019	DNH	NONE
567	Power Pole	38° 52′ 16.85" N	97° 14′ 15.15" W	1203	1243	2019-ACE-5374-OE	SUBMITTED 5-4-2019	DNH	NONE
568	Power Pole	38° 52′ 16.84" N	97° 14′ 18.25" W	1204	1244	2019-ACE-5375-OE	SUBMITTED 5-4-2019	DNH	NONE
569	Power Pole	38° 52′ 16.88" N	97° 14′ 20.69" W	1196	1236	2019-ACE-5376-OE	SUBMITTED 5-4-2019	DNH	NONE
570	Power Pole	38° 52′ 16.92" N	97° 14′ 23.20" W	1186	1226	2019-ACE-5377-OE	SUBMITTED 5-4-2019	DNH	NONE
571	Power Pole	38° 52′ 16.90" N	97° 14′ 25.83" W	1173	1213	2019-ACE-5378-OE	SUBMITTED 5-4-2019	DNH	NONE
572	Power Pole	38° 52′ 16.96" N	97° 14′ 28.68" W	1169	1209	2019-ACE-5379-OE	SUBMITTED 5-4-2019	DNH	NONE
573	Power Pole	38° 52′ 16.90" N	97° 14′ 31.54" W	1159	1214	2019-ACE-5380-OE	SUBMITTED 5-4-2019	DNH	NONE
574	Power Pole	38° 52′ 16.88" N	97° 14′ 33.97" W	1151	1206	2019-ACE-5381-OE	SUBMITTED 5-4-2019	DNH	NONE
575	Power Pole	38° 52′ 16.91" N	97° 14′ 36.70" W	1152	1207	2019-ACE-5382-OE	SUBMITTED 5-4-2019	DNH	NONE
576	Power Pole	38° 52′ 16.88" N	97° 14′ 39.48" W	1154	1209	2019-ACE-5383-OE	SUBMITTED 5-4-2019	DNH	NONE
577	Power Pole	38° 52′ 16.84" N	97° 14′ 42.02" W	1156	1211	2019-ACE-5384-OE	SUBMITTED 5-4-2019	DNH	NONE
578	Power Pole	38° 52′ 16.91" N	97° 14′ 44.64" W	1163	1218	2019-ACE-5385-OE	SUBMITTED 5-4-2019	DNH	NONE
579	Power Pole	38° 52′ 16.85" N	97° 14′ 47.47" W	1172	1227	2019-ACE-5386-OE	SUBMITTED 5-4-2019	DNH	NONE
580	Power Pole	38° 52′ 16.94" N	97° 14′ 50.12" W	1178	1233	2019-ACE-5387-OE	SUBMITTED 5-4-2019	DNH	NONE
581	Power Pole	38° 52′ 46.01" N	97° 13′ 24.02" W	1152	1192	2019-ACE-3603-OE	SUBMITTED 5-6-2019	DNH	NONE
582	Power Pole	38° 52′ 45.99" N	97° 13′ 24.64" W	1153	1193	2019-ACE-3604-OE	SUBMITTED 5-6-2019	DNH	NONE
583	Power Pole	38° 52′ 46.30" N	97° 13′ 27.61" W	1157	1197	2019-ACE-3605-OE	SUBMITTED 5-6-2019	DNH	NONE
584	Power Pole	38° 52′ 45.98" N	97° 13′ 30.96" W	1170	1210	2019-ACE-3606-OE	SUBMITTED 5-6-2019	DNH	NONE
585	Power Pole	38° 52′ 45.98" N	97° 13′ 33.43" W	1176	1216	2019-ACE-3607-OE	SUBMITTED 5-6-2019	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
586	Power Pole	38° 52′ 46.11" N	97° 13′ 37.25" W	1166	1206	2019-ACE-3608-OE	SUBMITTED 5-6-2019	DNH	NONE
587	Power Pole	38° 52′ 46.14" N	97° 13′ 40.41" W	1161	1201	2019-ACE-3609-OE	SUBMITTED 5-6-2019	DNH	NONE
588	Power Pole	38° 52′ 46.14" N	97° 13′ 50.30" W	1146	1186	2019-ACE-3610-OE	SUBMITTED 5-6-2019	DNH	NONE
589	Power Pole	38° 52′ 48.89" N	97° 13′ 52.78" W	1157	1197	2019-ACE-3611-OE	SUBMITTED 5-6-2019	DNH	NONE
593	Power Pole	38° 53′ 32.03" N	97° 13′ 57.93" W	1148	1188	2019-ACE-3615-OE	SUBMITTED 5-6-2019	DNH	NONE
594	Power Pole	38° 53′ 28.60" N	97° 13′ 57.90" W	1151	1191	2019-ACE-3616-OE	SUBMITTED 5-6-2019	DNH	NONE
595	Power Pole	38° 53′ 31.74" N	97° 13′ 56.50" W	1148	1188	2019-ACE-3617-OE	SUBMITTED 5-6-2019	DNH	NONE
596	Power Pole	38° 53′ 31.78" N	97° 13′ 53.94" W	1148	1188	2019-ACE-3618-OE	SUBMITTED 5-6-2019	DNH	NONE
597	Power Pole	38° 53′ 31.83" N	97° 13′ 51.16" W	1148	1188	2019-ACE-3619-OE	SUBMITTED 5-6-2019	DNH	NONE
598	Power Pole	38° 53′ 31.78" N	97° 13′ 48.44" W	1148	1188	2019-ACE-3620-OE	SUBMITTED 5-6-2019	DNH	NONE
599	Power Pole	38° 53′ 31.96" N	97° 13′ 45.74" W	1148	1188	2019-ACE-3621-OE	SUBMITTED 5-6-2019	DNH	NONE
600	Power Pole	38° 53′ 32.34" N	97° 13′ 42.83" W	1152	1192	2019-ACE-3622-OE	SUBMITTED 5-6-2019	DNH	NONE
601	Power Pole	38° 53′ 28.92" N	97° 13′ 45.68" W	1147	1187	2019-ACE-3623-OE	SUBMITTED 5-6-2019	DNH	NONE
602	Power Pole	38° 53′ 26.88" N	97° 13′ 45.68" W	1147	1187	2019-ACE-3624-OE	SUBMITTED 5-6-2019	DNH	NONE
603	Power Pole	38° 53′ 24.80" N	97° 12′ 45.64" W	1147	1187	2019-ACE-3625-OE	SUBMITTED 5-6-2019	DNH	NONE
609	Power Pole	38° 54′ 2.17" N	97° 14′ 42.14" W	1149	1189	2019-ACE-3638-OE	SUBMITTED 5-6-2019	DNH	NONE
610	Power Pole	38° 54′ 2.15" N	97° 14′ 44.59" W	1150	1190	2019-ACE-3639-OE	SUBMITTED 5-6-2019	DNH	NONE
611	Power Pole	38° 54′ 2.16" N	97° 14′ 46.61" W	1150	1190	2019-ACE-3640-OE	SUBMITTED 5-6-2019	DNH	NONE
612	Power Pole	38° 54′ 2.14" N	97° 14′ 49.20" W	1150	1190	2019-ACE-3641-OE	SUBMITTED 5-6-2019	DNH	NONE
613	Power Pole	38° 54′ 2.13" N	97° 14′ 51.46" W	1150	1190	2019-ACE-3642-OE	SUBMITTED 5-6-2019	DNH	NONE
614	Power Pole	38° 54′ 2.12" N	97° 14′ 53.71" W	1150	1190	2019-ACE-3643-OE	SUBMITTED 5-6-2019	DNH	NONE
615	Power Pole	38° 54′ 2.10" N	97° 14′ 55.96" W	1151	1191	2019-ACE-3644-OE	SUBMITTED 5-6-2019	DNH	NONE
616	Power Pole	38° 54′ 2.11" N	97° 14′ 58.55" W	1153	1193	2019-ACE-3645-OE	SUBMITTED 5-6-2019	DNH	NONE
617	Power Pole	38° 54′ 2.10" N	97° 15′ 0.85" W	1153	1193	2019-ACE-3646-OE	SUBMITTED 5-6-2019	DNH	NONE
618	Power Pole	38° 54′ 2.08" N	97° 15′ 3.30" W	1153	1193	2019-ACE-3647-OE	SUBMITTED 5-6-2019	DNH	NONE
619	Power Pole	38° 54′ 2.04" N	97° 15′ 5.60" W	1150	1190	2019-ACE-3648-OE	SUBMITTED 5-6-2019	DNH	NONE
620	Power Pole	38° 54′ 0.73" N	97° 15′ 5.58" W	1147	1187	2019-ACE-3649-OE	SUBMITTED 5-6-2019	DNH	NONE
621	Power Pole	38° 53′ 58.90" N	97° 15′ 5.56" W	1145	1185	2019-ACE-3650-OE	SUBMITTED 5-6-2019	DNH	NONE
622	Power Pole	38° 53′ 56.90" N	97° 15′ 5.56" W	1145	1185	2019-ACE-3651-OE	SUBMITTED 5-6-2019	DNH	NONE
623	Power Pole	38° 53′ 55.09" N	97° 15′ 5.56" W	1144	1184	2019-ACE-3652-OE	SUBMITTED 5-6-2019	DNH	NONE
624	Power Pole	38° 53′ 53.11" N	97° 15′ 5.54" W	1145	1185	2019-ACE-3653-OE	SUBMITTED 5-6-2019	DNH	NONE
625	Power Pole	38° 53′ 51.17" N	97° 15′ 5.54" W	1146	1186	2019-ACE-3654-OE	SUBMITTED 5-6-2019	DNH	NONE
626	Power Pole	38° 53′ 49.30" N	97° 15′ 5.58" W	1146	1186	2019-ACE-3655-OE	SUBMITTED 5-6-2019	DNH	NONE
627	Power Pole	38° 53′ 47.32" N	97° 15′ 5.55" W	1145	1185	2019-ACE-3656-OE	SUBMITTED 5-6-2019	DNH	NONE
628	Power Pole	38° 53′ 45.39" N	97° 15′ 5.53" W	1144	1184	2019-ACE-3657-OE	SUBMITTED 5-6-2019	DNH	NONE
629	Power Pole	38° 53′ 43.32" N	97° 15′ 5.54" W	1145	1185	2019-ACE-3658-OE	SUBMITTED 5-6-2019	DNH	NONE
630	Power Pole	38° 53′ 41.44" N	97° 15′ 5.53" W	1146	1186	2019-ACE-3659-OE	SUBMITTED 5-6-2019	DNH	NONE
631	Power Pole	38° 53′ 39.53" N	97° 15′ 6.09" W	1146	1186	2019-ACE-3660-OE	SUBMITTED 5-6-2019	DNH	NONE
632	Power Pole	38° 53′ 37.91" N	97° 15′ 7.48" W	1146	1186	2019-ACE-3661-OE	SUBMITTED 5-6-2019	DNH	NONE
633	Power Pole	38° 53′ 36.74" N	97° 15′ 9.56" W	1149	1189	2019-ACE-3662-OE	SUBMITTED 5-6-2019	DNH	NONE
634	Power Pole	38° 53′ 36.22" N	97° 15′ 11.93" W	1149	1189	2019-ACE-3663-OE	SUBMITTED 5-6-2019	DNH	NONE
635	Power Pole	38° 53′ 36.17" N	97° 15′ 14.68" W	1148	1203	2019-ACE-3664-OE	SUBMITTED 5-6-2019	DNH	NONE
636	Power Pole	38° 54′ 2.50" N	97° 15′ 39.21" W	1147	1202	2019-ACE-3666-OE	SUBMITTED 5-6-2019	DNH	NONE
637	Power Pole	38° 54′ 2.53" N	97° 15′ 36.05" W	1149	1204	2019-ACE-3667-OE	SUBMITTED 5-6-2019	DNH	NONE
638	Power Pole	38° 54′ 2.50" N	97° 15′ 32.24" W	1149	1189	2019-ACE-3668-OE	SUBMITTED 5-6-2019	DNH	NONE
639	Power Pole	38° 54′ 2.49" N	97° 15′ 27.86" W	1147	1187	2019-ACE-3669-OE	SUBMITTED 5-6-2019	DNH	NONE
640	Power Pole	38° 54′ 2.45" N	97° 15′ 23.31" W	1145	1185	2019-ACE-3670-OE	SUBMITTED 5-6-2019	DNH	NONE
641	Power Pole	38° 54′ 2.48" N	97° 15′ 18.90" W	1145	1185	2019-ACE-3671-OE	SUBMITTED 5-6-2019	DNH	NONE
642	Power Pole	38° 54′ 2.48" N	97° 15′ 14.53" W	1145	1185	2019-ACE-3672-OE	SUBMITTED 5-6-2019	DNH	NONE
643	Power Pole	38° 54′ 2.47" N	97° 15′ 10.20" W	1144	1184	2019-ACE-3673-OE	SUBMITTED 5-6-2019	DNH	NONE
644	Power Pole	38° 54′ 2.42" N	97° 15′ 6.83" W	1150	1190	2019-ACE-3674-OE	SUBMITTED 5-6-2019	DNH	NONE
645	Power Pole	38° 54′ 3.26" N	97° 15′ 4.84" W	1152	1192	2019-ACE-3675-OE	SUBMITTED 5-6-2019	DNH	NONE
646	Power Pole	38° 54′ 5.55" N	97° 15′ 3.42" W	1154	1194	2019-ACE-3676-OE	SUBMITTED 5-6-2019	DNH	NONE
647	Power Pole	38° 54′ 6.10" N	97° 15′ 2.34" W	1153	1193	2019-ACE-3677-OE	SUBMITTED 5-6-2019	DNH	NONE
648	Power Pole	38° 54′ 3.80" N	97° 15′ 5.65" W	1152	1192	2019-ACE-3678-OE	SUBMITTED 5-6-2019	DNH	NONE
649	Power Pole	38° 54′ 5.94" N	97° 15′ 5.55" W	1153	1193	2019-ACE-3679-OE	SUBMITTED 5-6-2019	DNH	NONE
650	Power Pole	38° 54′ 8.17" N	97° 15′ 5.55" W	1151	1191	2019-ACE-3680-OE	SUBMITTED 5-6-2019	DNH	NONE
651	Power Pole	38° 54′ 10.33" N	97° 15′ 5.53" W	1151	1191	2019-ACE-3681-OE	SUBMITTED 5-6-2019	DNH	NONE
652	Power Pole	38° 54′ 12.57" N	97° 15′ 5.52" W	1151	1191	2019-ACE-3682-OE	SUBMITTED 5-6-2019	DNH	NONE
653	Power Pole	38° 54′ 14.72" N	97° 15′ 5.52" W	1150	1190	2019-ACE-3683-OE	SUBMITTED 5-6-2019	DNH	NONE
654	Power Pole	38° 54′ 16.89" N	97° 15′ 5.51" W	1149	1189	2019-ACE-3684-OE	SUBMITTED 5-6-2019	DNH	NONE
655	Power Pole	38° 54′ 19.06" N	97° 15′ 5.51" W	1149	1189	2019-ACE-3685-OE	SUBMITTED 5-6-2019	DNH	NONE
656	Power Pole	38° 54′ 21.26" N	97° 15′ 5.50" W	1151	1191	2019-ACE-3686-OE	SUBMITTED 5-6-2019	DNH	NONE
657	Power Pole	38° 54′ 23.40" N	97° 15′ 5.48" W	1150	1190	2019-ACE-3687-OE	SUBMITTED 5-6-2019	DNH	NONE
658	Power Pole	38° 54′ 25.64" N	97° 15′ 5.50" W	1153	1208	2019-ACE-3688-OE	SUBMITTED 5-6-2019	DNH	NONE
659	Power Pole	38° 54′ 26.68" N	97° 15′ 5.50" W	1153	1208	2019-ACE-3689-OE	SUBMITTED 5-6-2019	DNH	NONE
660	Power Pole	38° 54′ 28.01" N	97° 15′ 5.49" W	1155	1210	2019-ACE-3690-OE	SUBMITTED 5-6-2019	DNH	NONE
661	Power Pole	38° 54′ 29.50" N	97° 15′ 5.49" W	1152	1207	2019-ACE-3691-OE	SUBMITTED 5-6-2019	DNH	NONE
662	Power Pole	38° 54′ 32.22" N	97° 15′ 5.42" W	1154	1209	2019-ACE-3692-OE	SUBMITTED 5-6-2019	DNH	NONE
663	Power Pole	38° 54′ 34.42" N	97° 15′ 5.40" W	1158	1213	2019-ACE-3693-OE	SUBMITTED 5-6-2019	DNH	NONE

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE
.	-	-

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 11

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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engineers - scientists - planners
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DRAWN BY: | DESIGNED BY: | REVIEWED BY: | QUANTITIES CHECKED BY:

PROJECT: ALP UPDATE

DATE: JULY 15, 2020

SHEET NO. 37 of 38

[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Plot Date: 7/13/2020 9:30:57 PM] [Last Saved: 5/5/2020 2:47:25 PM] [Saved By: Bwaller]

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
664	Power Pole	38° 54′ 36.76" N	97° 15′ 5.35" W	1160	1215	2019-ACE-3694-OE	SUBMITTED 5-6-2019	DNH	NONE
665	Power Pole	38° 54′ 38.36" N	97° 15′ 5.35" W	1161	1216	2019-ACE-3695-OE	SUBMITTED 5-6-2019	DNH	NONE
666	Power Pole	38° 54′ 39.86" N	97° 15′ 5.35" W	1163	1218	2019-ACE-3696-OE	SUBMITTED 5-6-2019	DNH	NONE
667	Power Pole	38° 54′ 41.23" N	97° 15′ 5.34" W	1168	1223	2019-ACE-3697-OE	SUBMITTED 5-6-2019	DNH	NONE
668	Power Pole	38° 54′ 43.95" N	97° 15′ 5.27" W	1184	1239	2019-ACE-3698-OE	SUBMITTED 5-6-2019	DNH	NONE
669	Power Pole	38° 54′ 44.94" N	97° 15′ 5.33" W	1189	1244	2019-ACE-3699-OE	SUBMITTED 5-6-2019	DNH	NONE
670	Power Pole	38° 54′ 46.87" N	97° 15′ 5.29" W	1193	1233	2019-ACE-3700-OE	SUBMITTED 5-6-2019	DNH	NONE
671	Power Pole	38° 54′ 49.32" N	97° 15′ 5.23" W	1194	1234	2019-ACE-3701-OE	SUBMITTED 5-6-2019	DNH	NONE
672	Power Pole	38° 54′ 51.44" N	97° 15′ 5.23" W	1196	1236	2019-ACE-3702-OE	SUBMITTED 5-6-2019	DNH	NONE
673	Power Pole	38° 54′ 53.57" N	97° 15′ 5.22" W	1188	1228	2019-ACE-3703-OE	SUBMITTED 5-6-2019	DNH	NONE
674	Power Pole	38° 54′ 54.97" N	97° 15′ 5.19" W	1187	1242	2019-ACE-3704-OE	SUBMITTED 5-6-2019	DNH	NONE
675	Power Pole	38° 54′ 54.99" N	97° 15′ 3.22" W	1185	1240	2019-ACE-3705-OE	SUBMITTED 5-6-2019	DNH	NONE
676	Power Pole	38° 54′ 54.98" N	97° 15′ 1.45" W	1186	1241	2019-ACE-3706-OE	SUBMITTED 5-6-2019	DNH	NONE
677	Power Pole	38° 54′ 54.97" N	97° 14′ 59.55" W	1188	1243	2019-ACE-3707-OE	SUBMITTED 5-6-2019	DNH	NONE
678	Power Pole	38° 54′ 54.98" N	97° 14′ 57.63" W	1195	1250	2019-ACE-3708-OE	SUBMITTED 5-6-2019	DNH	NONE
679	Power Pole	38° 54′ 54.99" N	97° 14′ 55.28" W	1205	1260	2019-ACE-3709-OE	SUBMITTED 5-6-2019	DNH	NONE
680	Power Pole	38° 54′ 54.98" N	97° 14′ 53.55" W	1204	1259	2019-ACE-3710-OE	SUBMITTED 5-6-2019	DNH	NONE
681	Power Pole	38° 54′ 54.99" N	97° 14′ 51.50" W	1207	1262	2019-ACE-3711-OE	SUBMITTED 5-6-2019	DNH	NONE
682	Power Pole	38° 54′ 54.99" N	97° 14′ 49.46" W	1202	1257	2019-ACE-3712-OE	SUBMITTED 5-6-2019	DNH	NONE
683	Power Pole	38° 54′ 54.99" N	97° 14′ 45.54" W	1199	1254	2019-ACE-3713-OE	SUBMITTED 5-6-2019	DNH	NONE
684	Power Pole	38° 54′ 55.00" N	97° 14′ 42.73" W	1197	1252	2019-ACE-3714-OE	SUBMITTED 5-6-2019	DNH	NONE
685	Power Pole	38° 54′ 55.02" N	97° 14′ 39.20" W	1192	1232	2019-ACE-3715-OE	SUBMITTED 5-6-2019	DNH	NONE
686	Power Pole	38° 54′ 55.00" N	97° 14′ 37.23" W	1188	1228	2019-ACE-3716-OE	SUBMITTED 5-6-2019	DNH	NONE
687	Power Pole	38° 54′ 55.03" N	97° 14′ 35.05" W	1184	1224	2019-ACE-3717-OE	SUBMITTED 5-6-2019	DNH	NONE
688	Power Pole	38° 54′ 55.02" N	97° 14′ 33.35" W	1181	1236	2019-ACE-3718-OE	SUBMITTED 5-6-2019	DNH	NONE
689	Tower	38° 52′ 49.86" N	97° 12′ 40.81" W	1175	1376	2019-ACE-4579-OE	SUBMITTED 6-5-2019	NPH	INSTALL & MAINTAIN RED OBSTRUCTION LIGHTS
690	Grain Elevator	38° 54′ 51.44" N	97° 13′ 19.19" W	1157	1320	2019-ACE-4580-OE	SUBMITTED 6-5-2019	DNH	MAINTAIN RED OBSTRUCTION LIGHTS
691	Grain Elevator	38° 55′ 0.30" N	97° 12′ 38.78" W	1152	1375	2019-ACE-4581-OE	SUBMITTED 6-5-2019	DNH	MAINTAIN RED OBSTRUCTION LIGHTS
692	Water Tower	38° 55′ 7.02" N	97° 14′ 29.80" W	1200	1345	2019-ACE-4582-OE	SUBMITTED 6-5-2019	NPH	INSTALL & MAINTAIN RED OBSTRUCTION LIGHTS
718	Building	38° 53′ 27.32" N	97° 13′ 59.96" W	1154	1169	2019-ACE-4249-OE	SUBMITTED 5-23-2019	DNH	NONE
719	Building	38° 53′ 28.81" N	97° 13′ 59.65" W	1152	1175	2019-ACE-4250-OE	SUBMITTED 5-23-2019	DNH	NONE
720	Building	38° 53′ 28.80" N	97° 14′ 0.70" W	1152	1175	2019-ACE-4251-OE	SUBMITTED 5-23-2019	DNH	NONE
721	Building	38° 53′ 29.00" N	97° 14′ 1.80" W	1152	1175	2019-ACE-4252-OE	SUBMITTED 5-23-2019	DNH	NONE
722	Building	38° 53′ 29.92" N	97° 14′ 2.83" W	1152	1175	2019-ACE-4253-OE	SUBMITTED 5-23-2019	DNH	NONE
723	Building	38° 53′ 26.73" N	97° 13′ 59.41" W	1154	1169	2019-ACE-4254-OE	SUBMITTED 5-23-2019	DNH	NONE
724	Tree Mass	38° 53′ 29.85" N	97° 13′ 58.02" W	1151	1196	2019-ACE-4255-OE	SUBMITTED 5-23-2019	DNH	NONE
725	Tree Mass	38° 53′ 29.87" N	97° 14′ 0.99" W	1152	1197	2019-ACE-4256-OE	SUBMITTED 5-23-2019	DNH	NONE
726	Tree Mass	38° 53′ 29.90" N	97° 14′ 4.16" W	1149	1194	2019-ACE-4257-OE	SUBMITTED 5-23-2019	DNH	NONE
727	Tree Mass	38° 53′ 28.02" N	97° 14′ 4.30" W	1148	1193	2019-ACE-4258-OE	SUBMITTED 5-23-2019	DNH	NONE
728	Tree	38° 53′ 26.34" N	97° 13′ 57.71" W	1150	1195	2019-ACE-4259-OE	SUBMITTED 5-23-2019	DNH	NONE
729	Tree	38° 53′ 26.20" N	97° 13′ 58.75" W	1152	1202	2019-ACE-4260-OE	SUBMITTED 5-23-2019	DNH	NONE
730	Tree	38° 53′ 26.43" N	97° 13′ 58.90" W	1153	1203	2019-ACE-4261-OE	SUBMITTED 5-23-2019	DNH	NONE
731	Tree	38° 53′ 26.27" N	97° 13′ 59.68" W	1152	1202	2019-ACE-4262-OE	SUBMITTED 5-23-2019	DNH	NONE
732	Tree	38° 53′ 26.42" N	97° 14′ 0.21" W	1151	1201	2019-ACE-4263-OE	SUBMITTED 5-23-2019	DNH	NONE
733	Tree	38° 53′ 27.33" N	97° 13′ 59.22" W	1153	1203	2019-ACE-4264-OE	SUBMITTED 5-23-2019	DNH	NONE
734	Tree	38° 53′ 27.44" N	97° 14′ 0.14" W	1151	1201	2019-ACE-4265-OE	SUBMITTED 5-23-2019	DNH	NONE
736	Building	38° 54′ 37.05" N	97° 13′ 59.81" W	1152	14	2019-ACE-4268-OE	SUBMITTED 5-23-2019	DNH	NONE
745	Tree	38° 54′ 34.05" N	97° 13′ 59.47" W	1150	48	2019-ACE-4277-OE	SUBMITTED 5-23-2019	DNH	NONE
760	Tree	38° 54′ 33.18" N	97° 13′ 58.32" W	1152	44	2019-ACE-4292-OE	SUBMITTED 5-23-2019	DNH	NONE

Point #	Structure	Latitude	Longitude	Ground Elevation	Object Height	Study Number	Submitted	Determination	Proposed Disposition
816	Building	38° 53′ 33.28" N	97° 13′ 40.54" W	1155	24	2019-ACE-4363-OE	SUBMITTED 5-24-2019	DNH	NONE
817	Building	38° 53′ 34.03" N	97° 13′ 40.55" W	1155	24	2019-ACE-4364-OE	SUBMITTED 5-24-2019	DNH	NONE
818	Silo	38° 53′ 34.28" N	97° 13′ 40.85" W	1154	26	2019-ACE-4365-OE	SUBMITTED 5-24-2019	DNH	NONE
819	Windmill	38° 53′ 34.39" N	97° 13′ 42.14" W	1153	40	2019-ACE-4366-OE	SUBMITTED 5-24-2019	DNH	NONE
820	Building	38° 53′ 32.12" N	97° 13′ 42.17" W	1155	22	2019-ACE-4367-OE	SUBMITTED 5-24-2019	DNH	NONE
821	Building	38° 53′ 32.38" N	97° 13′ 41.57" W	1155	22	2019-ACE-4368-OE	SUBMITTED 5-24-2019	DNH	NONE
822	Building	38° 53′ 32.55" N	97° 13′ 41.22" W	1155	20	2019-ACE-4369-OE	SUBMITTED 5-24-2019	DNH	NONE
823	Building	38° 53′ 32.88" N	97° 13′ 41.00" W	1155	20	2019-ACE-4370-OE	SUBMITTED 5-24-2019	DNH	NONE
824	Building	38° 53′ 32.23" N	97° 13′ 40.12" W	1156	18	2019-ACE-4371-OE	SUBMITTED 5-24-2019	DNH	NONE
825	Building	38° 53′ 31.64" N	97° 13′ 40.08" W	1156	18	2019-ACE-4372-OE	SUBMITTED 5-24-2019	DNH	NONE
826	Building	38° 53′ 32.59" N	97° 13′ 39.23" W	1156	14	2019-ACE-4373-OE	SUBMITTED 5-24-2019	DNH	NONE
827	Building	38° 53′ 32.63" N	97° 13′ 37.97" W	1156	14	2019-ACE-4374-OE	SUBMITTED 5-24-2019	DNH	NONE
828	Tree	38° 53′ 32.65" N	97° 13′ 39.82" W	1153	30	2019-ACE-4375-OE	SUBMITTED 5-24-2019	DNH	NONE
829	Tree	38° 53′ 31.69" N	97° 13′ 38.86" W	1151	28	2019-ACE-4376-OE	SUBMITTED 5-24-2019	DNH	NONE
830	Tree	38° 53′ 31.68" N	97° 13′ 38.41" W	1151	27	2019-ACE-4377-OE	SUBMITTED 5-24-2019	DNH	NONE
831	Tree	38° 53′ 31.71" N	97° 13′ 37.18" W	1151	25	2019-ACE-4378-OE	SUBMITTED 5-24-2019	DNH	NONE
832	Tree	38° 53′ 31.70" N	97° 13′ 36.61" W	1151	25	2019-ACE-4379-OE	SUBMITTED 5-24-2019	DNH	NONE
833	Tree	38° 53′ 31.74" N	97° 13′ 36.00" W	1150	26	2019-ACE-4380-OE	SUBMITTED 5-24-2019	DNH	NONE
834	Tree	38° 53′ 32.21" N	97° 13′ 36.08" W	1150	25	2019-ACE-4381-OE	SUBMITTED 5-24-2019	DNH	NONE
835	Tree	38° 53′ 32.54" N	97° 13′ 36.16" W	1151	25	2019-ACE-4382-OE	SUBMITTED 5-24-2019	DNH	NONE
836	Tree	38° 53′ 32.93" N	97° 13′ 36.07" W	1151	21	2019-ACE-4383-OE	SUBMITTED 5-24-2019	DNH	NONE
837	Tree	38° 53′ 33.06" N	97° 13′ 37.16" W	1151	24	2019-ACE-4384-OE	SUBMITTED 5-24-2019	DNH	NONE
838	Tree	38° 53′ 32.65" N	97° 13′ 37.66" W	1153	31	2019-ACE-4385-OE	SUBMITTED 5-24-2019	DNH	NONE
839	Tree	38° 53′ 33.05" N	97° 13′ 38.36" W	1153	29	2019-ACE-4386-OE	SUBMITTED 5-24-2019	DNH	NONE
840	Tree	38° 53′ 32.98" N	97° 13′ 39.56" W	1155	29	2019-ACE-4387-OE	SUBMITTED 5-24-2019	DNH	NONE
841	Tree	38° 53′ 33.44" N	97° 13′ 39.95" W	1154	45	2019-ACE-4388-OE	SUBMITTED 5-24-2019	DNH	NONE
842	Tree	38° 53′ 33.62" N	97° 13′ 39.65" W	1154	20	2019-ACE-4389-OE	SUBMITTED 5-24-2019	DNH	NONE
845	Tree	38° 53′ 34.30" N	97° 13′ 39.97" W	1155	33	2019-ACE-4392-OE	SUBMITTED 5-24-2019	DNH	NONE
848	Tree	38° 53′ 34.23" N	97° 13′ 43.49" W	1152	29	2019-ACE-4395-OE	SUBMITTED 5-24-2019	DNH	NONE
849	Tree	38° 53′ 33.22" N	97° 13′ 43.47" W	1153	40	2019-ACE-4396-OE	SUBMITTED 5-24-2019	DNH	NONE
850	Tree	38° 53′ 33.97" N	97° 13′ 41.59" W	1154	27	2019-ACE-4397-OE	SUBMITTED 5-24-2019	DNH	NONE
851	Tree	38° 53′ 33.05" N	97° 13′ 42.18" W	1152	28	2019-ACE-4398-OE	SUBMITTED 5-24-2019	DNH	NONE
852	Tree	38° 53′ 32.10" N	97° 13′ 41.17" W	1155	53	2019-ACE-4399-OE	SUBMITTED 5-24-2019	DNH	NONE
853	Tree	38° 54′ 25.75" N	97° 15′ 5.93" W	1152	39	2019-ACE-4752-OE	SUBMITTED 6-11-2019	DNH	NONE
854	Tree	38° 54′ 26.23" N	97° 15′ 3.18" W	1152	43	2019-ACE-4753-OE	SUBMITTED 6-11-2019	DNH	NONE
855	Tree	38° 54′ 26.68" N	97° 15′ 1.72" W	1152	45	2019-ACE-4754-OE	SUBMITTED 6-11-2019	DNH	NONE
856	Tree	38° 54′ 27.15" N	97° 15′ 0.32" W	1152	39	2019-ACE-4755-OE	SUBMITTED 6-11-2019	DNH	NONE
857	Tree	38° 54′ 27.61" N	97° 14′ 58.74" W	1152	40	2019-ACE-4756-OE	SUBMITTED 6-11-2019	DNH	NONE
858	Tree	38° 54′ 27.82" N	97° 14′ 58.00" W	1153	51	2019-ACE-4757-OE	SUBMITTED 6-11-2019	DNH	NONE
859	Tree	38° 54′ 28.21" N	97° 14′ 56.27" W	1154	49	2019-ACE-4758-OE	SUBMITTED 6-11-2019	DNH	NONE
860	Tree	38° 54′ 28.81" N	97° 14′ 54.62" W	1154	53	2019-ACE-4759-OE	SUBMITTED 6-11-2019	DNH	NONE
861	Tree	38° 54′ 29.01" N	97° 14′ 53.82" W	1155	50	2019-ACE-4760-OE	SUBMITTED 6-11-2019	DNH	NONE
862	Tree	38° 54′ 29.54" N	97° 14′ 52.04" W	1155	53	2019-ACE-4761-OE	SUBMITTED 6-11-2019	DNH	NONE
863	Tree	38° 54′ 30.05" N	97° 14′ 50.08" W	1155	62	2019-ACE-4762-OE	SUBMITTED 6-11-2019	DNH	NONE
864	Tree	38° 54′ 30.64" N	97° 14′ 47.94" W	1155	58	2019-ACE-4763-OE	SUBMITTED 6-11-2019	NPH	NONE **
865	Tree	38° 54′ 30.98" N	97° 14′ 46.42" W	1155	51	2019-ACE-4764-OE	SUBMITTED 6-11-2019	NPH	NONE **
866	Tree	38° 54′ 31.62" N	97° 14′ 44.27" W	1155	55	2019-ACE-4765-OE	SUBMITTED 6-11-2019	NPH	NONE **
867	Tree	38° 54′ 32.15" N	97° 14′ 42.56" W	1155	46	2019-ACE-4766-OE	SUBMITTED 6-11-2019	NPH	NONE **
868	Tree	38° 54′ 32.57" N	97° 14′ 40.89" W	1155	53	2019-ACE-4767-OE	SUBMITTED 6-11-2019	NPH	NONE **

**NO ACTION REQUIRED UNLESS A CROSSWIND RUNWAY IS CONSTRUCTED

LEGEND
DNH - DETERMINATION OF NO HAZARD
NPH - NOTICE OF PRESUMED HAZARD

NO.	REVISIONS	DATE

ALP
PLAN UPDATE
JULY 15, 2020

OBSTRUCTION DATA 12

AIRPORT LAYOUT PLAN UPDATE

ABILENE MUNICIPAL AIRPORT

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DESIGNED BY: ——
DRAWN BY: ——
REVIEWED BY: ——
QUANTITIES CHECKED BY: ——

PROJECT
ALP UPDATE

DATE
JULY 15, 2020

SHEET NO.
38 of 38

[File Location: Y:\manhattan\130400S\130492.00_abilene_master_plan\Eng_Docs\Sheets\01 - Airport Layout Plan (ALP)\130492.00 OBSTRUCTIONS DATA.dwg] [Last Saved: 5/5/2020 2:47:25 PM] [Plot Date: 7/13/2020 9:31:28 PM]

APPENDIX N

GRANT ASSURANCES - AIRPORT SPONSORS

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FAA
Airports

ASSURANCES

Airport Sponsors

A. General.

1. These assurances shall be complied with in the performance of grant agreements for airport development, airport planning, and noise compatibility program grants for airport sponsors.
2. These assurances are required to be submitted as part of the project application by sponsors requesting funds under the provisions of Title 49, U.S.C., subtitle VII, as amended. As used herein, the term "public agency sponsor" means a public agency with control of a public-use airport; the term "private sponsor" means a private owner of a public-use airport; and the term "sponsor" includes both public agency sponsors and private sponsors.
3. Upon acceptance of this grant offer by the sponsor, these assurances are incorporated in and become part of this grant agreement.

B. Duration and Applicability.

1. **Airport development or Noise Compatibility Program Projects Undertaken by a Public Agency Sponsor.**

   The terms, conditions and assurances of this grant agreement shall remain in full force and effect throughout the useful life of the facilities developed or equipment acquired for an airport development or noise compatibility program project, or throughout the useful life of the project items installed within a facility under a noise compatibility program project, but in any event not to exceed twenty (20) years from the date of acceptance of a grant offer of Federal funds for the project. However, there shall be no limit on the duration of the assurances regarding Exclusive Rights and Airport Revenue so long as the airport is used as an airport. There shall be no limit on the duration of the terms, conditions, and assurances with respect to real property acquired with federal funds. Furthermore, the duration of the Civil Rights assurance shall be specified in the assurances.

2. **Airport Development or Noise Compatibility Projects Undertaken by a Private Sponsor.**

   The preceding paragraph 1 also applies to a private sponsor except that the useful life of project items installed within a facility or the useful life of the facilities developed or equipment acquired under an airport development or noise compatibility program project shall be no less than ten (10) years from the date of acceptance of Federal aid for the project.

3. **Airport Planning Undertaken by a Sponsor.**

Unless otherwise specified in this grant agreement, only Assurances 1, 2, 3, 5, 6, 13, 18, 25, 30, 32, 33, and 34 in Section C apply to planning projects. The terms, conditions, and assurances of this grant agreement shall remain in full force and effect during the life of the project; there shall be no limit on the duration of the assurances regarding Airport Revenue so long as the airport is used as an airport.

C. Sponsor Certification.

The sponsor hereby assures and certifies, with respect to this grant that:

1. **General Federal Requirements.**

It will comply with all applicable Federal laws, regulations, executive orders, policies, guidelines, and requirements as they relate to the application, acceptance and use of Federal funds for this project including but not limited to the following:

Federal Legislation

a. Title 49, U.S.C., subtitle VII, as amended.
b. Davis-Bacon Act - 40 U.S.C. 276(a), et seq.[1]
c. Federal Fair Labor Standards Act - 29 U.S.C. 201, et seq.
d. Hatch Act – 5 U.S.C. 1501, et seq.[2]
e. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 Title 42 U.S.C. 4601, et seq.[1 2]
f. National Historic Preservation Act of 1966 - Section 106 - 16 U.S.C. 470(f).[1]
g. Archeological and Historic Preservation Act of 1974 - 16 U.S.C. 469 through 469c.[1]
h. Native Americans Grave Repatriation Act - 25 U.S.C. Section 3001, et seq.
i. Clean Air Act, P.L. 90-148, as amended.
j. Coastal Zone Management Act, P.L. 93-205, as amended.
k. Flood Disaster Protection Act of 1973 - Section 102(a) - 42 U.S.C. 4012a.[1]
l. Title 49, U.S.C., Section 303, (formerly known as Section 4(f))
m. Rehabilitation Act of 1973 - 29 U.S.C. 794.
n. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
o. Americans with Disabilities Act of 1990, as amended, (42 U.S.C. § 12101 et seq.), prohibits discrimination on the basis of disability).
p. Age Discrimination Act of 1975 - 42 U.S.C. 6101, et seq.
q. American Indian Religious Freedom Act, P.L. 95-341, as amended.
r. Architectural Barriers Act of 1968 -42 U.S.C. 4151, et seq.[1]
s. Power plant and Industrial Fuel Use Act of 1978 - Section 403- 2 U.S.C. 8373.[1]
t. Contract Work Hours and Safety Standards Act - 40 U.S.C. 327, et seq.[1]
u. Copeland Anti-kickback Act - 18 U.S.C. 874.1
v. National Environmental Policy Act of 1969 - 42 U.S.C. 4321, et seq.[1]
w. Wild and Scenic Rivers Act, P.L. 90-542, as amended.
x. Single Audit Act of 1984 - 31 U.S.C. 7501, et seq.[2]
y. Drug-Free Workplace Act of 1988 - 41 U.S.C. 702 through 706.

z. The Federal Funding Accountability and Transparency Act of 2006, as amended (Pub. L. 109-282, as amended by section 6202 of Pub. L. 110-252).

Executive Orders

a. Executive Order 11246 - Equal Employment Opportunity[1]
b. Executive Order 11990 - Protection of Wetlands
c. Executive Order 11998 – Flood Plain Management
d. Executive Order 12372 - Intergovernmental Review of Federal Programs
e. Executive Order 12699 - Seismic Safety of Federal and Federally Assisted New Building Construction[1]
f. Executive Order 12898 - Environmental Justice

Federal Regulations

a. 2 CFR Part 180 - OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement).
b. 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. [OMB Circular A-87 Cost Principles Applicable to Grants and Contracts with State and Local Governments, and OMB Circular A-133 - Audits of States, Local Governments, and Non-Profit Organizations].[4, 5, 6]
c. 2 CFR Part 1200 – Nonprocurement Suspension and Debarment
d. 14 CFR Part 13 - Investigative and Enforcement Procedures14 CFR Part 16 - Rules of Practice For Federally Assisted Airport Enforcement Proceedings.
e. 14 CFR Part 150 - Airport noise compatibility planning.
f. 28 CFR Part 35- Discrimination on the Basis of Disability in State and Local Government Services.
g. 28 CFR § 50.3 - U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964.
h. 29 CFR Part 1 - Procedures for predetermination of wage rates.[1]
i. 29 CFR Part 3 - Contractors and subcontractors on public building or public work financed in whole or part by loans or grants from the United States.[1]
j. 29 CFR Part 5 - Labor standards provisions applicable to contracts covering federally financed and assisted construction (also labor standards provisions applicable to non-construction contracts subject to the Contract Work Hours and Safety Standards Act).[1]
k. 41 CFR Part 60 - Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor (Federal and federally assisted contracting requirements).[1]
l. 49 CFR Part 18 - Uniform administrative requirements for grants and cooperative agreements to state and local governments.[3]
m. 49 CFR Part 20 - New restrictions on lobbying.
n. 49 CFR Part 21 – Nondiscrimination in federally-assisted programs of the Department of Transportation - effectuation of Title VI of the Civil Rights Act of 1964.
o. 49 CFR Part 23 - Participation by Disadvantage Business Enterprise in Airport Concessions.

p. 49 CFR Part 24 – Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs.[1] [2]
q. 49 CFR Part 26 – Participation by Disadvantaged Business Enterprises in Department of Transportation Programs.
r. 49 CFR Part 27 – Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance.[1]
s. 49 CFR Part 28 – Enforcement of Nondiscrimination on the Basis of Handicap in Programs or Activities conducted by the Department of Transportation.
t. 49 CFR Part 30 - Denial of public works contracts to suppliers of goods and services of countries that deny procurement market access to U.S. contractors.
u. 49 CFR Part 32 – Governmentwide Requirements for Drug-Free Workplace (Financial Assistance)
v. 49 CFR Part 37 – Transportation Services for Individuals with Disabilities (ADA).
w. 49 CFR Part 41 - Seismic safety of Federal and federally assisted or regulated new building construction.

Specific Assurances

Specific assurances required to be included in grant agreements by any of the above laws, regulations or circulars are incorporated by reference in this grant agreement.

Footnotes to Assurance C.1.

[1] These laws do not apply to airport planning sponsors.

[2] These laws do not apply to private sponsors.

[3] 49 CFR Part 18 and 2 CFR Part 200 contain requirements for State and Local Governments receiving Federal assistance. Any requirement levied upon State and Local Governments by this regulation and circular shall also be applicable to private sponsors receiving Federal assistance under Title 49, United States Code.

[4] On December 26, 2013 at 78 FR 78590, the Office of Management and Budget (OMB) issued the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards in 2 CFR Part 200. 2 CFR Part 200 replaces and combines the former Uniform Administrative Requirements for Grants (OMB Circular A-102 and Circular A-110 or 2 CFR Part 215 or Circular) as well as the Cost Principles (Circulars A-21 or 2 CFR part 220; Circular A-87 or 2 CFR part 225; and A-122, 2 CFR part 230). Additionally it replaces Circular A-133 guidance on the Single Annual Audit. In accordance with 2 CFR section 200.110, the standards set forth in Part 200 which affect administration of Federal awards issued by Federal agencies become effective once implemented by Federal agencies or when any future amendment to this Part becomes final. Federal agencies, including the Department of Transportation, must implement the policies and procedures applicable to Federal awards by promulgating a regulation to be effective by December 26, 2014 unless different provisions are required by statute or approved by OMB.

[5] Cost principles established in 2 CFR part 200 subpart E must be used as guidelines for determining the eligibility of specific types of expenses.

[6] Audit requirements established in 2 CFR part 200 subpart F are the guidelines for audits.

2. **Responsibility and Authority of the Sponsor.**

   a. Public Agency Sponsor:

   It has legal authority to apply for this grant, and to finance and carry out the proposed project; that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing body authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

   b. Private Sponsor:

   It has legal authority to apply for this grant and to finance and carry out the proposed project and comply with all terms, conditions, and assurances of this grant agreement. It shall designate an official representative and shall in writing direct and authorize that person to file this application, including all understandings and assurances contained therein; to act in connection with this application; and to provide such additional information as may be required.

3. **Sponsor Fund Availability.**

   It has sufficient funds available for that portion of the project costs which are not to be paid by the United States. It has sufficient funds available to assure operation and maintenance of items funded under this grant agreement which it will own or control.

4. **Good Title.**

   a. It, a public agency or the Federal government, holds good title, satisfactory to the Secretary, to the landing area of the airport or site thereof, or will give assurance satisfactory to the Secretary that good title will be acquired.

   b. For noise compatibility program projects to be carried out on the property of the sponsor, it holds good title satisfactory to the Secretary to that portion of the property upon which Federal funds will be expended or will give assurance to the Secretary that good title will be obtained.

5. **Preserving Rights and Powers.**

   a. It will not take or permit any action which would operate to deprive it of any of the rights and powers necessary to perform any or all of the terms, conditions, and assurances in this grant agreement without the written approval of the Secretary, and will act promptly to acquire, extinguish or modify any outstanding rights or claims of right of others which would interfere with such performance by the sponsor. This shall be done in a manner acceptable to the Secretary.

b. It will not sell, lease, encumber, or otherwise transfer or dispose of any part of its title or other interests in the property shown on Exhibit A to this application or, for a noise compatibility program project, that portion of the property upon which Federal funds have been expended, for the duration of the terms, conditions, and assurances in this grant agreement without approval by the Secretary. If the transferee is found by the Secretary to be eligible under Title 49, United States Code, to assume the obligations of this grant agreement and to have the power, authority, and financial resources to carry out all such obligations, the sponsor shall insert in the contract or document transferring or disposing of the sponsor's interest, and make binding upon the transferee all of the terms, conditions, and assurances contained in this grant agreement.

c. For all noise compatibility program projects which are to be carried out by another unit of local government or are on property owned by a unit of local government other than the sponsor, it will enter into an agreement with that government. Except as otherwise specified by the Secretary, that agreement shall obligate that government to the same terms, conditions, and assurances that would be applicable to it if it applied directly to the FAA for a grant to undertake the noise compatibility program project. That agreement and changes thereto must be satisfactory to the Secretary. It will take steps to enforce this agreement against the local government if there is substantial non-compliance with the terms of the agreement.

d. For noise compatibility program projects to be carried out on privately owned property, it will enter into an agreement with the owner of that property which includes provisions specified by the Secretary. It will take steps to enforce this agreement against the property owner whenever there is substantial non-compliance with the terms of the agreement.

e. If the sponsor is a private sponsor, it will take steps satisfactory to the Secretary to ensure that the airport will continue to function as a public-use airport in accordance with these assurances for the duration of these assurances.

f. If an arrangement is made for management and operation of the airport by any agency or person other than the sponsor or an employee of the sponsor, the sponsor will reserve sufficient rights and authority to insure that the airport will be operated and maintained in accordance Title 49, United States Code, the regulations and the terms, conditions and assurances in this grant agreement and shall insure that such arrangement also requires compliance therewith.

g. Sponsors of commercial service airports will not permit or enter into any arrangement that results in permission for the owner or tenant of a property used as a residence, or zoned for residential use, to taxi an aircraft between that property and any location on airport. Sponsors of general aviation airports entering into any arrangement that results in permission for the owner of residential real property adjacent to or near the airport must comply with the requirements of Sec. 136 of Public Law 112-95 and the sponsor assurances.

6. **Consistency with Local Plans.**

   The project is reasonably consistent with plans (existing at the time of submission of this application) of public agencies that are authorized by the State in which the project is located to plan for the development of the area surrounding the airport.

7. **Consideration of Local Interest.**

   It has given fair consideration to the interest of communities in or near where the project may be located.

8. **Consultation with Users.**

   In making a decision to undertake any airport development project under Title 49, United States Code, it has undertaken reasonable consultations with affected parties using the airport at which project is proposed.

9. **Public Hearings.**

   In projects involving the location of an airport, an airport runway, or a major runway extension, it has afforded the opportunity for public hearings for the purpose of considering the economic, social, and environmental effects of the airport or runway location and its consistency with goals and objectives of such planning as has been carried out by the community and it shall, when requested by the Secretary, submit a copy of the transcript of such hearings to the Secretary. Further, for such projects, it has on its management board either voting representation from the communities where the project is located or has advised the communities that they have the right to petition the Secretary concerning a proposed project.

10. **Metropolitan Planning Organization.**

    In projects involving the location of an airport, an airport runway, or a major runway extension at a medium or large hub airport, the sponsor has made available to and has provided upon request to the metropolitan planning organization in the area in which the airport is located, if any, a copy of the proposed amendment to the airport layout plan to depict the project and a copy of any airport master plan in which the project is described or depicted.

11. **Pavement Preventive Maintenance.**

    With respect to a project approved after January 1, 1995, for the replacement or reconstruction of pavement at the airport, it assures or certifies that it has implemented an effective airport pavement maintenance-management program and it assures that it will use such program for the useful life of any pavement constructed, reconstructed or repaired with Federal financial assistance at the airport. It will provide such reports on pavement condition and pavement management programs as the Secretary determines may be useful.

12. **Terminal Development Prerequisites.**

    For projects which include terminal development at a public use airport, as defined in Title 49, it has, on the date of submittal of the project grant application, all the safety equipment required for certification of such airport under section 44706 of Title 49, United States Code, and all the security equipment required by rule or regulation, and

has provided for access to the passenger enplaning and deplaning area of such airport to passengers enplaning and deplaning from aircraft other than air carrier aircraft.

13. **Accounting System, Audit, and Record Keeping Requirements.**

    a. It shall keep all project accounts and records which fully disclose the amount and disposition by the recipient of the proceeds of this grant, the total cost of the project in connection with which this grant is given or used, and the amount or nature of that portion of the cost of the project supplied by other sources, and such other financial records pertinent to the project. The accounts and records shall be kept in accordance with an accounting system that will facilitate an effective audit in accordance with the Single Audit Act of 1984.

    b. It shall make available to the Secretary and the Comptroller General of the United States, or any of their duly authorized representatives, for the purpose of audit and examination, any books, documents, papers, and records of the recipient that are pertinent to this grant. The Secretary may require that an appropriate audit be conducted by a recipient. In any case in which an independent audit is made of the accounts of a sponsor relating to the disposition of the proceeds of a grant or relating to the project in connection with which this grant was given or used, it shall file a certified copy of such audit with the Comptroller General of the United States not later than six (6) months following the close of the fiscal year for which the audit was made.

14. **Minimum Wage Rates.**

    It shall include, in all contracts in excess of $2,000 for work on any projects funded under this grant agreement which involve labor, provisions establishing minimum rates of wages, to be predetermined by the Secretary of Labor, in accordance with the Davis-Bacon Act, as amended (40 U.S.C. 276a-276a-5), which contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work.

15. **Veteran's Preference.**

    It shall include in all contracts for work on any project funded under this grant agreement which involve labor, such provisions as are necessary to insure that, in the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns owned and controlled by disabled veterans as defined in Section 47112 of Title 49, United States Code. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

16. **Conformity to Plans and Specifications.**

    It will execute the project subject to plans, specifications, and schedules approved by the Secretary. Such plans, specifications, and schedules shall be submitted to the Secretary prior to commencement of site preparation, construction, or other performance under this grant agreement, and, upon approval of the Secretary, shall be incorporated into this grant agreement. Any modification to the approved plans,

specifications, and schedules shall also be subject to approval of the Secretary, and incorporated into this grant agreement.

17. **Construction Inspection and Approval.**

    It will provide and maintain competent technical supervision at the construction site throughout the project to assure that the work conforms to the plans, specifications, and schedules approved by the Secretary for the project. It shall subject the construction work on any project contained in an approved project application to inspection and approval by the Secretary and such work shall be in accordance with regulations and procedures prescribed by the Secretary. Such regulations and procedures shall require such cost and progress reporting by the sponsor or sponsors of such project as the Secretary shall deem necessary.

18. **Planning Projects.**

    In carrying out planning projects:

    a. It will execute the project in accordance with the approved program narrative contained in the project application or with the modifications similarly approved.

    b. It will furnish the Secretary with such periodic reports as required pertaining to the planning project and planning work activities.

    c. It will include in all published material prepared in connection with the planning project a notice that the material was prepared under a grant provided by the United States.

    d. It will make such material available for examination by the public, and agrees that no material prepared with funds under this project shall be subject to copyright in the United States or any other country.

    e. It will give the Secretary unrestricted authority to publish, disclose, distribute, and otherwise use any of the material prepared in connection with this grant.

    f. It will grant the Secretary the right to disapprove the sponsor's employment of specific consultants and their subcontractors to do all or any part of this project as well as the right to disapprove the proposed scope and cost of professional services.

    g. It will grant the Secretary the right to disapprove the use of the sponsor's employees to do all or any part of the project.

    h. It understands and agrees that the Secretary's approval of this project grant or the Secretary's approval of any planning material developed as part of this grant does not constitute or imply any assurance or commitment on the part of the Secretary to approve any pending or future application for a Federal airport grant.

19. **Operation and Maintenance.**

    a. The airport and all facilities which are necessary to serve the aeronautical users of the airport, other than facilities owned or controlled by the United States, shall be operated at all times in a safe and serviceable condition and in accordance with the minimum standards as may be required or prescribed by applicable Federal,

state and local agencies for maintenance and operation. It will not cause or permit any activity or action thereon which would interfere with its use for airport purposes. It will suitably operate and maintain the airport and all facilities thereon or connected therewith, with due regard to climatic and flood conditions. Any proposal to temporarily close the airport for non-aeronautical purposes must first be approved by the Secretary. In furtherance of this assurance, the sponsor will have in effect arrangements for-

1) Operating the airport's aeronautical facilities whenever required;
2) Promptly marking and lighting hazards resulting from airport conditions, including temporary conditions; and
3) Promptly notifying airmen of any condition affecting aeronautical use of the airport. Nothing contained herein shall be construed to require that the airport be operated for aeronautical use during temporary periods when snow, flood or other climatic conditions interfere with such operation and maintenance. Further, nothing herein shall be construed as requiring the maintenance, repair, restoration, or replacement of any structure or facility which is substantially damaged or destroyed due to an act of God or other condition or circumstance beyond the control of the sponsor.

b. It will suitably operate and maintain noise compatibility program items that it owns or controls upon which Federal funds have been expended.

20. **Hazard Removal and Mitigation.**

It will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

21. **Compatible Land Use.**

It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

22. **Economic Nondiscrimination.**

a. It will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.

b. In any agreement, contract, lease, or other arrangement under which a right or privilege at the airport is granted to any person, firm, or corporation to conduct or

to engage in any aeronautical activity for furnishing services to the public at the airport, the sponsor will insert and enforce provisions requiring the contractor to-

1) furnish said services on a reasonable, and not unjustly discriminatory, basis to all users thereof, and

2) charge reasonable, and not unjustly discriminatory, prices for each unit or service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.

c. Each fixed-based operator at the airport shall be subject to the same rates, fees, rentals, and other charges as are uniformly applicable to all other fixed-based operators making the same or similar uses of such airport and utilizing the same or similar facilities.

d. Each air carrier using such airport shall have the right to service itself or to use any fixed-based operator that is authorized or permitted by the airport to serve any air carrier at such airport.

e. Each air carrier using such airport (whether as a tenant, non-tenant, or subtenant of another air carrier tenant) shall be subject to such nondiscriminatory and substantially comparable rules, regulations, conditions, rates, fees, rentals, and other charges with respect to facilities directly and substantially related to providing air transportation as are applicable to all such air carriers which make similar use of such airport and utilize similar facilities, subject to reasonable classifications such as tenants or non-tenants and signatory carriers and non-signatory carriers. Classification or status as tenant or signatory shall not be unreasonably withheld by any airport provided an air carrier assumes obligations substantially similar to those already imposed on air carriers in such classification or status.

f. It will not exercise or grant any right or privilege which operates to prevent any person, firm, or corporation operating aircraft on the airport from performing any services on its own aircraft with its own employees [including, but not limited to maintenance, repair, and fueling] that it may choose to perform.

g. In the event the sponsor itself exercises any of the rights and privileges referred to in this assurance, the services involved will be provided on the same conditions as would apply to the furnishing of such services by commercial aeronautical service providers authorized by the sponsor under these provisions.

h. The sponsor may establish such reasonable, and not unjustly discriminatory, conditions to be met by all users of the airport as may be necessary for the safe and efficient operation of the airport.

i. The sponsor may prohibit or limit any given type, kind or class of aeronautical use of the airport if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public.

23. **Exclusive Rights.**

It will permit no exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. For purposes of this paragraph, the providing of the services at an airport by a single fixed-based operator shall not be construed as an exclusive right if both of the following apply:

a. It would be unreasonably costly, burdensome, or impractical for more than one fixed-based operator to provide such services, and

b. If allowing more than one fixed-based operator to provide such services would require the reduction of space leased pursuant to an existing agreement between such single fixed-based operator and such airport. It further agrees that it will not, either directly or indirectly, grant or permit any person, firm, or corporation, the exclusive right at the airport to conduct any aeronautical activities, including, but not limited to charter flights, pilot training, aircraft rental and sightseeing, aerial photography, crop dusting, aerial advertising and surveying, air carrier operations, aircraft sales and services, sale of aviation petroleum products whether or not conducted in conjunction with other aeronautical activity, repair and maintenance of aircraft, sale of aircraft parts, and any other activities which because of their direct relationship to the operation of aircraft can be regarded as an aeronautical activity, and that it will terminate any exclusive right to conduct an aeronautical activity now existing at such an airport before the grant of any assistance under Title 49, United States Code.

24. **Fee and Rental Structure.**

It will maintain a fee and rental structure for the facilities and services at the airport which will make the airport as self-sustaining as possible under the circumstances existing at the particular airport, taking into account such factors as the volume of traffic and economy of collection. No part of the Federal share of an airport development, airport planning or noise compatibility project for which a grant is made under Title 49, United States Code, the Airport and Airway Improvement Act of 1982, the Federal Airport Act or the Airport and Airway Development Act of 1970 shall be included in the rate basis in establishing fees, rates, and charges for users of that airport.

25. **Airport Revenues.**

a. All revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport. The following exceptions apply to this paragraph:

1) If covenants or assurances in debt obligations issued before September 3, 1982, by the owner or operator of the airport, or provisions enacted before September 3, 1982, in governing statutes controlling the owner or operator's financing, provide for the use of the revenues from any of the airport owner or

operator's facilities, including the airport, to support not only the airport but also the airport owner or operator's general debt obligations or other facilities, then this limitation on the use of all revenues generated by the airport (and, in the case of a public airport, local taxes on aviation fuel) shall not apply.

2) If the Secretary approves the sale of a privately owned airport to a public sponsor and provides funding for any portion of the public sponsor's acquisition of land, this limitation on the use of all revenues generated by the sale shall not apply to certain proceeds from the sale. This is conditioned on repayment to the Secretary by the private owner of an amount equal to the remaining unamortized portion (amortized over a 20-year period) of any airport improvement grant made to the private owner for any purpose other than land acquisition on or after October 1, 1996, plus an amount equal to the federal share of the current fair market value of any land acquired with an airport improvement grant made to that airport on or after October 1, 1996.

3) Certain revenue derived from or generated by mineral extraction, production, lease, or other means at a general aviation airport (as defined at Section 47102 of title 49 United States Code), if the FAA determines the airport sponsor meets the requirements set forth in Sec. 813 of Public Law 112-95.

b. As part of the annual audit required under the Single Audit Act of 1984, the sponsor will direct that the audit will review, and the resulting audit report will provide an opinion concerning, the use of airport revenue and taxes in paragraph (a), and indicating whether funds paid or transferred to the owner or operator are paid or transferred in a manner consistent with Title 49, United States Code and any other applicable provision of law, including any regulation promulgated by the Secretary or Administrator.

c. Any civil penalties or other sanctions will be imposed for violation of this assurance in accordance with the provisions of Section 47107 of Title 49, United States Code.

26. **Reports and Inspections.**

It will:

a. submit to the Secretary such annual or special financial and operations reports as the Secretary may reasonably request and make such reports available to the public; make available to the public at reasonable times and places a report of the airport budget in a format prescribed by the Secretary;

b. for airport development projects, make the airport and all airport records and documents affecting the airport, including deeds, leases, operation and use agreements, regulations and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request;

c. for noise compatibility program projects, make records and documents relating to the project and continued compliance with the terms, conditions, and assurances of this grant agreement including deeds, leases, agreements, regulations, and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request; and

d. in a format and time prescribed by the Secretary, provide to the Secretary and make available to the public following each of its fiscal years, an annual report listing in detail:

1) all amounts paid by the airport to any other unit of government and the purposes for which each such payment was made; and

2) all services and property provided by the airport to other units of government and the amount of compensation received for provision of each such service and property.

27. **Use by Government Aircraft.**

It will make available all of the facilities of the airport developed with Federal financial assistance and all those usable for landing and takeoff of aircraft to the United States for use by Government aircraft in common with other aircraft at all times without charge, except, if the use by Government aircraft is substantial, charge may be made for a reasonable share, proportional to such use, for the cost of operating and maintaining the facilities used. Unless otherwise determined by the Secretary, or otherwise agreed to by the sponsor and the using agency, substantial use of an airport by Government aircraft will be considered to exist when operations of such aircraft are in excess of those which, in the opinion of the Secretary, would unduly interfere with use of the landing areas by other authorized aircraft, or during any calendar month that –

a. Five (5) or more Government aircraft are regularly based at the airport or on land adjacent thereto; or

b. The total number of movements (counting each landing as a movement) of Government aircraft is 300 or more, or the gross accumulative weight of Government aircraft using the airport (the total movement of Government aircraft multiplied by gross weights of such aircraft) is in excess of five million pounds.

28. **Land for Federal Facilities.**

It will furnish without cost to the Federal Government for use in connection with any air traffic control or air navigation activities, or weather-reporting and communication activities related to air traffic control, any areas of land or water, or estate therein, or rights in buildings of the sponsor as the Secretary considers necessary or desirable for construction, operation, and maintenance at Federal expense of space or facilities for such purposes. Such areas or any portion thereof will be made available as provided herein within four months after receipt of a written request from the Secretary.

29. **Airport Layout Plan.**

a. It will keep up to date at all times an airport layout plan of the airport showing

1) boundaries of the airport and all proposed additions thereto, together with the boundaries of all offsite areas owned or controlled by the sponsor for airport purposes and proposed additions thereto;

2) the location and nature of all existing and proposed airport facilities and structures (such as runways, taxiways, aprons, terminal buildings, hangars and

roads), including all proposed extensions and reductions of existing airport facilities;

3) the location of all existing and proposed nonaviation areas and of all existing improvements thereon; and

4) all proposed and existing access points used to taxi aircraft across the airport's property boundary. Such airport layout plans and each amendment, revision, or modification thereof, shall be subject to the approval of the Secretary which approval shall be evidenced by the signature of a duly authorized representative of the Secretary on the face of the airport layout plan. The sponsor will not make or permit any changes or alterations in the airport or any of its facilities which are not in conformity with the airport layout plan as approved by the Secretary and which might, in the opinion of the Secretary, adversely affect the safety, utility or efficiency of the airport.

b. If a change or alteration in the airport or the facilities is made which the Secretary determines adversely affects the safety, utility, or efficiency of any federally owned, leased, or funded property on or off the airport and which is not in conformity with the airport layout plan as approved by the Secretary, the owner or operator will, if requested, by the Secretary (1) eliminate such adverse effect in a manner approved by the Secretary; or (2) bear all costs of relocating such property (or replacement thereof) to a site acceptable to the Secretary and all costs of restoring such property (or replacement thereof) to the level of safety, utility, efficiency, and cost of operation existing before the unapproved change in the airport or its facilities except in the case of a relocation or replacement of an existing airport facility due to a change in the Secretary's design standards beyond the control of the airport sponsor.

30. **Civil Rights.**

It will promptly take any measures necessary to ensure that no person in the United States shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in any activity conducted with, or benefiting from, funds received from this grant.

a. Using the definitions of activity, facility and program as found and defined in §§ 21.23 (b) and 21.23 (e) of 49 CFR § 21, the sponsor will facilitate all programs, operate all facilities, or conduct all programs in compliance with all non-discrimination requirements imposed by, or pursuant to these assurances.

b. Applicability

1) Programs and Activities. If the sponsor has received a grant (or other federal assistance) for any of the sponsor's program or activities, these requirements extend to all of the sponsor's programs and activities.

2) Facilities. Where it receives a grant or other federal financial assistance to construct, expand, renovate, remodel, alter or acquire a facility, or part of a facility, the assurance extends to the entire facility and facilities operated in connection therewith.

3) Real Property. Where the sponsor receives a grant or other Federal financial assistance in the form of, or for the acquisition of real property or an interest in real property, the assurance will extend to rights to space on, over, or under such property.

c. Duration.

The sponsor agrees that it is obligated to this assurance for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the assurance obligates the sponsor, or any transferee for the longer of the following periods:

1) So long as the airport is used as an airport, or for another purpose involving the provision of similar services or benefits; or

2) So long as the sponsor retains ownership or possession of the property.

d. Required Solicitation Language. It will include the following notification in all solicitations for bids, Requests For Proposals for work, or material under this grant agreement and in all proposals for agreements, including airport concessions, regardless of funding source:

"The **(Name of Sponsor)**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises and airport concession disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."

e. Required Contract Provisions.

1) It will insert the non-discrimination contract clauses requiring compliance with the acts and regulations relative to non-discrimination in Federally-assisted programs of the DOT, and incorporating the acts and regulations into the contracts by reference in every contract or agreement subject to the non-discrimination in Federally-assisted programs of the DOT acts and regulations.

2) It will include a list of the pertinent non-discrimination authorities in every contract that is subject to the non-discrimination acts and regulations.

3) It will insert non-discrimination contract clauses as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a sponsor.

4) It will insert non-discrimination contract clauses prohibiting discrimination on the basis of race, color, national origin, creed, sex, age, or handicap as a

covenant running with the land, in any future deeds, leases, license, permits, or similar instruments entered into by the sponsor with other parties:

a) For the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and

b) For the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

f. It will provide for such methods of administration for the program as are found by the Secretary to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the acts, the regulations, and this assurance.

g. It agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the acts, the regulations, and this assurance.

31. **Disposal of Land.**

a. For land purchased under a grant for airport noise compatibility purposes, including land serving as a noise buffer, it will dispose of the land, when the land is no longer needed for such purposes, at fair market value, at the earliest practicable time. That portion of the proceeds of such disposition which is proportionate to the United States' share of acquisition of such land will be, at the discretion of the Secretary, (1) reinvested in another project at the airport, or (2) transferred to another eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order, (1) reinvestment in an approved noise compatibility project, (2) reinvestment in an approved project that is eligible for grant funding under Section 47117(e) of title 49 United States Code, (3) reinvestment in an approved airport development project that is eligible for grant funding under Sections 47114, 47115, or 47117 of title 49 United States Code, (4) transferred to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport, and (5) paid to the Secretary for deposit in the Airport and Airway Trust Fund. If land acquired under a grant for noise compatibility purposes is leased at fair market value and consistent with noise buffering purposes, the lease will not be considered a disposal of the land. Revenues derived from such a lease may be used for an approved airport development project that would otherwise be eligible for grant funding or any permitted use of airport revenue.

b. For land purchased under a grant for airport development purposes (other than noise compatibility), it will, when the land is no longer needed for airport purposes, dispose of such land at fair market value or make available to the Secretary an amount equal to the United States' proportionate share of the fair market value of the land. That portion of the proceeds of such disposition which is proportionate to the United States' share of the cost of acquisition of such land will, (1) upon application to the Secretary, be reinvested or transferred to another

eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order: (1) reinvestment in an approved noise compatibility project, (2) reinvestment in an approved project that is eligible for grant funding under Section 47117(e) of title 49 United States Code, (3) reinvestment in an approved airport development project that is eligible for grant funding under Sections 47114, 47115, or 47117 of title 49 United States Code, (4) transferred to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport, and (5) paid to the Secretary for deposit in the Airport and Airway Trust Fund.

c. Land shall be considered to be needed for airport purposes under this assurance if (1) it may be needed for aeronautical purposes (including runway protection zones) or serve as noise buffer land, and (2) the revenue from interim uses of such land contributes to the financial self-sufficiency of the airport. Further, land purchased with a grant received by an airport operator or owner before December 31, 1987, will be considered to be needed for airport purposes if the Secretary or Federal agency making such grant before December 31, 1987, was notified by the operator or owner of the uses of such land, did not object to such use, and the land continues to be used for that purpose, such use having commenced no later than December 15, 1989.

d. Disposition of such land under (a) (b) or (c) will be subject to the retention or reservation of any interest or right therein necessary to ensure that such land will only be used for purposes which are compatible with noise levels associated with operation of the airport.

32. **Engineering and Design Services.**

It will award each contract, or sub-contract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design, engineering, surveying, mapping or related services with respect to the project in the same manner as a contract for architectural and engineering services is negotiated under Title IX of the Federal Property and Administrative Services Act of 1949 or an equivalent qualifications-based requirement prescribed for or by the sponsor of the airport.

33. **Foreign Market Restrictions.**

It will not allow funds provided under this grant to be used to fund any project which uses any product or service of a foreign country during the period in which such foreign country is listed by the United States Trade Representative as denying fair and equitable market opportunities for products and suppliers of the United States in procurement and construction.

34. **Policies, Standards, and Specifications.**

It will carry out the project in accordance with policies, standards, and specifications approved by the Secretary including but not limited to the advisory circulars listed in the Current FAA Advisory Circulars for AIP projects, dated _____ (the latest approved version as of this grant offer) and included in this grant, and in accordance

with applicable state policies, standards, and specifications approved by the Secretary.

35. **Relocation and Real Property Acquisition.**

    a. It will be guided in acquiring real property, to the greatest extent practicable under State law, by the land acquisition policies in Subpart B of 49 CFR Part 24 and will pay or reimburse property owners for necessary expenses as specified in Subpart B.
    b. It will provide a relocation assistance program offering the services described in Subpart C and fair and reasonable relocation payments and assistance to displaced persons as required in Subpart D and E of 49 CFR Part 24.
    c. It will make available within a reasonable period of time prior to displacement, comparable replacement dwellings to displaced persons in accordance with Subpart E of 49 CFR Part 24.

36. **Access By Intercity Buses.**

    The airport owner or operator will permit, to the maximum extent practicable, intercity buses or other modes of transportation to have access to the airport; however, it has no obligation to fund special facilities for intercity buses or for other modes of transportation.

37. **Disadvantaged Business Enterprises.**

    The sponsor shall not discriminate on the basis of race, color, national origin or sex in the award and performance of any DOT-assisted contract covered by 49 CFR Part 26, or in the award and performance of any concession activity contract covered by 49 CFR Part 23. In addition, the sponsor shall not discriminate on the basis of race, color, national origin or sex in the administration of its DBE and ACDBE programs or the requirements of 49 CFR Parts 23 and 26. The sponsor shall take all necessary and reasonable steps under 49 CFR Parts 23 and 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts, and/or concession contracts. The sponsor's DBE and ACDBE programs, as required by 49 CFR Parts 26 and 23, and as approved by DOT, are incorporated by reference in this agreement. Implementation of these programs is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the sponsor of its failure to carry out its approved program, the Department may impose sanctions as provided for under Parts 26 and 23 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1936 (31 U.S.C. 3801).

38. **Hangar Construction.**

    If the airport owner or operator and a person who owns an aircraft agree that a hangar is to be constructed at the airport for the aircraft at the aircraft owner's expense, the airport owner or operator will grant to the aircraft owner for the hangar a long term lease that is subject to such terms and conditions on the hangar as the airport owner or operator may impose.

39. **Competitive Access.**

a. If the airport owner or operator of a medium or large hub airport (as defined in section 47102 of title 49, U.S.C.) has been unable to accommodate one or more requests by an air carrier for access to gates or other facilities at that airport in order to allow the air carrier to provide service to the airport or to expand service at the airport, the airport owner or operator shall transmit a report to the Secretary that-

   1) Describes the requests;

   2) Provides an explanation as to why the requests could not be accommodated; and

   3) Provides a time frame within which, if any, the airport will be able to accommodate the requests.

b. Such report shall be due on either February 1 or August 1 of each year if the airport has been unable to accommodate the request(s) in the six month period prior to the applicable due date.

APPENDIX O

AIRPORT CAPITAL IMPROVEMENT PLAN (ACIP) DATA SHEET - SAMPLE

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FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION – CENTRAL REGION

CIP DATA SHEET INSTRUCTIONS

1. The AIP project types are those in FAA Order 5100.38, AIP Handbook, Appendices D through T, which identifies factors to consider for justification, eligibility, and the required usable unit of work/outcome.
2. Select the desired FFY that you desire the project. (*Example: FY19 is October 1st, 2018, to September 30th, 2019*).
3. Provide the estimate of total cost (engineering, administrative, legal, appraisal costs, etc.) and breakout of federal, state, and local shares. Attach a detailed cost estimate showing unit costs; aggregate in square yards (S.Y.), concrete paving in square yards (S.Y.) and asphaltic paving in tons. Separate the costs for land acquired in fee and land acquired in easement. NOTE: Cost estimates cannot include an amount for contingencies.
4. Provide a detailed scope of the project and justification. Attach a sketch that clearly identifies the scope of the project. This information is required to determine if the project has been properly planned and is ready for funding assistance. Failure to provide and/or verify this information in this section will result in follow-up correspondence and revisions to the Data Sheet.
   - Justification - Describe the need, objectives, method of accomplishment, and the benefit expected to be obtained from the assistance. For some projects, the FAA must determine if a project is justified based on the applicable critical aircraft for the project. Reference paragraph 3-12 in FAA Order 5100.38, AIP Handbook, and Advisory Circular (AC) 150/5000-17, Critical Aircraft and Regular Use Determination.
   - Is the proposed development project on your approved Airport Layout Plan (ALP)? Proposed projects, with the exception of planning and equipment acquisition, are to be shown on the approved Airport Layout Plan (ALP).
   - All AIP funded projects must have a NEPA (environmental) determination from the FAA before a project can commence. If you have received a determination, please identify. If not, please continue working with your State Airport Planner and our Environmental Specialist.
   - Proposed pavements projects:
     - Identify most recent PCI score and date. If more than one type of pavement segment (runway, taxiway, apron) is part of the project, identify the PCI score and date of each pavement segment.
     - Include existing and proposed dimensioning (length, width, square footage, square yards, etc.).
     - Apron expansion/reconstruction - Include calculations based on Appendix 5 of AC 150/5300-13, Airport Design, showing justification for the size of apron needed. Central Region has prepared an apron sizing worksheet to assist with sizing aprons. Please request this worksheet from your State Airport Planner to complete and attach to your Data Sheet.
   - Verification of clear approach and departure surfaces in accordance with AC 150/5300-13, Airport Design, and FAA Order 8260.3, The United States Standard for Terminal Instruments Procedures (TERPS). If these surfaces are not clear, you will need to coordinate with your State Airport Planner to begin the planning process to mitigate obstacles. The sponsor must demonstrate that a plan has been developed before a grant can be issued.
   - Will the proposed project impact a FAA owned facility/equipment? If so, please identify the equipment. A FAA reimbursable agreement with the Air Traffic Organization (ATO), Central Service Area, NAS Planning and Integration Office will be required as part of the proposed project.
   - Proposed snow removal equipment (SRE) acquisition – Include an inventory of the airport's existing airport SRE and sizing calculations based on AC 150/5200-30, Airport Winter Safety and Operations, and AC 150/5220-20, Airport Snow and Ice Control Equipment. Central Region has prepared a SRE inventory and sizing worksheet to assist with these calculations. Please request this worksheet from your State Airport Planner to complete and attach to the Data Sheet.
   - Verify that the useful life of a facility, equipment, or pavement being rehabilitated, reconstructed, or replaced has been met (or prior to) grant issuance. Reference paragraph 3-13 and Table 3-8 in FAA Order 5100.38, AIP Handbook.
   - If the proposed project will involve the disposal of AIP funded equipment, reference the criteria for that effort in Table 5-39 of FAA Order 5100.38, AIP Handbook.
   - Revenue producing projects (fuel systems, hangars) - At minimum, provide the date of the submitted statement/letter that demonstrates all airside needs have been met, that runway approach/departure surfaces are clear of obstructions, and that any airside need within the next three years will be accommodated through local or nonprimary entitlement funds.
   - The sponsor must own all land upon which AIP funds will be expended for development. If the sponsor does not control the land (i.e. fee simple or easement) the project cannot commence. Verify that your required Exhibit 'A' Property Map reflects current conditions.

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Click here to enter text.		
AIP Project Type:	Click here to enter text		
Local Priority:	Select Local Priority	**Federal Share:**	**$** Click here to enter text.
FFY Requested:	Click here to enter text	**State Share:**	$Click here to enter text.
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$Click here to enter text.
		Total Project Cost:	**$** Click here to enter text.

Click here to enter text.

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	Click here to enter a date.
Printed Name:	Click here to enter text.	**Title:**	Click here to enter text.
Phone Number:	Click here to enter text.	**Email:**	Click here to enter text.

APPENDIX P

COMPLETED ACIP DATA SHEETS FOR ABILENE MUNICIPAL AIRPORT

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FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Abilene Municipal Airport (K78) – Abilene, KS		
AIP Project Type:	Obstruction Removal/Mitigation		
Local Priority:	1 - Very High	**Federal Share:**	**$** 360,000.00
FFY Requested:	FY 21	**State Share:**	$Click here to enter text.
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$40,000.00
		Total Project Cost:	**$** 400,000.00

Justification: This project removes and mitigates existing Runway 17/35 approach obstructions.
The proposed improvements include tree removals and lighting obstructions that cannot be removed.
NEPA Determination – the environmental clearances will be completed with the project prior to this project.
Proposed Project: This project will include the removal of trees, railroad obstruction lighting on poles, and on-airport pump station obstruction lighting to mitigate obstructions to Runway 17/35 approaches and transitional surfaces that have been identified in the 'in-progress' ALP.
The proposed project will NOT impact a FAA owned facility or equivalent.
The facility is NOT a revenue producing facility for the airport.

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	Click here to enter a date.
Printed Name:	Marcus Rothchild	**Title:**	Abilene Finance Director
Phone Number:	785.263.2550	**Email:**	marcus@abilenecityhall.com

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Abilene Municipal Airport (K78) – Abilene, KS		
AIP Project Type:	Displace Runway 17 Threshold		
Local Priority:	2 - High	**Federal Share:**	**$** 76,500.00
FFY Requested:	FY 23	**State Share:**	$Click here to enter text.
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$8,500.00
		Total Project Cost:	**$** 85,000.00

Justification: The 'in progress' ALP identifies the existing railroad as an obstruction to the Runway 17 approach. The long-term mitigation for the obstruction is to displace the Runway 17 threshold.
The proposed improvements are included on the (soon to be) approved Airport Layout Plan.
NEPA Determination – the environmental clearances will be completed with the project prior to the project.
Proposed Project: The Runway 17 threshold will be displaced to mitigated the railroad as an obstruction to the approach surface.
The proposed project will NOT impact a FAA owned facility or equivalent.
The facility is NOT a revenue producing facility for the airport.

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	Click here to enter a date.
Printed Name:	Marcus Rothchild	**Title:**	Abilene Finance Director
Phone Number:	785.263.2550	**Email:**	marcus@abilenecityhall.com

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Abilene Municipal Airport (K78) – Abilene, KS		
AIP Project Type:	Relocate North Apron Taxiway Connector		
Local Priority:	2 - High	**Federal Share:**	**$** 540,000.00
FFY Requested:	FY 23	**State Share:**	$Click here to enter text.
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$60,000.00
		Total Project Cost:	**$** 600,000.00

Justification: The existing north apron connector allows direct access from the apron to the runway. Relocating this connector will remove the direct access and improve safety at the airport.
The proposed improvements are included on the (soon to be) approved Airport Layout Plan.
NEPA Determination – the environmental clearances will be completed with the project prior to this project.
Proposed Project: The existing north apron connector shall be removed and relocated to the north approximately 235 feet.
The proposed project will NOT impact a FAA owned facility or equivalent.
The facility is NOT a revenue producing facility for the airport.

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	Click here to enter a date.
Printed Name:	Marcus Rothchild	**Title:**	Abilene Finance Director
Phone Number:	785.263.2550	**Email:**	marcus@abilenecityhall.com

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Alfred Benesch & Company
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