DENTON ENTERPRISE AIRPORT

AIRPORT MASTER PLAN

DRAFT FINAL

DRAFT FINAL REPORT
AIRPORT MASTER PLAN

For

Denton Enterprise Airport
Denton, Texas

Prepared by

Coffman Associates
Airport Consultants

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Table of Contents

TABLE OF CONTENTS

Introduction & Summary

ABOUT DENTON ENTERPRISE AIRPORT i-1
WHAT IS A MASTER PLAN? i-1
WHO IS PREPARING THE MASTER PLAN? i-3
STUDY GOALS, OBJECTIVES, AND ASSUMPTIONS i-3
Study Objectives I-3
Baseline Assumptions I-4
MASTER PLAN ELEMENTS AND PROCESS i-5
COORDINATION AND OUTREACH i-7
SWOT ANALYSIS i-7
SUMMARY i-9
Potential for Commercial Passenger Service i-10
Potential for Expanded Air Cargo i-11
Airfield Recommendations i-11
Landside Concept i-15
Development Funding i-19

Chapter One – Inventory

AIRPORT SETTING 1-1
Location 1-1
Climate 1-2
Airport History 1-5
AIRPORT ADMINISTRATION 1-5
AIRPORT SYSTEM PLANNING ROLE 1-6
Federal Airport Planning 1-6
State Airport Planning 1-7
Local Airport Planning 1-9
AERONAUTICAL ACTIVITY 1-9
Annual Operations 1-9
Based Aircraft 1-10
CAPITAL IMPROVEMENT HISTORY 1-11
14 CFR PART 139 CERTIFICATION 1-16
AIRSIDE FACILITIES 1-17
Runways 1-18
Helipad 1-24
Taxiways 1-24
Taxilanes 1-25
Pavement Condition 1-25
Airfield Lighting, Signage, And Marking 1-26

Chapter One – Inventory (continued)

Holding Bays 1-30
Weather And Communication Aids 1-30
AREA AIRSPACE AND AIR TRAFFIC CONTROL 1-31
Airspace Structure 1-31
Special Use Airspace 1-33
Airspace Control 1-35
Navigational Aids 1-36
Flight Procedures 1-37
Runway Use and Traffic Patterns 1-39
Regional Airports 1-39
LANDSIDE FACILITIES 1-40
Terminal/General Aviation Administration Building 1-40
Airport Businesses 1-43
Aircraft Hangar Facilities 1-43
Aircraft Parking Aprons 1-45
Vehicle Parking 1-46
SUPPORT FACILITIES 1-46
Aircraft Rescue and Firefighting (ARFF) Services 1-46
Fuel Storage 1-49
Airport Maintenance Facilities 1-50
Perimeter Access Road and Fencing 1-50
Mobility Plan 1-51
ENVIRONMENTAL INVENTORY 1-51
Air Quality 1-52
Biological Resources 1-52
Coastal Resources 1-58
Department Of Transportation Act, Section 4(F) 1-58
Farmlands 1-59
Hazardous Materials, Solid Waste, and Pollution Prevention 1-61
Historical, Architectural, Archaeological, and Cultural Resources 1-62
Land Use 1-62
Natural Resources and Energy Supply 1-64
Noise And Noise-Compatible Land Use 1-64
Socioeconomics and Children's Environmental Health & Safety Risks 1-67
Visual Effects 1-68
Water Resources 1-69

Chapter Two – Forecasts

NATIONAL AVIATION TRENDS 2-3
National General Aviation (GA) Trends 2-3
Business Jet Operational Trends 2-4
Risks to the Forecast 2-8

Chapter Two – Forecasts (continued)

AIRPORT SERVICE AREA 2-8
Service Area Socioeconomics 2-11
FORECASTING APPROACH 2-12
PREVIOUS FORECASTS 2-13
GENERAL AVIATION FORECASTS 2-14
Based Aircraft Forecast 2-15
Based Aircraft Fleet Mix Forecast 2-21
Operations Forecast 2-21
PEAKING CHARACTERISTICS 2-29
Forecast Summary 2-29
Forecast Comparison to the FAA TAF 2-31
AIRCRAFT/AIRPORT/RUNWAY CLASSIFICATION 2-31
Aircraft Classification 2-31
Airport And Runway Classifications 2-32
CRITICAL AIRCRAFT 2-35
Airport Design Aircraft 2-36
Taxiway Design Group (TDG) 2-37
Runway Design Code 2-37
Critical Aircraft Summary 2-38
POTENTIAL COMMERCIAL PASSENGER SERVICE ENPLANEMENTS 2-38
Background 2-38
Commercial Airline Industry 2-39
Potential Scheduled Commercial Service 2-40
Potential Passenger Enplanements 2-41
SUMMARY 2-46

Chapter Three – Facility Requirements

DEMAND-BASED PLANNING HORIZONS 3-2
AIRFIELD CAPACITY 3-3
Factors Affecting Annual Service Volume 3-3
Calculation of Annual Service Volume 3-7
Aircraft Delay 3-8
Capacity Analysis Conclusion 3-9
AIRSIDE FACILITY REQUIREMENTS 3-9
Runways 3-9
Safety Area Design Standards 3-19
Runway Separation Standards 3-25
Taxiways 3-27
Navigational and Approach Aids 3-33
Airfield Lighting, Marking, and Signage 3-35
ADVANCED AIR MOBILITY (AAM) 3-35
Design Standards for Vertiports 3-37
Approach Profiles – Imaginary Surfaces 3-38

Chapter Three – Facility Requirements (continued)

Vertiport Summary 3-39
LANDSIDE FACILITY REQUIREMENTS 3-39
General Aviation Facilities 3-39
Support Facilities 3-43
SUMMARY 3-45

Chapter Four – Alternatives

NO-ACTION/NON-DEVELOPMENT ALTERNATIVES 4-2
No-Build/Do-Nothing Alternative 4-2
Transfer of Service/Relocate Airport 4-2
Non-Development Alternatives Summary 4-3
PLANNING OBJECTIVES 4-3
REVIEW OF PREVIOUS AIRPORT PLANS 4-4
AIRSIDE ALTERNATIVES 4-4
Airside Considerations 4-7
Airfield Alternatives 4-8
LANDSIDE ALTERNATIVES 4-15
Landside Considerations 4-16
East Landside Alternatives 4-16
West Landside Alternatives 4-18
SUMMARY 4-27

Chapter Five – Master Plan Concept

AIRFIELD PLAN 5-2
Design Standards 5-2
Runway 18L-36R 5-2
Runway 18R-36L 5-6
Taxiway Improvements 5-7
LANDSIDE CONCEPT 5-8
General Aviation Facilities 5-11
Air Cargo Facilities 5-12
Airport Traffic Control Tower 5-13
Advanced Air Mobility 5-13
Non-Aeronautical Development 5-14
LAND USE COMPATIBILITY 5-14
Existing Land Use 5-14
Future Land Use Plan 5-15
Zoning 5-17
Subdivision Regulations 5-21
Building Code 5-21
Non-Compatible Development Analysis 5-21
Recommendations 5-23

Chapter Five – Master Plan Concept (continued)

AIRPORT RECYCLING, REUSE, AND WASTE REDUCTION 5-27
- Regulatory Guidelines 5-27
- Solid Waste 5-28
- Solid Waste Management System 5-29
- Existing Services 5-30
- Goals and Recommendations 5-30

ENVIRONMENTAL OVERVIEW 5-32
SUMMARY 5-41

Chapter Six – Capital Improvement Program

CAPITAL IMPROVEMENT PROGRAM 6-2
- Short-Term Improvements 6-2
- Intermediate-Term Improvements 6-2
- Long-Term Improvements 6-5

FINANCIAL PLAN 6-5
- Historical Revenues and Expenses 6-5
- Forecast Revenues and Expenses 6-10
- Financial Analysis 6-12
- Capital Resources 6-13
- Development Incentives 6-15

MASTER PLAN IMPLEMENTATION 6-16

EXHIBITS

Introduction and Summary

iA Recommended Development Concept i-13
iB Recommended Development Concept – East Side i-17
iC Recommended Development Concept – West Side i-18

Inventory

1A Location/Vicinity Map 1-3
1B Climate and Wind Patterns 1-4
1C Existing Airside Facilities 1-19
1D Wind Roses .... 1-22 / 1-23
1E Existing Pavement Conditions 1-27
1F Airspace Classification 1-32
1G Vicinity Airspace 1-34
1H Existing Landside Facilities 1-41
1J Vehicle Parking Lots 1-47
1K Fencing and Access Roads 1-53
1L City of Denton Mobility Plan 1-55

EXHIBITS (continued)

Inventory (continued)

1M Wildlife Corridor and Green Spaces Near DTO 1-57
1N Sensitive Land Uses Within One Mile of the Airport 1-60
1P Zoning Map 1-63
1Q Existing/Future Land Use Maps 1-65
1R Natural Resources Environmental Sensitivities 1-70
1S Environmental Sensitive Areas 1-71

Forecasts

2A National General Aviation Forecasts 2-5
2B Based Aircraft Service Area 2-10
2C Based Aircraft Projections 2-22
2D Based Aircraft Projections 2-28
2E Forecast Summary 2-30
2F Aircraft Classification Parameters/ Aircraft Reference Codes .... 2-33 / 2-34

Facility Requirements

3A Airfield Capacity Factors / Airfield Demand vs. Capacity .... 3-4 / 3-5
3B Existing Safety Areas 3-21
3C Existing TOFA/TLOFA / Ultimate TOFA/TLOFA .... 3-29 / 3-30
3D Airfield Summary 3-36

Alternatives

4A 2015 Airport Master Plan Recommendations 4-5
4B Airfield Alternative 1 4-9
4C Airfield Alternative 2 4-13
4D Airfield Alternative 3 4-14
4E East Landside Alternative 1 4-19
4F East Landside Alternative 2 4-20
4G East Landside Alternative 3 4-21
4H West Landside Alternative 1 4-22
4J West Landside Alternative 2 4-25
4K West Landside Alternative 3 4-26

Master Plan Concept

5A Recommended Development Concept 5-3
5B Recommended Development Concept – East Side 5-9
5C Recommended Development Concept – West Side 5-10
5D Existing Land Use Approach Maps 5-16
5E Future Land Use Approach Maps 5-18
5F Zoning Approach Map 5-20
5G Noise Contours 5-25

EXHIBITS (continued)

Capital Improvement Program

6A Capital Improvement Program 6-3
6B Recommended Development Staging 6-4
6C Percentage Shifts in Operating Expenses 6-8
6D Percentage Shifts in Operating Revenues 6-9

APPENDICES

Appendix A – Glossary of Terms

Appendix B – Forecast Approval Letter

Appendix C – Air Cargo Assessment

Appendix D – Airport Layout Plan

Introduction and Summary

Introduction and Summary

ABOUT DENTON ENTERPRISE AIRPORT

Denton Enterprise Airport (DTO) is owned and operated by the City of Denton, Texas. DTO is considered a national airport, according to the National Plan of Integrated Airport Systems (NPIAS). As such, DTO serves a vital role in accommodating all forms of general aviation traffic, including corporate aviation, flight training, emergency medical flight services, charter flights, and recreational flying, among many others. DTO is situated on over 928 acres of property located approximately three miles west from downtown Denton. In terms of economic impact, a study sponsored by the Texas Department of Transportation (TxDOT) in 2018 found that the airport supports 1,435 jobs, $45.8 million in annual payroll, and $156.3 million in total economic impact to the local economy. DTO is a vital infrastructure component that supports economic development and quality of life for residents in and around the City of Denton.

WHAT IS A MASTER PLAN?

The Federal Aviation Administration (FAA) recommends that airports update their long-term planning documents every seven to 10 years, or as necessary, to address local changes at the airport. The last master plan update for DTO was completed in 2015. The City of Denton, the sponsor of the airport, received a grant from the TxDOT Aviation Division to update the airport master plan.

The sponsor is responsible for funding capital improvements at DTO, as well as obtaining FAA and TxDOT development grants. The master plan is intended to provide **a true vision for how DTO is developed**, **guidance for future development**, and **justification for projects** for which the airport may receive funding through an updated capital improvement program, which will demonstrate the future investments required by the City of Denton, TxDOT, and the FAA.

The airport master plan follows a systematic approach outlined by the FAA to identify airport needs in advance of the actual need for improvements. This is done to ensure the city can coordinate environmental reviews, project approvals, design, financing, and construction to minimize the negative effects of maintaining and operating inadequate or insufficient facilities. An important outcome of the master plan process is a recommended development plan, which reserves sufficient areas for future facility needs. Such planning will protect development areas and ensure they will be readily available when required to meet future needs. The intended outcome of this study is a detailed on-airport land use concept that outlines specific uses for all areas of airport property, including strategies for revenue enhancement.

Some common questions regarding what a master plan is / is not are answered in the graphic below.

AN AIRPORT MASTER PLAN IS…

- A comprehensive, long-range study of the airport and all air and landside components that describes plans to meet FAA safety standards and future aviation demand.
- Required by the FAA to be conducted every 7-10 years to ensure plans are up to date and reflect current conditions and FAA regulations. The last master plan for DTO was completed in 2015.
- Funded 90% by the FAA's Airport Improvement Program (AIP). The remaining 10% is funded by the City of Denton.
- A local document that will ultimately be presented for approval from the City of Denton. The FAA/TxDOT approves only two elements of the master plan: the aviation demand forecasts and the airport layout plan (ALP) drawing set.
- An opportunity for airport stakeholders and the public to engage with airport staff on issues related to the airport, its current and future operations, and environmental and socioeconomic impacts. Four public information workshops will be conducted during the master plan process to facilitate this public outreach effort.

AN AIRPORT MASTER PLAN IS *NOT*…

- A guarantee that the airport will proceed with any planned projects. Master plans are guides that help airport staff plan for future development; however, the need/demand for certain projects might never materialize.
- A guarantee that the City of Denton, TxDOT, or the FAA will fund any planned projects. Project funding is considered on a case-by-case basis and requires appropriate need and demand. Certain projects may require the completion of a benefit-cost analysis.
- A binding or static plan. Elements of the master plan may be updated to reflect changes in aviation activity at the airport, economic conditions of the region, or the goals of the City of Denton.
- Environmental clearance for specific projects. The master plan includes an environmental overview, which identifies potential environmental sensitivities per the *National Environmental Policy Act of 1969* (NEPA) guidelines. Most planned projects will require a separate environmental study prior to construction.

The preparation of this master plan is evidence that the city recognizes the importance of the airport and the associated challenges inherent in providing for its unique operating and improvement needs. The cost of maintaining an airport is an investment that yields impressive benefits to the local community. With a sound and realistic master plan, the airport can maintain its role as an important link to the regional, state, national, and global air transportation systems. Moreover, the plan will aid in supporting decisions for directing limited and valuable city resources for future airport development. Continued investment in the airport will ultimately allow the sponsor to reap the economic benefits.

WHO IS PREPARING THE MASTER PLAN?

The City of Denton contracted Coffman Associates, Inc. to undertake the airport master plan. Coffman Associates is an airport planning and consulting firm that specializes in master planning and environmental studies. Coffman Associates led the planning team, with support from the following firms:

- Garver – Cost estimating and engineering support
- HubPoint Strategic Advisors – Air cargo market study and forecasts
- Jordan Aviation Strategies – Financial analysis
- Martinez Geospatial – Aerial photography, ground survey, and geographic information system (GIS) products to meet FAA 5300-18B requirements for Airports GIS data submittal

The airport master plan was prepared in accordance with FAA requirements, including Advisory Circular (AC) 150/5300-13B, *Airport Design* (as amended), and AC 150/5070-6B, *Airport Master Plans* (as amended). The plan was closely coordinated with other planning studies relevant to the area and with aviation plans developed by the FAA and TxDOT. The plan was also coordinated with the City of Denton, as well as other local and regional agencies, as appropriate.

STUDY GOALS, OBJECTIVES, AND ASSUMPTIONS

The primary goal of this master plan is to provide the framework needed to guide future airport development that will satisfy aviation demand in a cost-effective way while considering potential environmental and socioeconomic impacts. Accomplishing this goal requires an evaluation of the existing airport to decide what actions should be taken to maintain a safe, adequate, and reliable facility. A long-range planning study also requires several baseline assumptions that were used throughout the analysis. Specific objectives and assumptions for this study are as follows.

STUDY OBJECTIVES

Aviation Demand Forecasts

- To research factors likely to affect all air transportation demand segments at DTO over the next 20 years, including the development of forecasts of potential commercial service, air cargo, and general aviation operational and basing demand
- To determine the airport's current and future critical design aircraft per FAA AC 150/5300-17, *Critical Aircraft and Regular Use Determination*

Facility Requirements

- To analyze the existing airfield system to determine the existing and ultimate runway length required to satisfy the airport's critical aircraft now and into the future
- To assess the need for expanded airfield pavements, hangars, and apron area to support existing and anticipated based aircraft and itinerant operations
- To recommend improvements that will enhance the landside area's ability to satisfy future aviation needs, taking into consideration the potential for commercial passenger service, air cargo, advanced air mobility (AAM), and general aviation needs

Development Alternatives

- To evaluate the highest and best uses of airport property
- To recommend landside improvements that satisfy the anticipated operational growth, including fixed base operator (FBO) and specialty aviation operator (SASO) operations, as well as the potential for commercial airline and/or cargo operations

Development Plan and Capital Improvement Program (CIP)

- To develop a 20-year demand-based CIP, including a recommended phasing plan
- To consider sustainability efforts, specifically waste and recycling improvements, as part of the FAA's updated standards

Airport Layout Plan (ALP) Update

- To produce accurate base maps of existing and proposed facilities, as well as updated ALP drawings consistent with FAA Standard Operating Procedures (SOPs) No. 2.00 and 3.00
- To review future use and zoning of airport property, instrument approach areas, and nearby developments to ensure flight safety and land use compatibility; this will involve the development of new noise exposure contours utilizing the FAA's Aviation Environmental Design Tool (AEDT), application of current land use compatibility guidelines, review of local land use controls and plans, and analysis of land use management techniques
- To analyze all opportunities and develop strategies for incompatible land use encroachments

BASELINE ASSUMPTIONS

A long-range planning study requires several baseline assumptions that are used throughout this analysis. The baseline assumptions for this study are as follows.

- DTO will continue to accommodate general aviation tenants – as well as itinerant and local aircraft operations by air taxi, general aviation, and military operators – through the 20-year planning period.

- The aviation industry will develop through the planning period as projected by the FAA. Specifics of projected changes in national aviation industries are described in Chapter Two – Forecasts.
- The socioeconomic characteristics of the region will generally change as forecast (Chapter Two).
- A federal and state airport improvement program will be in place through the planning period to assist in funding future capital development needs.

MASTER PLAN ELEMENTS AND PROCESS

The master plan has nine elements that are intended to assist in the evaluation of future facility needs and provide the supporting rationale for their implementation. **Figure iA** provides a graphical depiction of the process involved in the study.

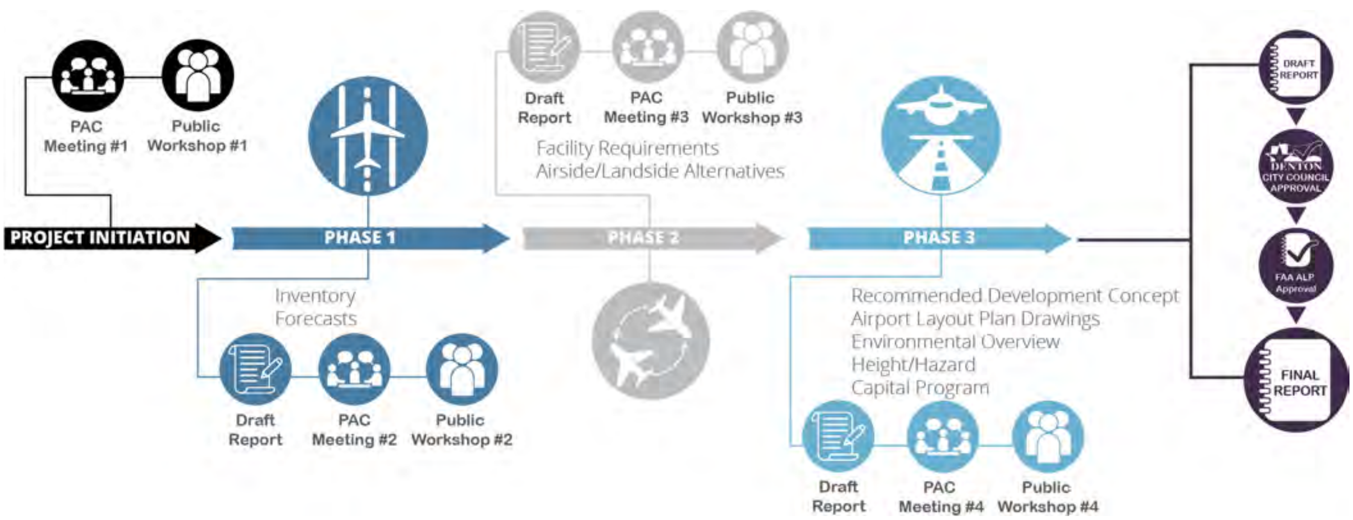


Figure iA – Project Workflow

Element 1 – Study Initiation and Organization includes the development of the scope of services, schedule, and study website. Study materials will be assembled in a workbook format. General background information will be established that includes outlining the goals and objectives to be accomplished during the master plan.

Element 2 – Inventory of Existing Conditions focuses on collecting and assembling relevant data pertaining to the airport and the area it serves. Information regarding existing facilities and operations is collected. Local economic and demographic data are collected to define the local growth trends, and environmental information is gathered to identify potential environmental sensitivities that might affect future improvements. Planning studies that may be relevant to the master plan are also collected.

Element 3 – Aviation Demand Forecasts examines the potential aviation demand at DTO. The analysis utilizes local socioeconomic information and national air transportation trends to quantify the levels of aviation activity that can reasonably be expected to occur at DTO over a 20-year period. An existing and ultimate critical design aircraft – based on AC 150/5000-17, *Critical Aircraft and Regular*

Use Determination – is also established to determine future planning design standards. The results of this effort are used to determine the types and sizes of facilities that will be required to meet the projected aviation demand at the airport through the planning period. Forecasts result in estimates of demand for annual aircraft operations, based aircraft, and potential commercial airline passenger enplanements, as well as air cargo operations and tonnage. This element is one of two elements that are submitted to TxDOT for approval.

Element 4 – Facility Requirements determines the available capacities of various facilities at the airport, whether they conform with FAA standards, and what facility updates or new facilities will be needed to comply with FAA requirements and/or projected 20-year demand.

Element 5 – Airport Development Alternatives considers a variety of solutions to accommodate projected airside and landside facility needs through the long-term planning period. An analysis is completed to identify the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for development.

Element 6 – Airport Plans/Land Use Compatibility/Environmental Overview involves coordination with airport staff and the planning advisory committee to result in the selection of a recommended development concept. The airport's noise exposure and land use compatibility will also be evaluated. An environmental overview will identify any potential environmental concerns that must be addressed prior to the implementation of the recommended development program.

Element 7 – Financial Management and Development Program analyzes the benefits and costs associated with the recommended plan. Specific project costs are established for the development of a CIP that ensures logical staging of improvements.

Element 8 – Geographical Information System (GIS) and Data Collection Services includes collection of high-resolution aerial photography and high-precision surveys of safety critical airport data to provide the sponsor with a digital dataset of the airport and its surrounding environment, in conformance with current FAA standards set forth in ACs 150/5300-13A, -16B, -17C, and -18B. The collected data allow for a detailed airspace analysis for the appropriate airport approach and departure surfaces.

Element 9 – Airport Layout Plans will be developed to depict the recommended development concept. The drawings will meet the requirements of FAA SOP No. 2.00, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)* (effective October 1, 2013). The updated ALP set is included as an appendix to this study.

Element 10 – Final Reports produces the draft final report and ALP drawings in print and digital form. These materials will be presented to the City of Denton, TxDOT, and the FAA for review and approval. Once approved, a final report will be prepared and made available in print and digital formats.

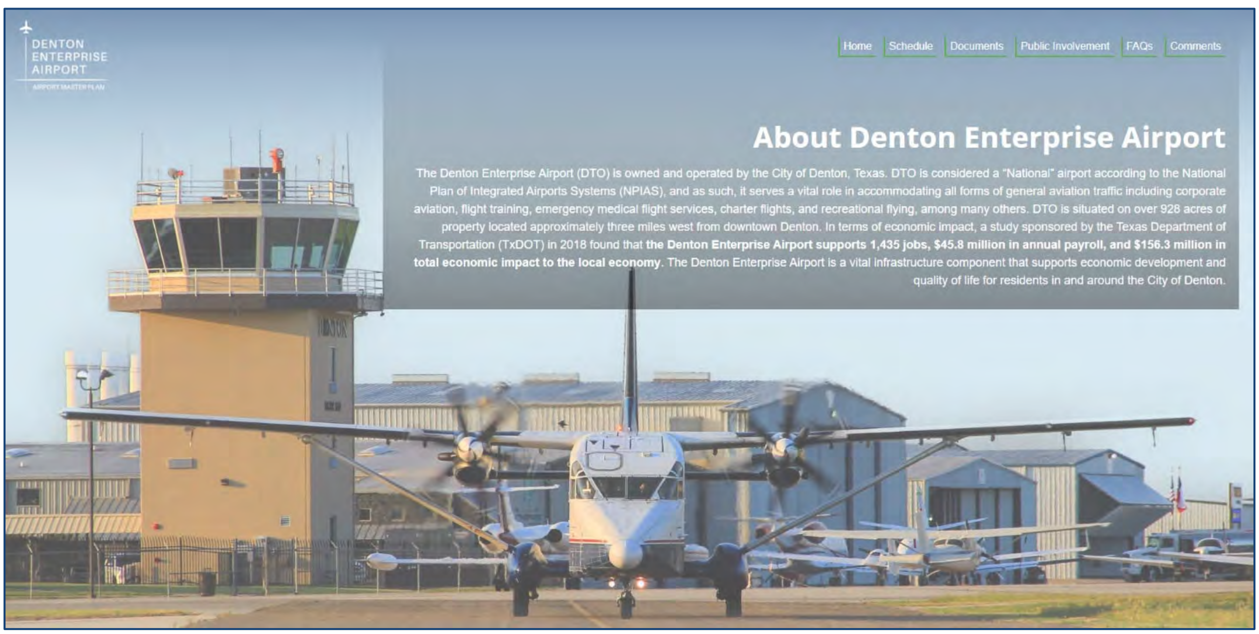
COORDINATION AND OUTREACH

This study is of interest to many within the local community and region, including local citizens, local businesses, community organizations, city officials, airport users/tenants, and aviation organizations. As a component of the regional, state, and national aviation systems, DTO is of importance to both state and federal agencies responsible for overseeing the air transportation system.

To assist in the development of the master plan, a planning advisory committee (PAC) was established to act in an advisory role. PAC members met four times at designated points during the study to review study materials and provide comments to help ensure a realistic, viable plan was developed.

Draft phase reports were prepared at various milestones in the planning process. The phase report process allows for timely input and review during each step within the master plan to ensure all issues are fully addressed as the recommended program develops.

Four open-house public information workshops were also held as part of the study coordination and outreach efforts. Workshops are designed to allow all interested persons to become informed and provide input concerning the master plan process. Notices of meeting times and locations were advertised through local media outlets. All draft phase reports, meeting notices, and materials were made available to the public on a study-specific website: DTO.airportstudy.net.



The DTO.airportstudy.net website

SWOT ANALYSIS

A SWOT analysis is a strategic business planning technique used to identify **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats associated with an action or plan. The SWOT analysis involves identifying an action, objective, or element, and then identifying the internal and external forces that positively and negatively impact that action, objective, or element in a given environment. A SWOT analysis was conducted at the first PAC meeting and the findings are summarized in **Table iA**.

TABLE iA | DTO SWOT Analysis

Strengths	• Parallel runways provide redundancy for periods during which one must be closed for maintenance • DTO is a towered airport providing greater operational efficiency/safety • DTO's location at the confluence of 35E/35W is in a high-growth area • DTO has the ability to quickly and efficiently process aircraft cargo and equipment • Size of the airport and availability of developable property • Adjacent property is owned by the City of Denton	• On-site fire station services • Compatible land uses (industrial/commercial) surround the airport • DTO attracts business development to the community • DTO is close to downtown Denton and has a good access/egress roadway network with limited congestion issues • Growing flight school activities • Business diversity in and around the airport • DTO has a 7,000-foot-long runway capable of accommodating most large business jets
Weaknesses	• Fuel accessibility is limited • DTO lacks available hangar capacity • DTO's proximity to Dallas Fort Worth International Airport (DFW) and Fort Worth Alliance Airport (AFW) hinders its potential for commercial passenger/air cargo services • Automobile parking capacity is limited • Surrounding industrial complexes do not utilize the airport	• West side of airfield is landlocked • Runway weight restrictions do not support regular use by large/heavy business jets, such as the Boeing Business Jet (BBJ) • City of Denton development code standards and lighting/landscaping requirements are strict • Semi-truck traffic for neighboring industrial areas can occasionally cause traffic congestion
Opportunities	• Emerging technologies, such as advanced air mobility (AAM) • Highway improvements (Loop 288) could improve accessibility to the west side and create a new "front door" to the airport • Air cargo and commercial passenger service • Extensive logistics space in the Dallas-Fort Worth metroplex • Proximity to the BNSF and Union Pacific rail lines; BNSF has adopted the use of unmanned aerial vehicles (UAVs) • Installation of electric vehicle charging stations • West side of airport is a blank slate for new development • Land north and west of the airport provides opportunities for expansion/development	• DTO could consider vertiport (AAM) development • DTO could become a center for aviation education • Cole and Hunter Ranch developments could bring Class A office space opportunities to the city and new aviation users to DTO • Part 139 certification opens opportunities to commercial operations • Having on-site customs would open the airport to international traffic • DTO is located within the Dallas-Fort Worth foreign trade zone (FTZ) • Denton is preparing a wastewater master plan that examines wastewater reuse opportunities and future-proofing water facilities (resiliency); this study could present opportunities for the airport to incorporate resiliency measures
Threats	• New residential developments south of the airport present compatibility issues • Available/open land uses going to incompatible land uses • High flight training activity at DTO can detract from commercial and business aviation users • Increased DTO operations can lead to greater congestion/delay issues • Cost and requirements to become a Part 139 airport	• Competition with other regional airports over users/activity • Rising construction and utility costs • Diminished production of natural gas wells on the airport resulting in declining revenue • DTO airport traffic control tower capacity and staffing are limited • Lack of on-site customs and the cost to establish those facilities and staffing could outweigh the benefits of access to international traffic

SUMMARY

Planned development at DTO is focused on accommodating projected growth in activity and meeting FAA airfield design standards. The CIP that has been developed identifies both airside (runways, taxiways, navigational aids, etc.) and landside (terminal area, aprons, hangar, access roads, vehicle parking, etc.) facility needs.

Aviation demand forecasts were prepared to properly plan for future demand that may occur. Because of the cyclical nature of the economy, it is virtually impossible to predict with certainty year-to-year fluctuations in activity five, 10, and 20 years into the future. The master plan is keyed realistically toward potential demand horizon levels, rather than future dates in time. These planning horizons were established as levels of activity that will call for consideration of the implementation of the next step in the airport development program. By developing the airport to meet the aviation demand levels instead of specific points in time, the airport will serve as a safe and efficient aviation facility that will meet the operational demands of its users while being developed in a cost-effective manner. This program allows the City of Denton to change specific developments in response to unanticipated needs or demand.

The forecast approach utilized historical and forecasted general aviation and economic trends, resulting in modest growth projections for DTO through the planning period of the study. Several factors contribute to DTO's activity growth potential, including:

- Projected socioeconomic growth of Denton County. Population, employment, and gross regional product indices are all projected to grow at a faster rate within Denton County than the DFW metropolitan statistical area (MSA) over the next 20 years.
- DTO competes well with other regional general aviation reliever airports with its parallel runway system, instrument approach capabilities, and available services and amenities.
- DTO is in a desirable location northwest of the DFW metropolitan area and has excellent access to the interstate highway system with the nearby junction of I-35E and I-35W.
- The U.S. Loop 288 extension planned to extend along the west side of the airport will increase the development potential of the airport by making the west side more accessible.
- The airport maintains an extensive hangar waiting list of 100 individuals.
- The airport is actively engaged with developers to expand available facilities to attract new users.

The aviation demand forecast is summarized in **Table iB**. TxDOT issued its approval of the forecasts prepared in this master plan on March 3, 2025. The TxDOT forecast approval letter is included in **Appendix B** of the master plan.

TABLE iB | Aviation Demand Planning Horizons

	Base Year (2024)	Short Term (1-5 Years)	Intermediate Term (6-10 Years)	Long Term (11-20 Years)
BASED AIRCRAFT				
Single-Engine	306	351	401	520
Multi-Engine	58	68	79	105
Jet	34	40	46	65
Helicopter	14	16	19	25
Other	0	0	1	2
TOTAL BASED AIRCRAFT:	**412**	**475**	**546**	**717**
ANNUAL OPERATIONS				
Itinerant				
Air Carrier	14	14	14	14
Air Taxi	3,075	3,400	4,300	6,100
General Aviation	102,829	113,500	125,300	152,800
Military	51	81	81	81
Total Itinerant Operations:	**105,969**	**116,995**	**129,695**	**158,995**
Local				
General Aviation	115,514	126,284	138,057	165,000
Military	4	0	0	0
Total Local Operations:	**115,518**	**126,284**	**138,057**	**165,000**
TOTAL OPERATIONS:	**221,487**	**243,279**	**267,752**	**323,995**

Source: Coffman Associates analysis

POTENTIAL FOR COMMERCIAL PASSENGER SERVICE

The DFW region's rapid growth will soon exceed the passenger capacities of Dallas Fort Worth International Airport (DFW) and Dallas Love Field (DAL), creating demand for a third commercial service airport. McKinney National Airport (TKI), which broke ground on a new passenger terminal building in July 2025, is leading the effort to become the third commercial service airport for the region.

This master plan effort analyzed several enplanement scenarios for DTO, showing a broad potential range from under 10,000 to over 1 million annual enplanements, depending on market conditions and competition. The most realistic range for DTO aligns with TKI's projections, which project 273,000 to 1.37 million passenger enplanements by 2040. However, these projections assume the failure of TKI in establishing commercial service, which currently seems unlikely. If TKI is successful in establishing commercial service activities, the market would not support a fourth commercial service airport, especially two in the northern DFW suburbs. Due to TKI's front-runner position to become the third commercial service airport, the required large capital investment needed to develop a passenger terminal at DTO, the increased regulatory/safety compliance associated with becoming a Part 139 certificated commercial service airport, the ongoing costs associated with maintaining a passenger terminal facility and Part 139 certificate, and the potential for increased environmental/noise impacts, the master plan does not pursue commercial service as a viable development option for DTO.

POTENTIAL FOR EXPANDED AIR CARGO

Hubpoint Strategic Advisors prepared a detailed *Air Cargo Assessment* for DTO that included an air cargo market analysis, development of a 20-year air cargo forecast in tonnage and all-cargo aircraft operations, and development of air cargo revenue forecasts for DTO. The full air cargo report is included in the master plan as **Appendix C**. The findings of the analysis include:

- DTO's existing air cargo business relies heavily on charter operations, and this is expected to remain the case over the next 20 years.
- Prevailing trends among scheduled cargo operators (e.g., FedEx, UPS, Amazon Air) do not indicate the addition of new airports like DTO to their networks.
- Competition from established commercial airports in the Dallas-Fort Worth Metroplex limits DTO's ability to capitalize on potential opportunities and grow its air cargo business.
- A substantial expansion of air cargo services at DTO would likely require significant investments in cargo facilities, infrastructure, and handling equipment — investments that may not be justifiable given the low revenue levels the airport/city currently receives from cargo operations.
- Despite this, DTO's air cargo services provide substantial value to key companies in the Denton community, making the continuation of charter cargo operations a priority.
- Effective oversight of DTO's air cargo business should enhance services and help identify growth opportunities within its charter cargo niche.
- The air cargo forecast projects a range of 100 to 156 movements annually, while cargo tonnage ranges between 55 tons and 130 tons.
- Revenue impacts of air cargo for the airport/city are projected to be minimal, ranging between $2,300 and $3,700 annually during the 20-year period. These low figures are a function of relatively low levels of air cargo charter operations, the use of smaller cargo aircraft with low annual fueling requirements, and the limited number of revenue-generating sources at DTO.

For planning purposes, the master plan has designated a site on the west side of the airfield for a dedicated air cargo handling facility, associated apron, and truck loading/staging area, if stronger demand for air cargo at DTO emerges at some point in the future.

AIRFIELD RECOMMENDATIONS

The recommended airport development concept includes improvements to the airfield and landside area to satisfy FAA design and safety standards and meet current and forecast needs. Runway design standards are based on the characteristics of the critical design aircraft for the runway. Runway 18L-36R is planned to an ultimate runway design code (RDC) of C/D-III-2400, which accommodates all general aviation aircraft, including the largest and fastest business jets in the national fleet. Runway 18R-36L is planned to an RDC of B-II-4000, which accommodates most small and mid-sized business jets.

The following summarizes the recommended airport development concept, which is depicted on **Exhibit iA**. A more detailed discussion of the recommended development concept can be found in Chapter Five.

Runway 18L-36R (Primary Runway)

Dimensions:

- No change to the existing dimensions of 7,002 feet long and 150 feet wide. This length and width are sufficient to accommodate the business jets using the airport now and into the future.
- Runway width exceeds design standard of 100 feet. For future major runway rehabilitation projects, TxDOT and the FAA may fund up to the 100-foot width standard, with the remaining 50 feet funded locally.

Enhancements:

- Installation of Engineered Material Arresting Systems (EMAS) at both runway ends to meet safety standards and increase usable takeoff/landing distances.
- Runway declared distances adjusted to improve operational capability without affecting adjacent waterways (Hickory Creek and Dry Fork Hickory Creek).
- Lighting/approach aid upgrades include medium intensity runway lights (MIRL) being upgraded to LED and the installation of runway end identifier lights (REILs) to the 36R end to improve pilot situational awareness.
- Land acquisition/easements include acquisition of approximately 3.9 acres to secure the runway protection zones (RPZs) on both ends of the runway.

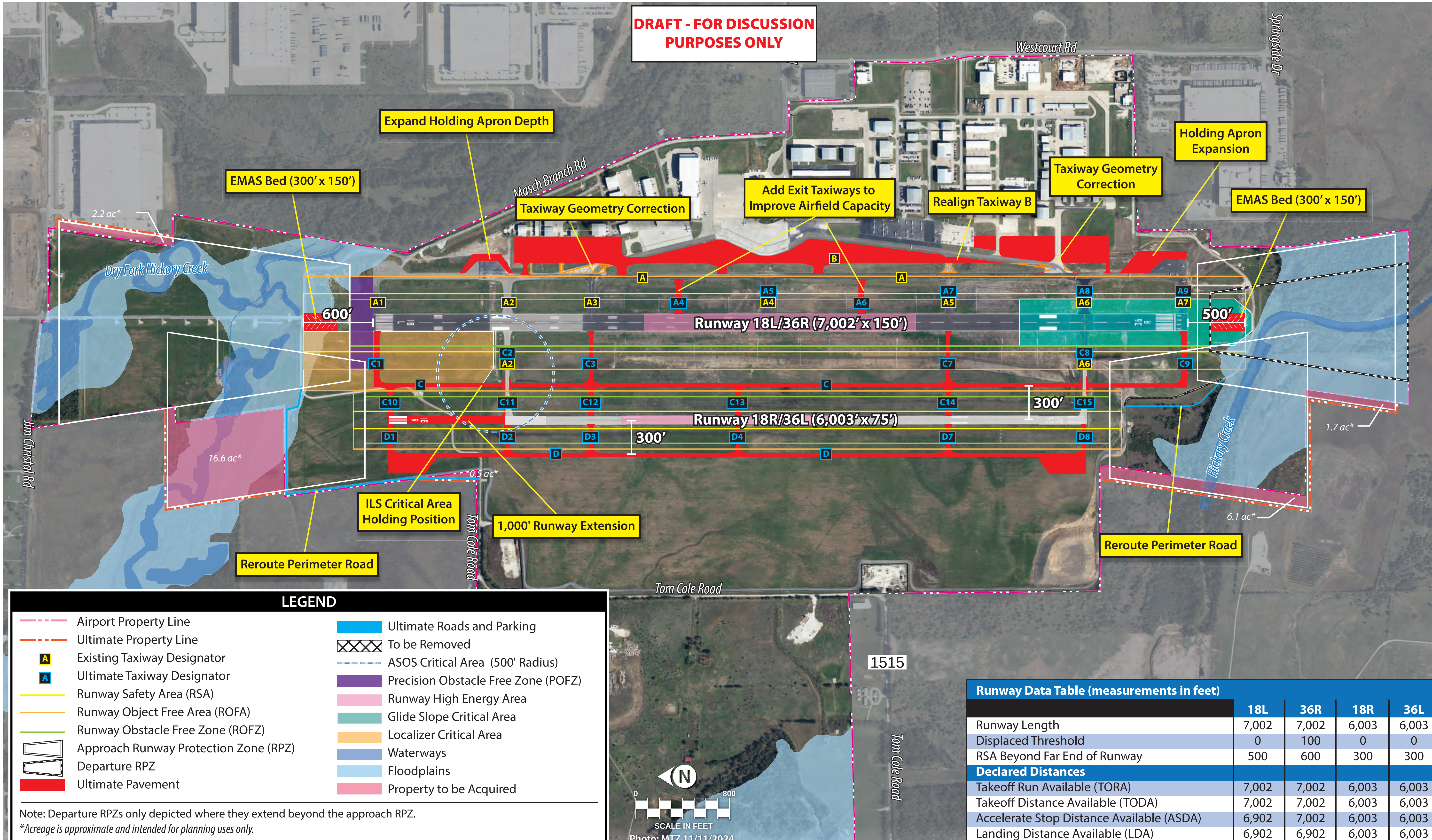
Runway 18R-36L (Parallel Runway)

Dimensions:

- Existing dimensions of 5,003 feet long and 75 feet wide are sufficient for small piston aircraft. The plan identifies a planned 1,000-foot extension to 6,003 feet long to accommodate more frequent operations by mid-sized business jets, which will be advantageous particularly as development of the west side of the airfield occurs.

Enhancements:

- Lighting/approach aid upgrades include the installation of REILs on both runway ends to improve pilot situational awareness.
- Land acquisition/easements include acquisition of approximately 23.2 acres to secure the runway protection zones (RPZs) on both ends of the runway and the primary surface.



LEGEND

- Airport Property Line
- Ultimate Property Line
- Existing Taxiway Designator
- Ultimate Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Approach Runway Protection Zone (RPZ)
- Departure RPZ
- Ultimate Pavement
- Ultimate Roads and Parking
- To be Removed
- ASOS Critical Area (500' Radius)
- Precision Obstacle Free Zone (POFZ)
- Runway High Energy Area
- Glide Slope Critical Area
- Localizer Critical Area
- Waterways
- Floodplains
- Property to be Acquired

Note: Departure RPZs only depicted where they extend beyond the approach RPZ.
Acreage is approximate and intended for planning uses only.

Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,002	7,002	6,003	6,003
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	600	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,002	7,002	6,003	6,003
Takeoff Distance Available (TODA)	7,002	7,002	6,003	6,003
Accelerate Stop Distance Available (ASDA)	6,902	7,002	6,003	6,003
Landing Distance Available (LDA)	6,902	6,902	6,003	6,003

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Taxiway Improvements

- Taxiway A (50 feet wide) is a parallel taxiway that extends the entire length of Runway 18L-36R on its east side. The only alteration planned for this taxiway is the addition of two new exit taxiways to reduce runway occupancy times by allowing aircraft more opportunities to exit in the middle portion of the runway.
- Taxiway B (50 feet wide) is a partial-parallel taxiway that serves the east side of the airfield, including the terminal ramp and aircraft hangars. Taxiway B is nonlinear, creating non-standard intersections with Taxiway A. The plan includes realignment of Taxiway B to be a true dual-parallel taxiway while eliminating the non-standard intersections and direct access points.
- Ultimate parallel Taxiways C and D are planned to support new west side developments.
- Existing Taxiway A holding aprons are planned to be expanded to support use by more aircraft and larger aircraft. Two additional holding aprons are planned at the north and south ends of ultimate Taxiway D to support operations on the west side of the airfield.

LANDSIDE CONCEPT

The primary goal of landside facility planning is to provide adequate space to meet reasonably anticipated needs of the various users while optimizing operational efficiency and land use. Achieving these goals yields a development scheme that segregates functional uses while maximizing the airport's revenue potential. The landside development plans are depicted on **Exhibits iB** and **iC**.

All landside development should occur only as dictated by demand. The locations and sizes of new facilities (aprons, hangars, etc.) proposed in the recommended plans are conceptual and may not reflect the needs of future developers and their customers. The recommended concept is strictly intended to be used as a guide for DTO staff when considering new developments.

- **General Aviation Terminal Services |** The existing 4,800 square foot (sf) GA Administration Building and Sheltair's fixed base operator (FBO) facilities are sufficient to meet GA terminal service needs at DTO, and no expansions are planned. Over time, the FBO and various specialty aviation service operators (SASOs) on the airport will develop new facilities or modernize and/or expand existing general aviation (GA) services facilities to better serve their customers and the users of the airport. The plan includes the development of a 5,000-sf GA terminal facility on the west side of the airfield to support activities and developments in that area.

- **Aprons |** Available apron space at DTO totals 60,175 square yards (sy) for aircraft parking and circulation. The plan identifies several apron expansions on the east and west sides of the airfield, totaling over 194,000 sy for new aircraft parking space. This includes a dedicated cargo apron on the west side.

- **Hangars |** Existing hangars at DTO total 736,720 sf of storage capacity. The airport maintains a hangar waiting list of 100 individuals and many SASOs have expressed interest in developing hangar facilities at DTO. The plan reflects new hangar developments on what remains of the airport's undeveloped properties on the east side, along with redevelopment of certain areas with the aim of focusing on facilities to support larger GA aircraft, while new developments on the west side of the airfield are planned to support smaller GA aircraft.

- **Fuel Storage |** Available fuel farms at DTO provide total storage capacities of 36,340 gallons of Jet A fuel and 37,340 gallons of 100LL fuel. Additional Jet A fuel storage capacity may be needed as turbine traffic grows. Future planning for unleaded aviation fuel should also be considered as it becomes more widely adopted and available.

- **Vehicle Parking |** New or expanded parking lots and vehicle access roads are planned with most of the new hangar developments on the east and west sides. In the existing core terminal area, a vehicle parking lot expansion is planned for the GA Administration Building and the new ARFF station to support new hangar facilities in the area. The planned west GA terminal will be supported by a large vehicle parking lot centrally located between new hangars planned for FBO/SASOs.

- **Air Cargo Facilities |** Air cargo activities at DTO currently comprise a small share of the overall operational activity at DTO. There are no scheduled cargo flights; all cargo flights operate as on-demand charters. Most cargo charters carry inbound freight to Denton, and outbound shipments are rare. A substantial expansion of air cargo services at DTO would likely require significant investments in dedicated cargo facilities, infrastructure, and handling equipment – investments that may not be justifiable given the low revenue levels the airport/city currently receives from cargo operations. Despite this, DTO's air cargo services provide substantial value to key companies in the Denton community, making the continuation of charter cargo operations a priority. Should opportunities arise for expanded air cargo operations at DTO, the plan includes a dedicated air cargo handling facility, associated apron, and truck loading/staging area on the west side of the airfield. Once Loop 288 is developed, the west side will be more accessible to the regional roadway network for distribution trucks.

- **Airport Traffic Control Tower (ATCT) |** The ATCT has been identified by staff as undersized, with limited space for more controllers, which may be needed as operation levels continue to rise at DTO. The plan includes the option to expand the existing tower or develop a new tower in a location nearby the existing tower.

- **Advanced Air Mobility (AAM) |** AAM is an emerging industry that involves next-generation aviation technologies designed to move people and goods more efficiently using innovative aircraft, such as electric vertical takeoff and landing (eVTOL) vehicles, autonomous drones, and hybrid systems. The plan includes reserving a 5.7-acre site for a vertiport and any supporting facilities (taxilane, apron, terminal, vehicle access and parking, firefighting facilities, etc.) west of the proposed Loop 288 and north of Tom Cole Road.

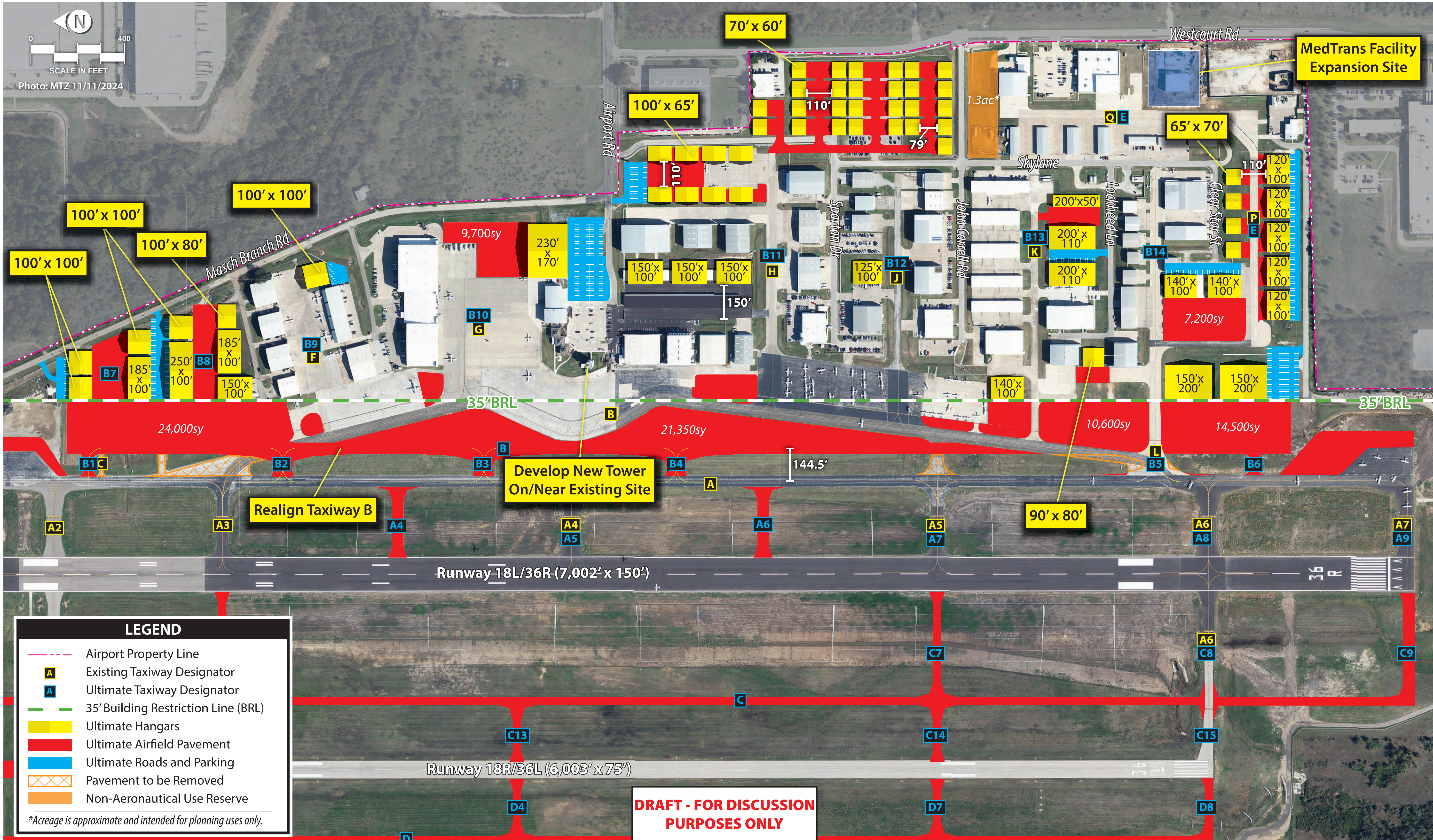


Exhibit iB
RECOMMENDED DEVELOPMENT CONCEPT - EAST SIDE

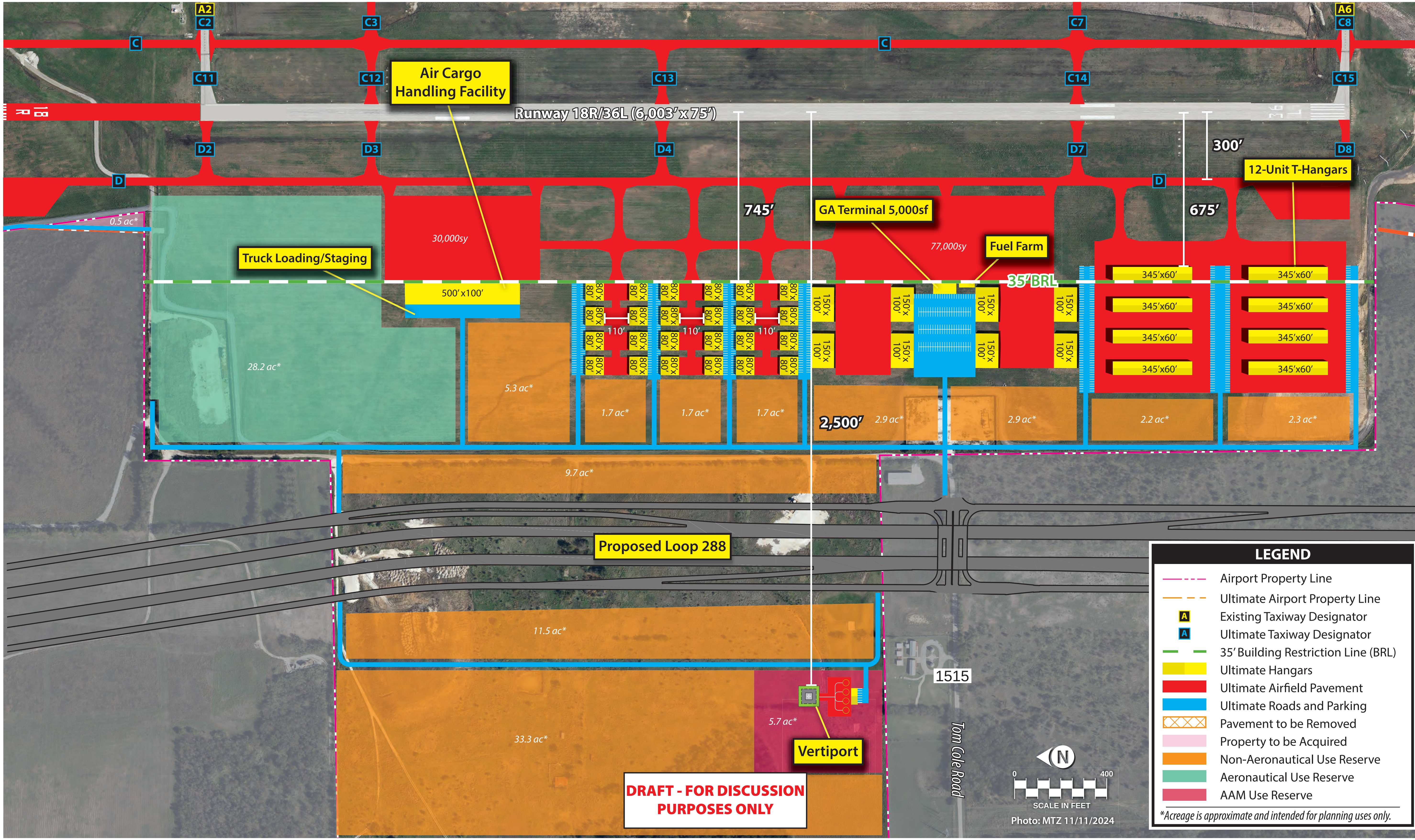


Exhibit iC
RECOMMENDED DEVELOPMENT CONCEPT - WEST SIDE

- **Non-Aeronautical Development |** The plan for DTO includes reserving approximately 1.3 acres on the east side and approximately 75 acres on the west side for future non-aeronautical use. On the west side, properties that front the proposed Loop 288 are planned for non-aeronautical use to take advantage of the visibility from the highway, which will attract commercial developments that could boost and diversify airport revenues.

DEVELOPMENT FUNDING

The full implementation of the master plan is likely to take more than two decades, at a cost of $421.4 million in 2025 dollars. However, it is not unusual for the capital plan and phasing program presented in Chapter Six to change over time due to funding limitations or changes in the aviation industry. An effort has been made to identify and prioritize all major capital projects that would require federal or state grant funding; nevertheless, the airport and TxDOT review the five-year CIP on an annual basis.

The breakdown of funding over the planning horizons is presented in **Table iC**. Approximately 69 percent of the total cost is eligible for grant funding from the FAA's Airport Improvement Program (AIP) or TxDOT. The funding source for the AIP is the Aviation Trust Fund, which is funded through user fees and taxes on airline tickets, aviation fuel, and aircraft parts. New hangar construction, private parking lots, and taxiways for private developments are anticipated to be funded by private developers. A more detailed discussion of the CIP can be found in Chapter Six of the study.

With the study completed, the most important challenge is implementation. The cost of developing and maintaining aviation facilities is an investment that yields impressive benefits for the City of Denton. This plan and associated development program provide the tools the City of Denton will require to meet the challenges of the future.

TABLE iC | Development Funding Summary

Planning Horizon	Total Cost	Federal/TxDOT Eligible	Sponsor
Short Term	$24,505,000	$21,802,500	$2,702,500
Intermediate Term	$149,830,000	$120,510,000	$29,320,000
Long Term	$247,052,000	$149,238,000	$97,814,000
Total Program Costs	**$421,387,000**	**$291,550,500**	**$129,836,500**

Federal = Airport Improvement Program
TxDOT = Texas Department of Transportation Aviation Division
Sponsor = City of Denton

Sources: Cost estimates prepared by Garver; Project staging prepared by Coffman Associates

Chapter One

Inventory

Chapter One
Inventory

The inventory of existing conditions is the initial step in the preparation of the *Denton Enterprise Airport Master Plan*. The inventory will serve as an overview of the airport's physical and operational features, including facilities, users, and activity levels, as well as specific information related to the airspace, air traffic activity, and role of the airport. Finally, a summary of socioeconomic characteristics and a review of existing environmental conditions on and adjacent to the airport are thoroughly detailed, which will provide further input into the study process.

Information provided in this chapter serves as the baseline for the remainder of the master plan, which is compiled using a wide variety of resources, including: applicable planning documents and financial reports; on-site visits; interviews with airport staff, tenants, and users; aerial and ground photography; federal, state, and local publications; and project record drawings.

AIRPORT SETTING

LOCATION

The City of Denton is the county seat of Denton County, Texas, and is located on the far north end of the Dallas-Fort Worth metroplex area at the intersection of Interstate 35 (I-35) and U.S. Highways 380, 377, and 77. At this location, I-35 splits into I-35E to reach Dallas, Texas, and I-35W to reach Fort Worth, Texas. Both Dallas and Fort Worth are approximately 40 miles southeast and southwest of Denton, respectively. These three cities were commonly known as the "Golden Triangle of North Texas" due to the wealth of the area that resulted from the Spindletop oil boom in 1901 and to the strategic location of the cities, which form the shape of a triangle. Denton's prime location within the Dallas-Fort Worth Metroplex make it a highly desirable place to live and work.

The City of Denton is comprised of approximately 98.8 square miles[1] and lies on the northeast edge of the Bend Arch-Fort Worth Basin, which is characterized by flat terrain. Underneath the city is a portion of the Barnett Shale, which is a geological formation and a rich source of natural gas.

The city is included within the Dallas-Fort Worth-Arlington Metropolitan Statistical Area (MSA) and had an estimated population of 158,349 residents in 2023. In addition, the city contains several major contributors to the state's economy, including industries such as service and manufacturing, retail, automotive, and healthcare. Education also plays a significant role in the local economy, as the city is home to the University of North Texas and Texas Woman's University.

Denton Enterprise Airport (DTO) is located approximately three miles west from the central Denton business district and is situated on 929 acres at an elevation of 642.7 feet above mean sea level (MSL). Access to the airport is provided from the north via Highway 380 and from the east via I-35. The terminal is accessed from Airport Road. **Exhibit 1A** depicts the regional setting.

CLIMATE

Climate and local weather conditions are important considerations in the master planning process, as they can significantly impact an airport's operations. For example, high temperatures and humidity can increase runway length requirements for some aircraft, prevailing winds dictate primary runway orientation, and cloud cover percentages and frequency of inclement weather can determine the need for navigational aids and lighting. Knowledge of these weather conditions during the planning process allows the airport to prepare for any improvements that may be needed on the airfield.

Denton experiences hot summers with an average high temperature of 95.7 degrees Fahrenheit (°F) in July. Winters are generally mild; January is the coldest month, with an average low temperature of 32.2°F. According to the Köppen Climate Classification System, Denton has a humid subtropical climate with no significant precipitation difference between seasons. The area receives an average of 35.60 inches of precipitation each year and May is the rainiest month. **Exhibit 1B** summarizes weather and wind patterns at the airport.

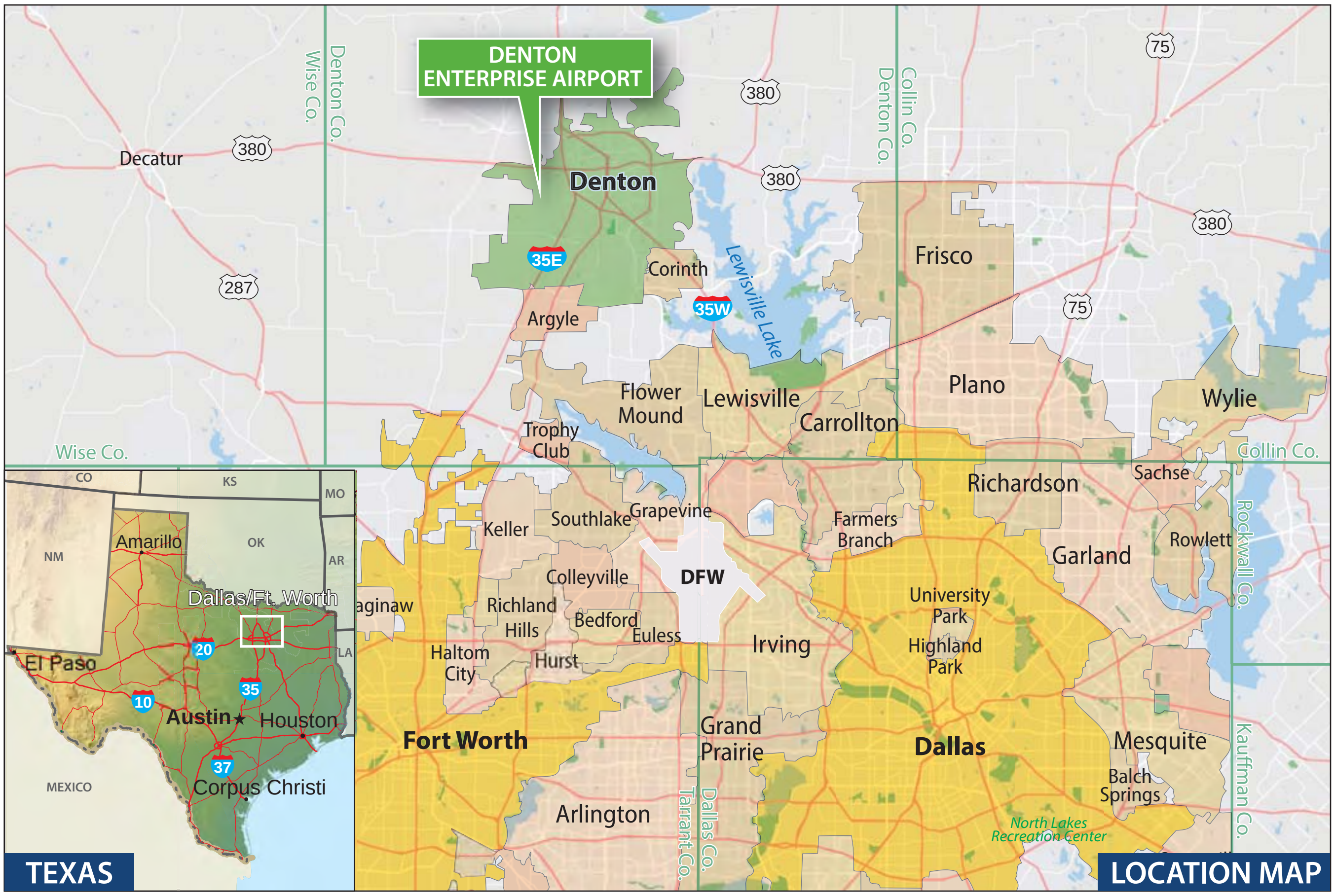
Table 1A indicates that visual meteorological conditions (VMC) occur 89.49 percent of the time. When under VMC, pilots can operate using visual flight rules (VFR) and are responsible for maintaining proper separation from objects and other aircraft. Instrument meteorological conditions (IMC) account for all weather conditions less than VMC that still allow for aircraft to safely operate under instrument flight rules (IFR). Under IFR, pilots rely on instruments in their aircraft to accomplish navigation. IMC occur 7.40 percent of the time. Less than IMC, or poor visibility conditions (PVC), are present 3.11 percent of the time. Under PVC, the airport is only accessible by utilizing published precision instrument approach procedures.

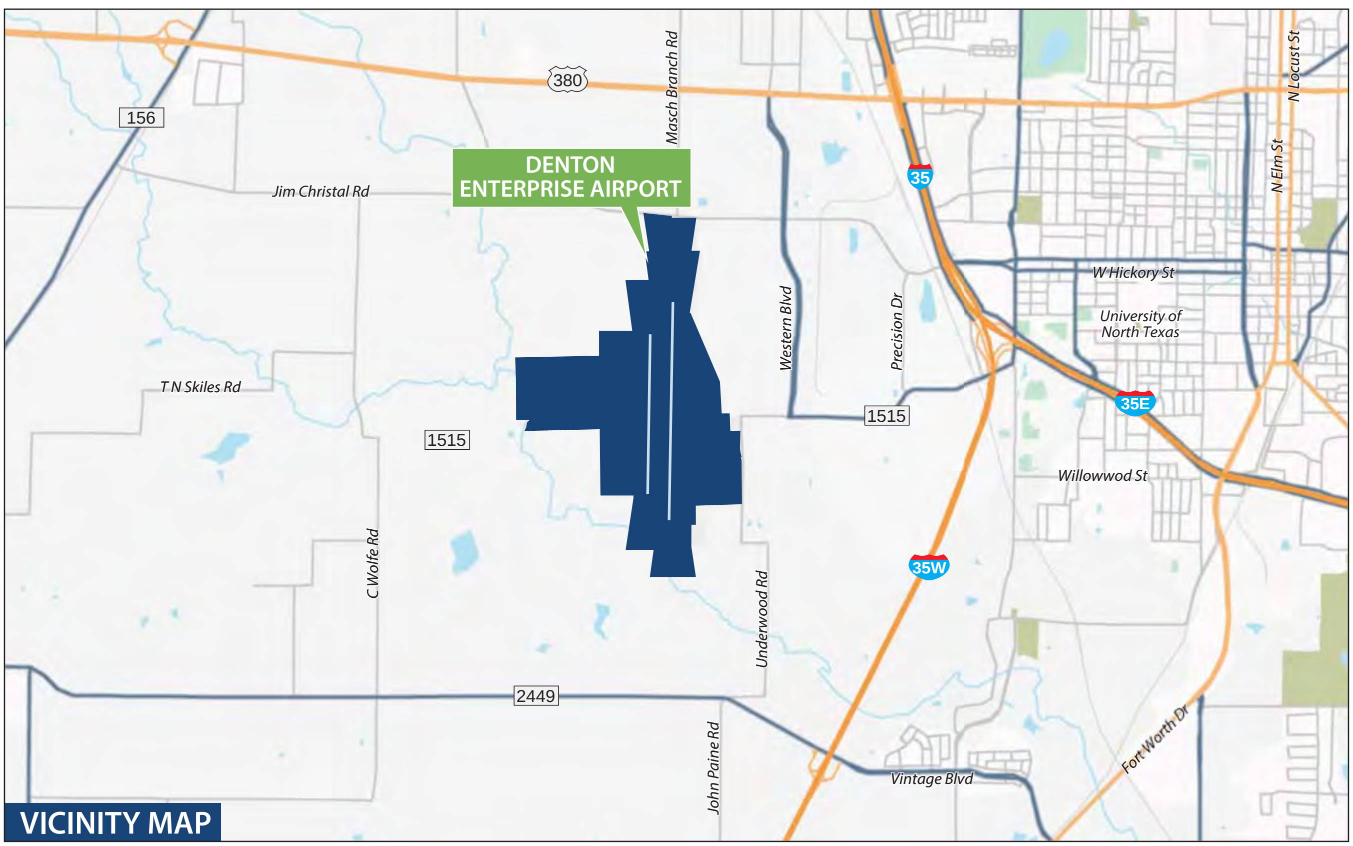
TABLE 1A | Weather Conditions

Condition	Cloud Ceiling	Visibility	Percent of Total
VMC	≥ 1,000' AGL	≥ 3 statute miles	89.49%
IMC	≥ 500' AGL and < 1,000' AGL	≥ 1 to < 3 statute miles	7.40%
PVC	< 500' AGL	< 1 statute mile	3.11%
VMC= visual meteorological conditions IMC= instrument meteorological conditions		PVC= poor visibility conditions AGL= above ground level	

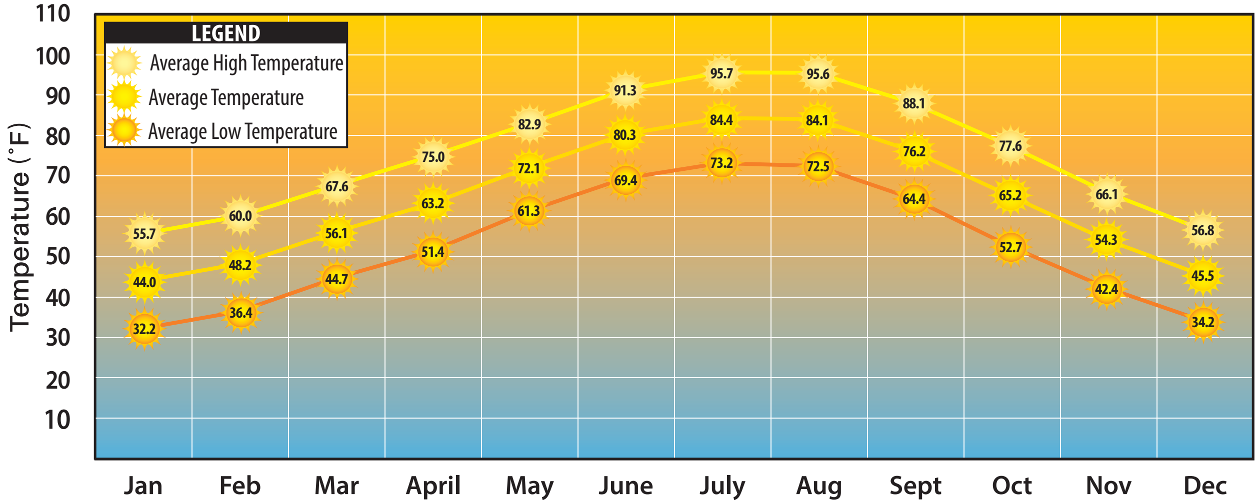
Source: Denton Municipal Airport, US Station 72258903991, observations from 1/1/2014 through 12/31/2023

[1] *Statistical Trends and News of Denton*, Fourth Quarter Fiscal Year 22/23.

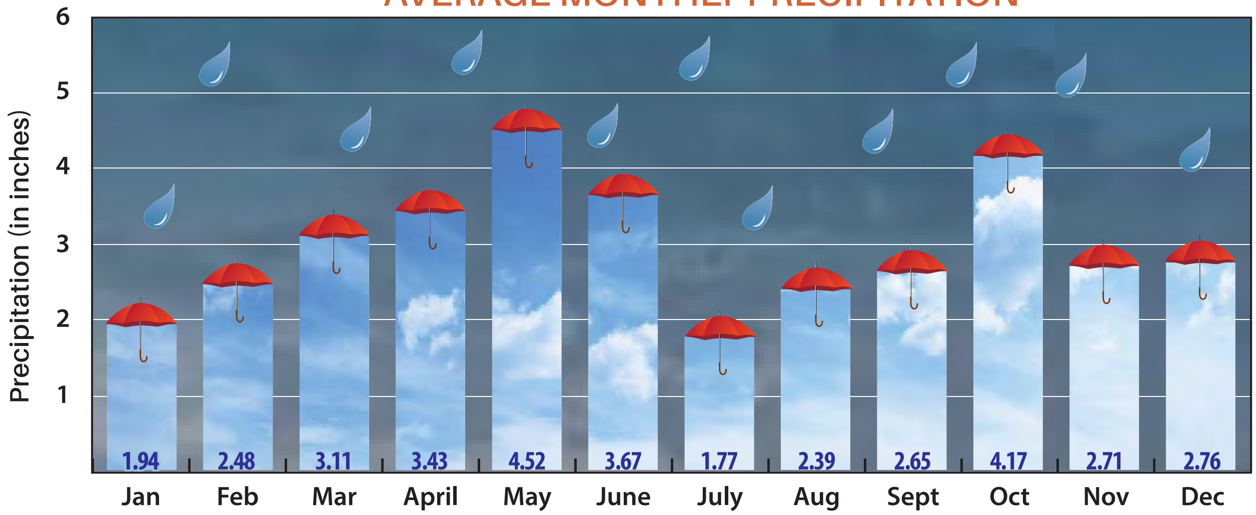

DENTON ENTERPRISE AIRPORT
Denton
Decatur
Corinth
Argyle
Lewisville Lake
Frisco
Plano
Wylie
Flower Mound
Lewisville
Carrollton
Trophy Club
Richardson
Sachse
Rowlett
Garland
Keller
Southlake
Grapevine
Farmers Branch
Colleyville
DFW
University Park
aginaw
Richland Hills
Bedford
Euless
Highland Park
Haltom City
Hurst
Irving
Fort Worth
Grand Prairie
Dallas
Mesquite
Balch Springs
Arlington
North Lakes Recreation Center
Wise Co.
Denton Co.
Collin Co.
Rockwall Co.
Kauffman Co.
Tarrant Co.
Dallas Co.
380
287
75
35E
35W
CO
KS
MO
NM
OK
AR
LA
Amarillo
Dallas/Ft. Worth
El Paso
Austin
Houston
Corpus Christi
MEXICO
20
10
35
37
TEXAS
LOCATION MAP


380
156
Jim Christal Rd
Masch Branch Rd
DENTON ENTERPRISE AIRPORT
35
W Hickory St
University of North Texas
N Locust St
N Elm St
Western Blvd
Precision Dr
1515
35E
T N Skiles Rd
Willowwod St
C Wolfe Rd
35W
Underwood Rd
2449
John Paine Rd
Vintage Blvd
Fort Worth Dr
VICINITY MAP

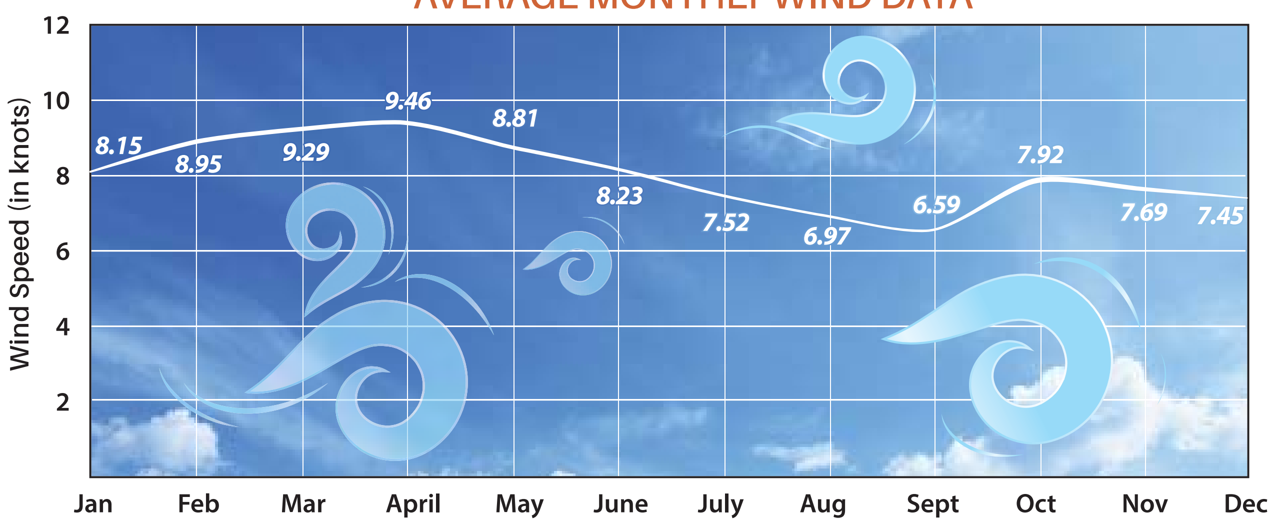
AVERAGE MONTHLY TEMPERATURES



AVERAGE MONTHLY PRECIPITATION



AVERAGE MONTHLY WIND DATA



Source: NOAA National Centers for Environmental Information Climate Normals, 1991-2020 -- Station: Denton MUNI AP, TX

Exhibit 1B
CLIMATE AND WIND PATTERNS

AIRPORT HISTORY

The history of the airport in Denton began in September 1943, when the City of Denton purchased 550 acres of land on the west side of the city to develop Denton Enterprise Airport (formally known as Denton Municipal Airport prior to 2013). In January 1944, the City of Denton entered into a contract with the Civil Aeronautics Authority (CAA) for the construction of the airport. In May 1946, the Mayor of Denton received a letter from the CAA informing the city that airport construction was completed and ready to be taken over by the city. Initially, the airport had a single concrete runway, which measured 4,125 feet long and 150 feet wide.

During World War II, the airport was used for considerable training activity by the North Texas State College (now known as the University of North Texas) flying school. The airport also hosted one of the only seven glider schools in the United States.

Today, DTO sits on 929 acres and has two parallel paved asphalt runways. Runway 18L-36R is the primary runway. It measures 7,002 feet long and 150 feet wide and can accommodate larger jet traffic. The airport completed construction of parallel Runway 18R-36L in November 2019 to provide a secondary location for flight training, separate traffic, and help minimize delays for arrivals and departures. Runway 18R-36L measures 5,000 feet long and 75 feet wide. The airport constructed a general aviation administration building in 2007 and a new Denton fire station (Station #9) was completed in July 2024. The airport traffic control tower (ATCT) at DTO was constructed in 2004.

AIRPORT ADMINISTRATION

The airport is owned by the City of Denton and is operated as a department within the city's organizational chart. The Director of Airport reports to the city manager and manages day-to-day operations and oversight of airport staff. The airport's staff include six full-time positions and two part-time positions. **Figure 1A** depicts the DTO organizational chart.

The Airport Advisory Board (AAB) serves the city council in an advisory capacity concerning matters related to airport safety, flight and ground operations, airport infrastructure improvements, long-term planning, and budgetary issues. The AAB consists of seven members appointed by the city council. Each member serves a two-year term with a three-term limit, or until a successor is appointed.

The city's Economic Development Partnership Board makes recommendations to the City Council regarding DTO branding, marketing, and incentive policies, and acts as a recommending body to the city council regarding specific airport economic development incentives.

The airport is set up as an enterprise fund within the city budget and revenue is sourced from customers of the airport. The Airport Fund, which was established in fiscal year (FY) 2011, is required to use the revenues received at the airport (including gas well revenues from airport property) for airport uses due to state and federal rules regarding grant funding received for airport improvements. Prior to 2011, the airport was part of the General Fund and debt was supported by the City's debt portion of the tax rate. The Airport Fund was established in FY 2011 as a self-sustaining enterprise. Airport paid its own debt service from FY 2011 to 2016. Beginning in FY 2017, airport debt service was budgeted to be paid by the City's debt service tax rate to assist with the financial sustainability of the airport. However, beginning in FY 2021, the airport resumed paying its own debt service as a self-sustaining fund.

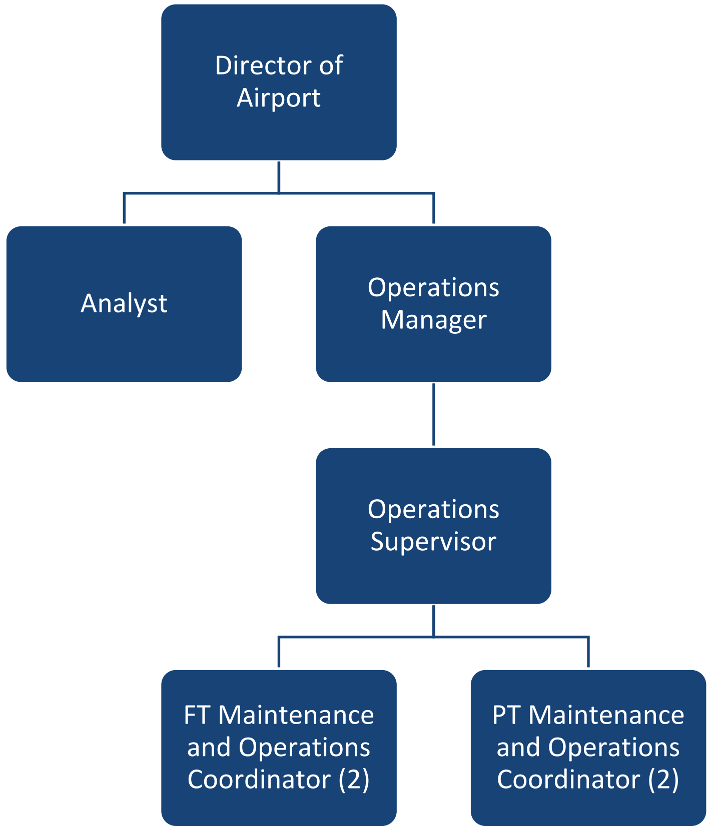


Figure 1A – Denton Enterprise Airport Organizational Chart

AIRPORT SYSTEM PLANNING ROLE

Airport planning exists on many levels: national, state, and local. Each level has a different emphasis and purpose. On the national level, Denton Enterprise Airport is included in the *National Plan of Integrated Airport Systems* (NPIAS). On the regional and state levels, the airport is included in the *Texas Airport System Plan* (TASP). The local planning document is the *Denton Enterprise Airport Master Plan*, which was previously updated and approved in 2015.

FEDERAL AIRPORT PLANNING

The NPIAS identifies nearly 3,310 existing and proposed airports that are included in the national airport system, the roles they currently serve, and the amounts and types of airport development eligible for federal funding under the Airport Improvement Program (AIP) over the next five years. The NPIAS contains all commercial service airports, all reliever airports, and select publicly owned general aviation airports.

DTO is classified in the NPIAS as a reliever airport (one of 24 in the State of Texas), meaning that certain criteria must be met to be viewed by the federal government as an asset to the air transportation system. Reliever airports are designated by the Federal Aviation Administration (FAA) to relieve congestion at commercial service airports (Dallas-Fort Worth International Airport and Dallas Love Field Airport) and to provide more general aviation access to the overall community. Within this airport designation, there are four different airport categories: national, regional, local, and basic. DTO is classified within the national category (one of 14 in the State of Texas). National reliever airports are critical components of the national airport system, as they provide communities with access to national and international markets in multiple states and throughout the United States. National airports have very high levels of aviation activity, including activity by many jet and multi-engine propeller aircraft.

STATE AIRPORT PLANNING

DTO is included in the 2010 TASP; an update to the TASP is currently underway. The primary purpose of a state airport system plan is to study the performance and interaction of an entire aviation system. The TASP objectives include providing air service based on the level of service required throughout the state, adequate airport capacity to meet forecast demand, and an airport system developed to applicable federal and state planning and design standards.

DTO is included in the 2010 TASP as one of the 24 reliever airports in the State of Texas. According to the TASP, reliever airports have or must be forecast to have 100 based aircraft or 25,000 annual itinerant operations, and generally serve areas with populations of 250,000 or more. These airports generally relieve commercial service airports that operate at 60 percent capacity with at least 250,000 annual enplanements.

There are no specific design standards for reliever airports; however, typical reliever airport reference codes (ARCs) are C-II and D-II. ARC is used to relate airport design criteria to the operational and physical characteristics of the aircraft types that will operate at the airport. The ARC is comprised of two components: 1) the aircraft approach category (AAC), which is designated with a capital letter (A through E) and is based on an aircraft's approach speed (operational characteristic); and 2) the airplane design group (ADG), which is designated by a Roman numeral (I through VI) and is based on an aircraft's wingspan and tail height (physical characteristics). More detail on ARCs as they apply to DTO will be provided in the Critical Aircraft section of the Forecast chapter. A reliever airport in Texas can be designed to accommodate a variety of aircraft, based on the specific role it performs in the TASP. For comparison purposes, **Table 1B** details the state standards.

TABLE 1B | TASP Minimum Design Standards

	Commercial Service		General Aviation	DTO
	Primary	Non-Primary	Business/Corporate	Reliever
Airport Criteria				
Airport Reference Code[1]	ARC C-II thru D-VI	ARC B-II thru D-IV	ARC B-II through D-IV	ARC D-II[2]
Design Aircraft	Heavy transport	Light transport, business jet	Business jet	Business jet, light/ heavy transport
Minimum Land Requirement				
Runway Safety Area	As required by hub size	136 acres	136 acres	111 acres
Runway Protection Zone		160 acres	160 acres	226 acres
Landside Development		24 acres	24 acres	160+ acres
Runways				
Length	As required by critical aircraft	5,000'	5,000'	7,002'
Width		100'	100'	150'
Strength		30,000 lb.	30,000 lb.	100,000 lb.
Lighting	HIRL	MIRL	MIRL	MIRL

Continues on next page

TABLE 1B | TASP Minimum Design Standards (continued)

	Commercial Service		General Aviation	DTO
	Primary	Non-Primary	Business/Corporate	Reliever
Taxiways				
Type	Full Parallel	Full Parallel	Full Parallel	Full Parallel
Approach				
Type	Precision	Precision	Non-precision	Precision
Visibility Minimums	200' – ½ mile	200' – ½ mile	250' – ¾ mile LPV	200' – ½-mile
Services				
Services Available	Full range	Full range	Terminal, restrooms, telephone, Avgas, Jet A; attended 18 hours	Full range

[1]Described in detail in Chapter 2
[2]Per the *DTO Airport Layout Plan*, November 2015
Sources: 2010 Texas Aviation System Plan; Airnav.com

Economic Impact

In 2018, the Texas Department of Transportation (TxDOT) conducted a study of the impact and relationship of airports in Texas with the statewide economy. Impact types include:

- Direct impacts, which account for activities by on-airport businesses and visitor spending at locations such as hotels and restaurants;
- Indirect impacts, which include any portions of direct impacts that are used to purchase goods or services within the state;
- Induced impacts, which are portions of direct and indirect revenues that are paid to on-airport workers and spent on goods and services within the state; and
- Total economic impacts, which are the sums of direct, indirect, and induced impacts.

Table 1C summarizes the annual economic impact of DTO.

TABLE 1C | Aviation Economic Impact

	DTO	All Texas System Airports
Total Annual Economic Impact	$156.3 million	$94.3 billion
Total Annual Payroll	$45.8 million	$30.1 billion
Total Jobs	1,435	778,995

Source: TxDOT, Texas Aviation Economic Impact Study, 2018

DTO is home to numerous on-airport businesses, which offer services such as fixed base operator (FBO) amenities, flight instruction, avionics, and aircraft maintenance. The most frequent general aviation operations at DTO include flight instruction, recreational flying, aircraft charter operations, air cargo operations, and flights bringing visitors to the region. DTO's economic impact makes it one of the top economic generators of the 264 general aviation airports in the State of Texas.

The airport is in the process of updating its economic impact figures. This section will be updated in later printings with more current data.

LOCAL AIRPORT PLANNING

The airport master plan is the primary local planning document that provides a 20-year airport development vision based on aviation demand forecasts. Given the inevitable uncertainties as the master plan ages, the FAA recommends that airports update their master plans every seven to 10 years, or as necessary to address any significant changes. DTO's master plan was last updated in 2015. Major recommendations from this plan included the following:

- The addition of a 5,000-foot-long west parallel runway constructed to C-II standards at 100 feet wide – *complete*; *constructed to B-II standards at 75 feet wide*
- Relocation of taxiway connectors A2 and A6 to improve access to the new runway – *complete*
- Realignment of Taxiway Bravo and removal of direct access taxiways between the apron and runways – *partially complete*
- Roadway capacity improvements on Airport Road and Underwood Road – *not started*
- Improvements to the Hickory Creek bridge crossing – *not started*
- A new access road to connect Tom Cole Road to Jim Christal Road, allowing western airport access – *not started*

AERONAUTICAL ACTIVITY

At airports that primarily serve general aviation activity, the numbers of based aircraft and operations (takeoffs and landings) are key aeronautical activity measures. These indicators will be used in subsequent analyses in this master plan to project future aeronautical activity and determine future facility requirements.

ANNUAL OPERATIONS

Aircraft operational statistics at DTO are recorded by the airport traffic control tower (ATCT). The ATCT is owned by the city and operated by an FAA contractor every day from 6:00 a.m. to 10:00 p.m. Among other duties, the ATCT counts aircraft operations, which are defined as either a takeoff or landing. Aircraft operations are classified as either local or itinerant. Local operations are those that stay within an airport's traffic pattern, such as flight training or touch-and-go operations, while itinerant operations are those with origins or destinations at other airports. Aircraft operations are further separated into four general categories:

- **Air Carrier** – Air carrier operations are performed by commercial airline aircraft with more than 60 seats. Another commercial airline indicator is the amount of air cargo shipped, which is typically recorded in annual enplaned pounds or tons.
- **Air Taxi** – Air taxi operations are associated with commuter aircraft with 60 or fewer passenger seats, but also include for-hire general aviation aircraft.

- **Military** – Military operations are conducted by airplanes and helicopters with military identification.
- **General Aviation** – General aviation operations include all other aviation activity, from small ultralights to large business jets.

Table 1D provides a summary of operational statistics since 2004, including the breakdown of itinerant and local operations and the categories of operations. Operations at DTO have steadily increased throughout the years, with periods of stagnation or declining operations from 2009-2010 and 2016-2017, likely due to the economic recessions that occurred during those times. Operations dropped in 2019, likely due to the impacts of constructing the parallel runway and associated taxiways. DTO exceeded 200,000 annual operations in 2023 and is currently on pace (as of June 2024) to exceed the previous year's total. A Runway 18L-36R reconstruction project closed the runway from July 8 through August 17, 2024, which limited activity at DTO for that period.

TABLE 1D | DTO Operations History

Calendar Year	ITINERANT OPERATIONS					LOCAL OPERATIONS			Total Operations
	Air Carrier	Air Taxi	General Aviation	Military	Total Itinerant	General Aviation	Military	Total Local	
2004	0	566	22,175	14	22,755	34,855	2	34,857	57,612
2005	1	1,094	34,081	35	35,211	51,423	168	51,591	86,802
2006	199	849	30,853	22	31,923	56,901	8	56,909	88,832
2007	23	726	30,576	66	31,391	68,119	224	68,343	99,734
2008	7	1,130	40,041	117	41,295	85,373	2	85,375	126,670
2009	0	392	46,911	175	47,478	94,602	24	94,626	142,104
2010	0	685	49,236	256	50,177	91,911	24	91,935	142,112
2011	4	756	64,380	130	65,270	82,735	26	82,761	148,031
2012	39	1,103	65,446	202	66,790	91,164	32	91,196	157,986
2013	12	1,473	68,676	227	70,388	90,298	54	90,352	160,740
2014	38	1,919	70,351	178	72,486	85,708	16	85,724	158,210
2015	54	1,457	73,215	169	74,895	89,852	50	89,902	164,797
2016	5	1,665	61,514	189	63,373	73,279	4	73,283	136,656
2017	16	1,932	60,504	158	62,610	62,949	49	62,998	125,608
2018	35	1,440	61,535	50	63,060	84,703	14	84,717	147,777
2019	10	1,337	63,098	125	64,570	71,166	8	71,174	135,744
2020	15	963	64,154	31	65,163	71,463	4	71,467	136,630
2021	24	1,572	58,357	60	60,013	78,672	18	78,690	138,703
2022	17	2,574	71,679	50	74,320	99,426	12	99,438	173,758
2023	10	1,590	89,063	76	90,739	114,054	4	114,058	204,797

Source: FAA Operations Network (OPSNET)

BASED AIRCRAFT

Identifying the current number of based aircraft is important to master plan analysis but can be challenging because of the transient nature of aircraft storage. The airport maintains a record of aircraft based on the airport. Historical based aircraft levels at DTO are shown in **Table 1E**.

TABLE 1E | DTO Based Aircraft History

Year	DTO Based Aircraft Inventory	FAA-Validated Based Aircraft
2015	387	379
2016	369	364
2017	455	451
2018	365	362
2019	342	311
2020	323	288
2021	306	301
2022	432	398
2023	482	445
2024	426	412

Sources: Airport Records; National Based Aircraft Inventory Program

As of 2024, there were 426 based aircraft at DTO; however, according to the FAA's validation process, DTO has 412 validated based aircraft. This means that 14 of the 426 aircraft in DTO's based aircraft inventory are already validated at other airports, are not operational or airworthy, or do not have current registrations with the FAA. For the purposes of the master plan and forecasting of aviation demand, only validated aircraft will be used as the baseline count. The 412 validated based aircraft include 306 single-engine piston aircraft, 58 multi-engine aircraft (pistons and turboprops), 34 jets, and 14 helicopters.

CAPITAL IMPROVEMENT HISTORY

To assist in ongoing capital improvements, the FAA and TxDOT Aviation Division provide funding to DTO through the Airport Improvement Program (AIP). Texas is a member of the FAA's Block Grant Program, which gives TxDOT the responsibility of administering AIP grants to reliever and general aviation airports, including DTO. The State of Texas also offers the following funding opportunities for which DTO is eligible:

- **Routine Airport Maintenance Program (RAMP)** – For FY 2024, TxDOT matches local government grants up to $100,000 for basic improvements, such as parking lots, fencing, and other airside and landside needs.
- **Federal Aviation Grants** – These grants provide federal and state grant funding for maintenance and improvement projects to airports that are included in the NPIAS.

Table 1F summarizes TxDOT grant data of airport capital improvement, maintenance, and planning projects that have been undertaken at DTO between 1972 and 2020 and were funded from federal, state, and local sources. During this period, the airport has been awarded more than $30.2 million dollars in state and federal grants.

TABLE 1F | Historical Capital Improvement Projects – from TxDOT Records

Year	TxDOT Project #	Description	Federal Total	State Total	Local Total
1972	–	AMP; Shimek, Roming, Jacobs & Finklea	$6,133	$0	$0
1974	–	Install VASI	$0	$3,450	$0
1975	–	Install VASI-2 on both ends of RW 17-35	$18,679	$0	$0
1975	–	Land	$12,000	$0	$0
1976	–	Acquire land	$210,000	$0	$0
1976	–	Joint with FAA 76-03 Project	$0	$20,000	$0
1977	–	Phase I: extend RW (4150' x 150' to 5000' x 150'), including glide slope grading; extend TW; install RW lighting, lighted wind cone, and segmented circle; relocate N VASI-2 and convert to VASI-4; RW and TW markings	$53,650	$0	$0
1977	–	Relocate road, including incidental drainage and fencing; clearing; adjust, mark, and light powerline	$120,000	$0	$0
1978	–	Joint with FAA 78-05 Project	$0	$25,000	$0
1978	–	Phase II: extend RW (4150' x 150' to 5000' x 150'), including glide slope grading; construct and mark TW extension; install RW lighting, lighted wind cone, and segmented circle; marking; relocate VASI-2 and convert to VASI-4	$289,650	$0	$0
1979	–	Overlay RW (approx. 5000' x 150') and associated TWs; marking	$651,200	$0	$0
1984	–	Construct apron; construct and mark connecting TW; improve drainage at north end; install two lighted supplemental windcones	$468,500	$0	$0
1985	–	AMP Update and EIA Report; Charles Willis	$34,691	$0	$0
1986	–	Construct and mark T-hangar TWs 'H', 'I', and 'J'; construct holding apron RW 17; construct and mark helipad and connecting TW	$226,450	$0	$0
1992	–	Acquire land for north and south RPZ (5.7 ac)	$113,760	$0	$0
1992	–	Conduct Master Plan Study	$135,000	$0	$0
1992	–	Overlay RW 17-35, rehabilitate TWs and apron	$1,175,000	$0	$0
1997	–	Improve safety areas RW 17-35/clear trees, regrade/improve drainage system/ realign approach lights, install fence along terminal apron (1000 lf); update ALP	$1,319,882	$0	$146,653
1998	–	Install 2-electronic security gates	$0	$10,055	$10,055
2001	0118DNTON	Airport master plan	$165,150	$0	$16,515
2001	0018DNTON	Engineering/design for FY 2002 construction-rehab & MITLs; security fencing; signage	$101,610	$0	$11,290
2002	0218DNTON	Rehabilitate RW 17-35, hangar access TWs (21-24) & midfield, joint concrete sealing north hangar access (1890 lf), south FBO apron (330 x 145), south parking apron (18,700 sy), parallel TW (6200 x 50); recon n. parallel TW (1100 x 50), recon north apron (174 x 415); upgrade RW signage; install security fencing (6133 lf) & 5 gates; install MITLs & reflectors on stub TWs	$1,854,392	$0	$211,458

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TABLE 1F | Historical Capital Improvement Projects – from TxDOT Records (continued)

Year	TxDOT Project #	Description	Federal Total	State Total	Local Total
2002	0218DENTN	Reimbursement grant Construct GA automobile parking (5100 sf) Construct air traffic control tower Construct GA terminal building (4000 sf)	$150,000	$419,286	$435,953
2003	M318DNTOX	RAMP: Miscellaneous projects contracted by sponsor	$0	$14,546	$14,546
2004	0418DNTON	Engineering/design to construct parallel taxiway, construct stub taxiway to north general apron and pave 2 grass islands, construct corporate apron, install MITL with separate circuits and regulator	$181,607	$0	$20,179
2004	0418DENTN	Purchase and install radio equipment; construction services associate with the terminal building (PROJECT WAS COMBINED WITH 0218DENTN)	$0	$0	$0
2004	M418DNTON	RAMP: TxDOT herbicide, resurface airport access road, paving material for repair AMA's, maintenance shed, airport entrance landscaping, concrete spillway for fuel storage area, beacon and tower removal	$0	$22,366	$22,366
2005	0518DNTON	ALP and Engineering/Design for construction project 0918DNTON runway extension. reimbursement for 32 acres	$790,931	$0	$51,216
2005	0518DENTO	Construct parallel TW on new alignment (4000 x 50), Construct corporate apron (150 x 360) & stub TW (100 x 370), Install MITL & guidance signs w/separate circuits & regulator (7,200 lf), Drainage improvements	$4,343,764	$0	$482,640
2005	M518DNTON	RAMP: City to repair and resurface airport roads, contract for ATC maintenance, relocate electrical utilities	$0	$23,522	$23,522
2006	M618DNTON	RAMP: Sponsor to contract for repair/resurface Sabre Lande, Aeronca, taxiway Charlie, flatwork for maintenance yard pad site, professional services for DTO SPCC, construction of maintenance building, maintenance for MIRRA recorder, tower equipment, purchase FOD Boss sweeper	$0	$15,890	$15,890
2007	M718DNTON	RAMP: Sponsor to contract for resurfacing Sabre Lane, repair and crack sealing South Ramp, taxiway and street repair	$0	$49,412	$49,412
2008	0818DNTON	Engineering/Design to Construct hangar access TW #2 (1,000 x 35); Construct hangar access TW #4 (790 X 35); Construct hangar access TW #3 (975 X 35); Construct hangar access TW #1 (479 X 50) Construct holding pad (100 x 100)	$107,556	$0	$11,951
2008	M818DNTON	RAMP: Purchase of materials for Sky Lane sewer extension, air traffic control tower maint. agreement, professional services for SWPPP update and inspection.	$0	$49,787	$49,787
2009	0918DENTO	Acquire land for RW extension/ RSA/MALSR (23 ac) discretionary 2006	$770,256	$0	$85,583

Continues on next page

TABLE 1F | Historical Capital Improvement Projects – from TxDOT Records (continued)

Year	TxDOT Project #	Description	Federal Total	State Total	Local Total
2009	0918DENTN	Conduct Airport Business Plan	$0	$50,000	$52,975
2009	0918DENNT	Contingency, Admin. fees, RPR, testing, etc.; Construct hangar access TW #2 (1,000 x 35); Construct hangar access TW #4 (790 X 35); Construct hangar access TW #3 (975 X 35); Construct hangar access TW #1 (479 X 50) Alt. bid ($471,430); Construct holding pad (100 x 100)	$1,295,949	$0	$221,962
2009	0918DNTON	MOA with FAA; Fencing (18,000 lf) & install 3 security gates (12 ft. width); Earthwork for south RSA/ displace threshold 500 ft. Relocate glide slope/localizer antenna (FAA discretionary); Mark RW 17-35 (91,791 sf); Upgrade/relocate PAPI-4 RW 17; Extend MITLs (1300 lf); Seeding (20 ac); Earthwork for north RSA Extend RW 17 (1001x 150); Expand run-up area (100 x 50); Mobilization; Extend parallel TW (1300 x 50); Extend MIRL (1001 lf w/ disp. threshold); Upgrade/ relocate MALSR; Erosion/sedimentation control (north & south RSA); Distance remaining signs; Replace VASI with PAPI-4 RW 35	$4,919,746	$1,379,962	$738,771
2009	M918DNTON	RAMP: Entrance & vehicle access paving. sec. gate maint., light pole relocation & tower ent. gate access. G/D- airside & landslide drainage imp.; tower radio maint; herbicide/pesticide appls. A#1 fiber/connectivity; tower radio maint.; signs; house removal	$0	$49,999	$49,999
2010	M018DNTON	RAMP: pavement improvements/repairs; drainage improvements; chemical applications; radio and gate repairs/maintenance; airport signage; and security lighting. A#1 - Security assessment and corrective measures.	$0	$49,836	$49,836
2011	1118DNTON	Engineering/Design to Install apron lighting/ fencing; Demolition of pavement & utilities; Drainage improvements; Expand apron north of terminal building (5700 sy); Contingency, admin. fees, RPR, etc.; Install tiedowns & mark apron	$76,141	$0	$8,460
2011-2015	M118DNTON M1418DNTO M1518DNTO M218DNTON M318DNTON	RAMP: Sponsor to perform airport general maintenance.	$0	$243,615	$243,615
2012	12MPDNTON	Airport Master Plan update including infrastructure/drainage study	$399,636	$0	$226,989
2012	1218DENTN	Conduct Wildlife Assessment	$78,418	$0	$9,713

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TABLE 1F | Historical Capital Improvement Projects – from TxDOT Records (continued)

Year	TxDOT Project #	Description	Federal Total	State Total	Local Total
2012	1218DNTON	Demolition of pavement & utilities; Drainage improvements; Expand apron north of terminal building (5700 sy); Contingency, admin. fees, RPR, etc.; Install tiedowns & mark apron; Install apron lighting/fencing	$989,244	$0	$109,916
2014	14TBDNTON	Engineering/design for terminal expansion. PROJECT WAS CANCELLED AND CITY PAID 100% OF DESIGN FEES	$0	$0	$68,225
2015	15TBDNTON	Contingency, RPR, admin on terminal expansion; Construct GA automobile parking (8450 sf); Drainage GA Automobile Parking; Construct terminal public meeting room. ($200K max State participation, this includes the design costs) PROJECT WAS CANCELLED AFTER BIDS WERE OPENED. NO GRANT EXECUTED. ADVERTISING COSTS ONLY	$0	$775	$775
2015	1518DENTN	Obstruction Evaluation; MOA with FAA or PDRA for ILS impacts; Engineering/design	$490,245	$0	$65,634
2016-2021	M1618DNTO M1718DNTO M1818DNTO M1918DNTO M2018DNTO M2118DNTO	RAMP: Sponsor to perform airport general maintenance.	$0	$299,995	$326,698
2017	1718DENTN	Construct West Parallel RWY (4500 x 75); Construct Additional Pavement for a Final 5000 x 100 RWY (Sponsor 100% Share); Contingency, admin fees, RPR, mobilization, etc.; Relocate ASOS (FAA equipment); Install PAPIs on West Parallel RWY; Construct & mark connecting TW from primary RWY to new RWY 17R (800 x 35); Construct & mark connecting TW from primary RWY to new RWY 35L (800 x 35)	$4,976,436	$0	$1,797,423
2018	1818DNTON	Engineering and Design for Runway Reconstruct, Taxiway Alpha2 and Bravo relocation (NPE '16 '17)	$177,960	$0	$19,773
2019	1918DENTN	Engineering and design for west parallel runway lighting (NPE '18)	$62,392	$0	$11,010
2020	2018DENTN	Replace airfield guidance signs for 18L/36R 18R/36L; Install new electrical vault for west side RW; Install MIRLs west RW (4500 lf) & electrical vault; Contingencies, RPR, Admin, Fees, etc for MIRL and electrical improvements West RWY; Install MIRLs West RWY (500 lf) (100% Sponsor Share); Night Work administration and costs; Relocate/protect utilities	$713,866	$0	$139,583
		Totals	**$27,479,894**	**$2,727,496**	**$5,800,373**

Source: TxDOT Historic Projects List

14 CFR PART 139 CERTIFICATION

An airport must have an Airport Operating Certificate (AOC) if it serves scheduled air carrier aircraft with more than nine passenger seats or unscheduled air carrier aircraft with more than 30 passenger seats. Title 14 Code of Federal Regulations (CFR) Part 139 describes the requirements for obtaining and maintaining an AOC, which include meeting various Federal Aviation Regulations (FARs) that are now codified under the CFR.

Airports are classified in the following categories based on the types of air carrier operations they serve:

- **Class I Airport** – an airport that is certificated to serve scheduled operations of large air carrier aircraft and can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft
- **Class II Airport** – an airport that is certificated to serve scheduled operations of small air carrier aircraft and unscheduled passenger operations of large air carrier aircraft; a Class II airport cannot serve scheduled large air carrier aircraft
- **Class III Airport** – an airport that is certificated to serve scheduled operations of small air carrier aircraft; a Class III airport cannot serve scheduled or unscheduled large air carrier aircraft
- **Class IV Airport** – an airport that is certificated to serve unscheduled passenger operations of large air carrier aircraft; a Class IV airport cannot serve scheduled air carrier aircraft regulated under CFR Part 121

DTO is not currently a Part 139 certificated airport but is considering options that may be available with an AOC. Part 139 certification supports the regularly or irregularly scheduled/unscheduled operations of large and/or small air carrier aircraft conducting charter services at the airport. Pursuing this designation would allow the airport to accommodate aircraft charter services for the University of North Texas (UNT), Texas Woman's University (TWU), and the Texas Motor Speedway (TMS), as well as potential future scheduled commercial operations.

Part 139 regulations, which implemented provisions of the *Airport and Airway Development Act of 1970* (as amended on November 27, 1971), set standards for the marking and lighting of areas used for operations; firefighting and rescue equipment and services; the handling and storage of hazardous materials; the identification of obstructions; and safety inspection and reporting procedures. It also required airport operators to have an FAA-approved *Airport Certification Manual* (ACM).

The ACM is a required document that defines the procedures to be followed in the routine operation of the airport and in response to emergency situations. The ACM is a working document that is updated annually, as necessary. It reflects the current condition and operation of the airport and establishes responsibility, authority, and procedures, as required. Sections of the ACM that cover administrative and procedural details are required. The ACM includes the following information:

- General Information
- Organization and Management
- Airport Information
- Maintenance and Inspection Program
- Operational Safety
- Hazardous Materials
- Aircraft Rescue and Firefighting
- Snow and Ice Control
- Airport Emergency Plan
- Wildlife Hazard Management
- Maintenance of Certification Manual

Airports operating under Part 139 face associated financial costs including:

- Maintenance and upgrades: ongoing costs for maintaining airport facilities, including regular inspections and upgrades to comply with Part 139 safety regulations.
- Personnel expenses: hiring and training of staff, including aircraft rescue and firefighting (ARFF) and operations personnel, to meet regulatory requirements.
- Equipment: investments in new ARFF equipment and storage spaces.
- Compliance costs: expenses related to ensuring compliance with Part 139 requirements, including audits, reporting, and safety training.
- Insurance premiums: potentially higher costs due to the increased liability associated with operating a Part 139 airport.
- Security measures: costs related to security personnel, systems, badging, fencing, and technologies to comply with Part 139 security requirements.

AIRSIDE FACILITIES

Airside facilities include runways, taxiways, airfield lighting, and navigational aids. These facilities are identified on **Exhibit 1C** and descriptions of each are included in the following sections. Runway 18L-36R is the primary runway and Runway 18R-36L serves as a secondary parallel runway. Both runways are oriented north-south. Information pertaining to each runway is described below and summarized on the exhibit.

DTO Airfield

RUNWAYS

Primary Runway 18L-36R

Runway 18L-36R is 7,002 feet long and 150 feet wide and is oriented north-south. The runway surface is constructed of asphalt. This runway serves as the airport's primary runway because it is the longest runway and is equipped with an instrument landing system (ILS) approach procedure. The Runway 36R threshold is displaced by 100 feet. Runway 18L is marked with precision markings, including the runway designation, centerline, threshold stripes, aiming point, touchdown zone, and edge markings. Runway 36R has the same markings, except for the touchdown zone markings. The runway slopes down from north to south with an elevation change of 12.3 feet, resulting in a runway gradient of 0.18 percent. The primary runway is equipped with medium intensity runway edge lighting (MIRL) to illuminate the runway edges at night and/or during poor meteorological conditions. Runway 18L utilizes a standard left-hand traffic pattern, while Runway 36R utilizes a right-hand traffic pattern.

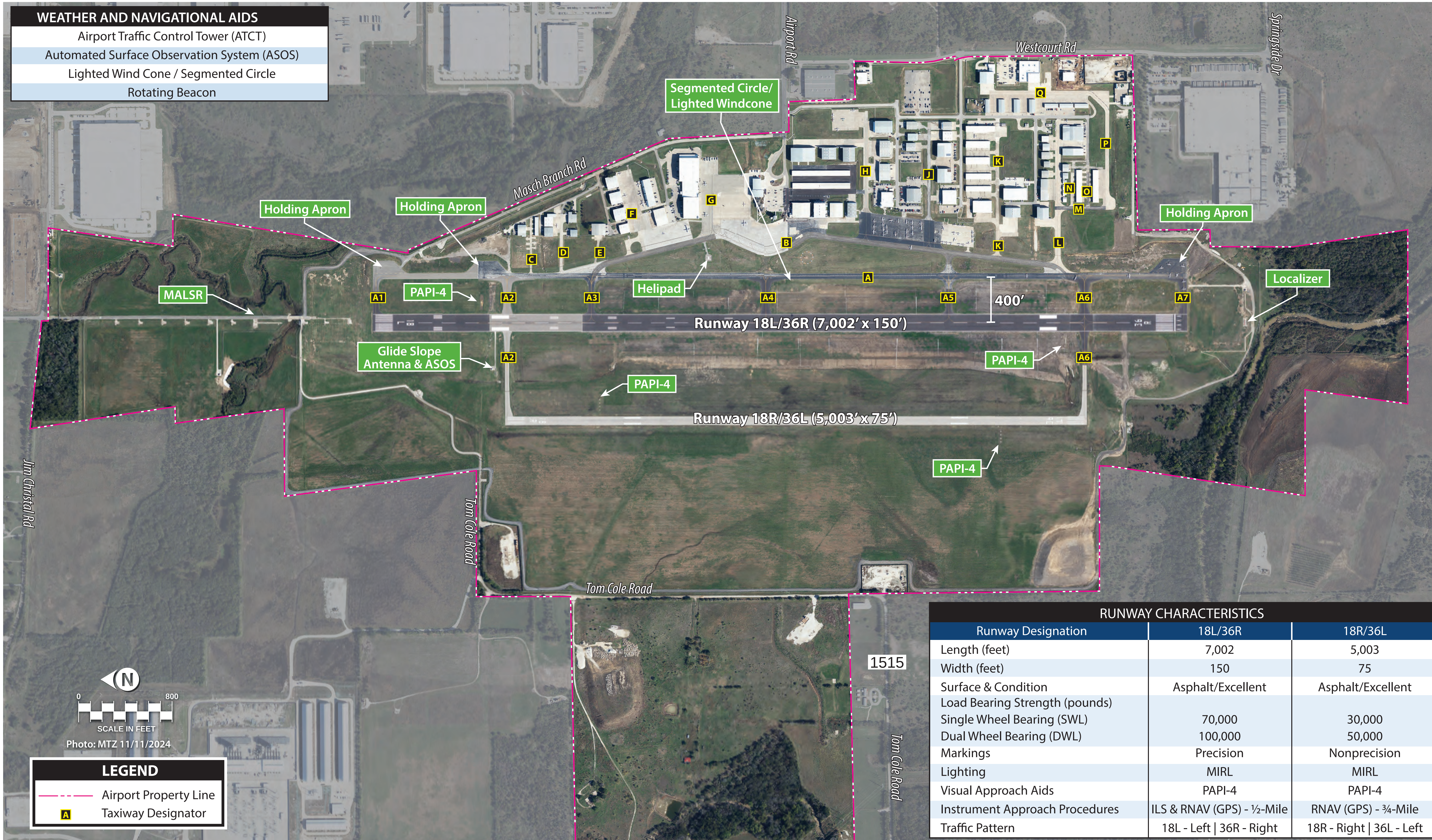
Runway 18L-36R has a pavement strength rating of 70,000 pounds single wheel loading (SWL), which refers to the design of certain aircraft landing gear with a single-wheel main landing gear strut. The runway pavement strength increases to 100,000 pounds dual wheel loading (DWL).

Runway 18L
(Source: Google Earth, imagery date March 2023)

Runway 36R
(Source: Google Earth, imagery date March 2023)

Parallel Runway 18R-36L

Also oriented north-south, Runway 18R-36L is 5,003 feet long and 75 feet wide and is located approximately 840 feet from Runway 18L-36R, centerline to centerline. Runway 18R-36L was constructed in 2019 and is in excellent condition. The runway pavement has a strength rating of 30,000 pounds SWL. The runway has non-precision markings, which include the runway designation, threshold stripes, and aiming points. The runway markings are in good condition. The runway slopes



WEATHER AND NAVIGATIONAL AIDS

Airport Traffic Control Tower (ATCT)
Automated Surface Observation System (ASOS)
Lighted Wind Cone / Segmented Circle
Rotating Beacon

LEGEND

- Airport Property Line
- A Taxiway Designator

RUNWAY CHARACTERISTICS

Runway Designation	18L/36R	18R/36L
Length (feet)	7,002	5,003
Width (feet)	150	75
Surface & Condition	Asphalt/Excellent	Asphalt/Excellent
Load Bearing Strength (pounds)		
Single Wheel Bearing (SWL)	70,000	30,000
Dual Wheel Bearing (DWL)	100,000	50,000
Markings	Precision	Nonprecision
Lighting	MIRL	MIRL
Visual Approach Aids	PAPI-4	PAPI-4
Instrument Approach Procedures	ILS & RNAV (GPS) - ½-Mile	RNAV (GPS) - ¾-Mile
Traffic Pattern	18L - Left | 36R - Right	18R - Right | 36L - Left

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down from north to south with an elevation change of 15.4 feet from end to end, resulting in a gradient of 0.31 percent. A standard left-hand traffic pattern is applied to Runway 36L, and a right-hand traffic pattern is applied to Runway 18R. The runway is equipped with MIRL.

Runway 18R
(Source: Google Earth, imagery date March 2023)

Runway 36L
(Source: Google Earth, imagery date March 2023)

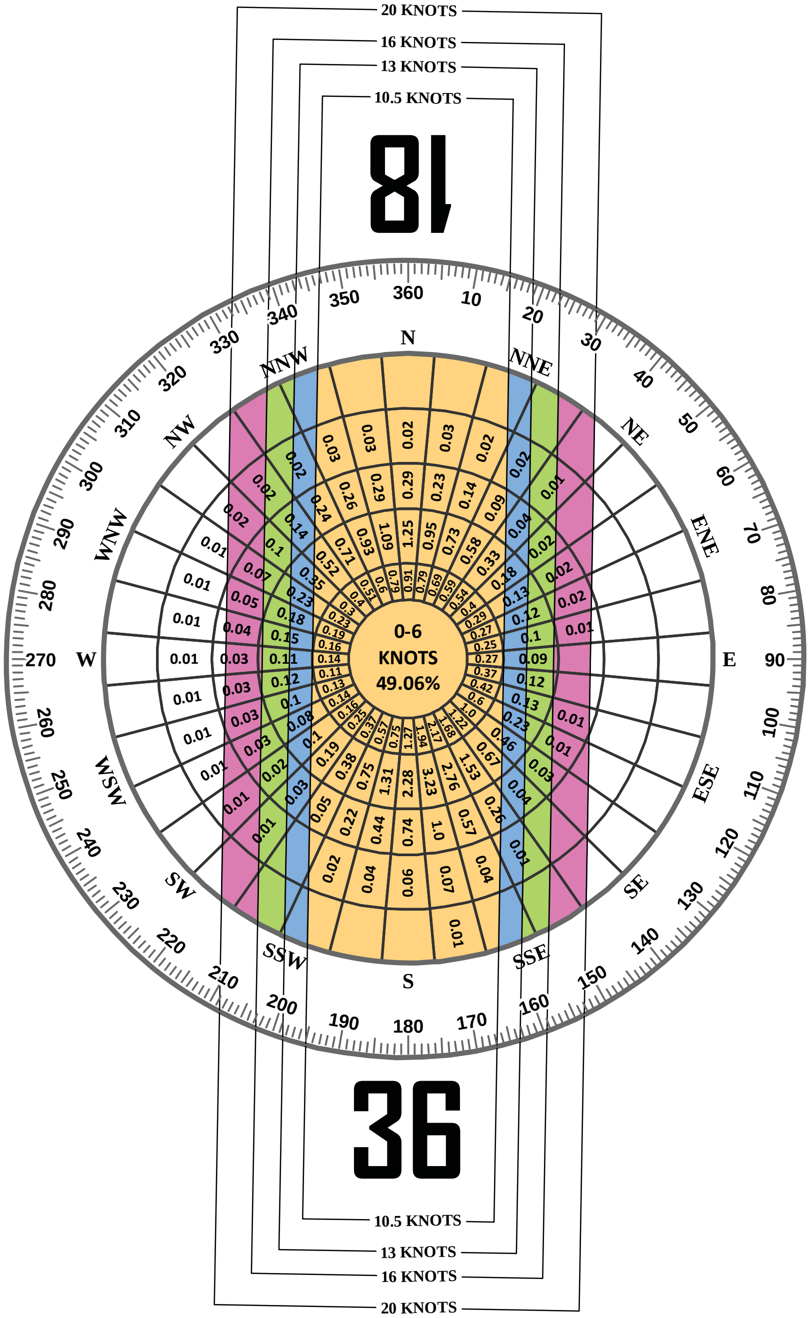
Crosswind Coverage

Prevailing winds are winds that blow predominantly in a given direction. At an airport, the direction of prevailing winds determines the desired alignment, configuration, and usage of a runway. Aircraft can only tolerate limited crosswinds, which are components of wind that blow perpendicular to the runway centerline. Ideally, runways are configured to allow aircraft to take off and land into the wind 100 percent of the time. Because winds change direction, FAA planning standards indicate that an airport's primary runway should be capable of operating under allowable wind conditions at least 95 percent of the time. If a runway does not meet this 95 percent coverage, FAA funding assistance for the development of a crosswind runway may be advisable.

The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 miles per hour [mph]) for ARC A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; 16 knots (18 mph) for ARC A-III, B-III, and C-I through D-II; and 20 knots (23 mph) for ARC C-III through D-IV.

Exhibit 1D presents the all-weather wind rose for the airport. Wind data for the previous 10 years were obtained from the on-airport automated weather observation station (AWOS) and have been analyzed to identify wind coverage provided by the existing runway orientations. At DTO, the north-south orientation of the parallel runways provides 96.35 percent coverage for the 10.5-knot component, 98.27 percent coverage for the 13-knot component, and greater than 99 percent coverage for the 16- and 20-knot components. The IFR wind rose (presented on the reverse side of **Exhibit 1D**) shows a similar distribution of crosswind components for the parallel runways; thus, the current runway orientation at DTO provides adequate wind coverage for all-weather and IFR conditions.

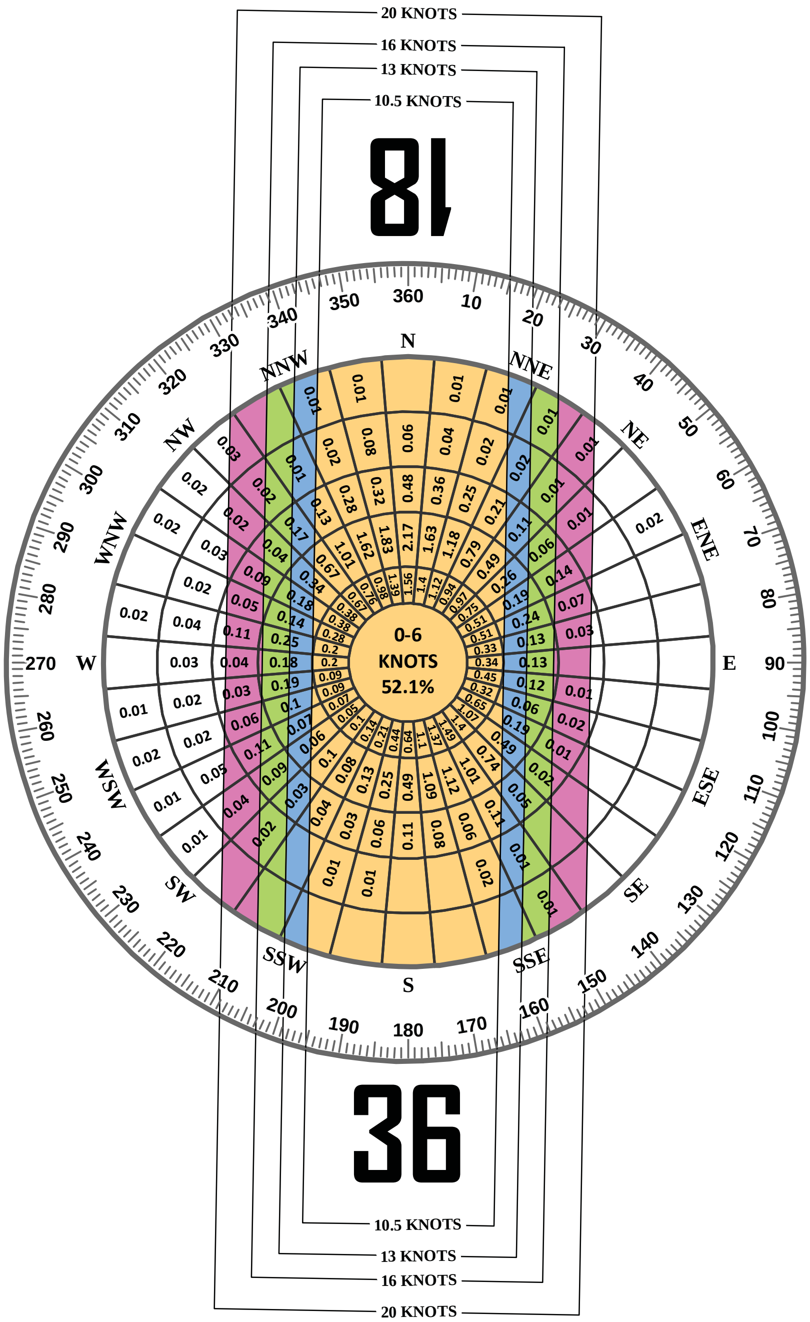
ALL WEATHER WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 18-36	96.35%	98.27%	99.46%	99.85%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Denton Enterprise Airport
Denton, TX

OBSERVATIONS:
105,976 All Weather Observations
Jan. 1, 2014 - Dec, 31 2023

IFR WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 18-36	95.17%	97.25%	98.74%	99.50%



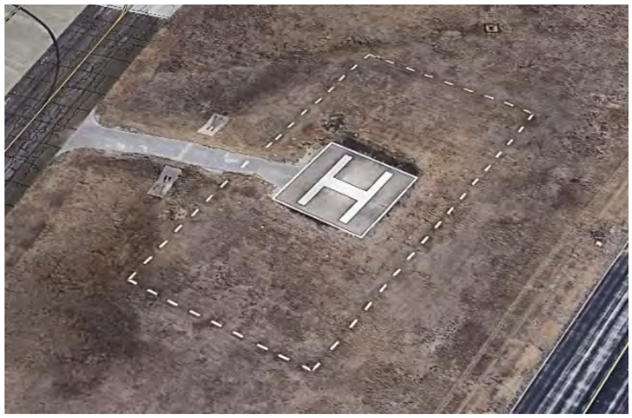
SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Denton Enterprise Airport
Denton, TX

OBSERVATIONS:
12,335 IFR Observations
Jan. 1, 2014 - Dec, 31 2023

Exhibit 1D continued
WIND ROSES

HELIPAD

DTO has one helipad, which is located between Runway 18L-36R and Taxiway B near the midpoint of the airfield. The helipad measures 50 feet by 50 feet and is constructed of concrete. The helipad is marked with unpaved final approach and liftoff area (FATO) perimeter markings that measure 100 feet wide and 200 feet long.



Helipad
(Source: Google Earth, imagery date March 2023)

TAXIWAYS

A taxiway is a defined path established for the taxiing of aircraft from one part of an airport to another. The taxiway system at DTO consists of parallel, connector, and entrance/exit taxiways that are constructed of asphalt. Taxiway widths range between 40 and 50 feet. All taxiways have blue medium intensity taxiway lighting (MITL) and yellow centerline markings.

DTO has one primary taxiway, Taxiway A, which is a full-length parallel taxiway that provides access to both ends of Runway 18L-36R. It is 50 feet wide and is located 400 feet east of the runway, centerline to centerline. Seven entrance/exit taxiways connect Taxiway A to the runway and are designated A1, A2, A3, A4, A5, A6, and A7. Two taxiway connectors, A2 and A6, provide access to both ends of the secondary runway, Runway 18R-36L, which connects from the primary runway. Taxiways A2 and A6 measure 40 feet in width.

Table 1G summarizes details for each taxiway at the airport.

TABLE 1G | Taxiway Characteristics

Designation	Width (feet)	Description
A	50	Primary taxiway; full-length parallel taxiway serving Runway 18L-36R
B	50	Partial parallel taxiway serving Taxiway A, terminal ramp, and aircraft hangars
A1	50	Connector taxiway from Runway 18L-36R to Runway 18L-36R
A2	50	Connector taxiway from Runway 18L-36R to Taxiway A
A2	40	Connector taxiway from Runway 18R-36L to Taxiway A
A3	50	Connector taxiway from Runway 18L-36R to Taxiway A
A4	50	Connector taxiway from Runway 18L-36R to Taxiway A
A5	50	Connector taxiway from Runway 18L-36R to Taxiway A
A6	50	Connector taxiway from Runway 18L-36R to Taxiway A
A6	40	Connector taxiway from Runway 18L-36R to Runway 18L-36R
A7	50	Connector taxiway from Runway 18L-36R to Taxiway A

Source: Coffman Associates analysis

TAXILANES

A taxilane is a defined path designed for low speed and precise maneuvering of aircraft. Taxilanes provide access from a taxiway to aircraft parking positions, hangars, and other terminal areas. DTO has 15 taxilanes, which are designated C, D, E, F, G, H, J, K, L, M, N, O, P, and Q. Each taxilane measures between 20 and 50 feet wide. The width of each taxilane varies based on aircraft design and usage. A summary of taxilane characteristics is provided in **Table 1H**.

Taxilane L

Taxilane F

TABLE 1H | Taxilane Characteristics

Designation	Width (feet)	Description
C	20	Taxilane from Taxiway A to executive hangars
D	30	Taxilane from Taxilane B to executive hangars
E	20	Taxilane from Taxilane B to corporate hangar
F	30	Taxilane from Taxilane B to executive, conventional, and corporate hangars and general aviation apron
G	N/A	Taxilane from Taxilane B to FBO, corporate hangars, and terminal ramp
H	45	Taxilane from Taxilane B to FBO, aircraft hangars, and general aviation aprons
J	30	Taxilane from Taxilane B to aircraft and corporate hangars and Civil Air Patrol
K	30	Taxilane from Taxilane B to aircraft and corporate hangars
L	50	Taxilane from Taxilane B to aircraft and corporate hangars
M	30	Partial parallel taxilane serving Taxilanes L, N, and O
N	25	Taxilane from Taxilane M to T-hangars
O	25	Taxilane from Taxilane M to T-hangars
P	35	Taxilane from Taxilane M to T-hangars
Q	35	Taxilane from Taxilane P to T-hangars and corporate hangars

N/A = not applicable

Source: Coffman Associates analysis

PAVEMENT CONDITION

On behalf of the TxDOT Aviation Division, the Texas A&M Transportation Institute conducted a survey of DTO operational pavements in May 2019, including the runway (Runway 18R-36L was not yet constructed), taxiways, and aprons. The inspection evaluated the airfield pavement to provide a pavement condition index (PCI) rating. PCI ratings are determined through visual assessments, in accordance with FAA Advisory Circular (AC) 150/5380-6, and range from 0 (failed) to 100 (excellent). The purpose of the report is to provide the airport sponsor with pavement condition information to guide pavement maintenance schedules and ensure airfield surfaces are preserved in good working order.

The results of the 2019 PCI survey are depicted on **Exhibit 1E**. This pavement condition report is now five years old, so the PCI values have likely declined due to routine wear and tear. As stated earlier, Runway 18L-36R underwent rehabilitation during the summer of 2024, so its PCI value is likely at or near 100. Several pavement sections on the airport, including portions of the terminal apron and several connectors from the runway to Taxiway A were reported to have PCI values in the 70s and are likely to be in Fair to Poor condition today.

AIRFIELD LIGHTING, SIGNAGE, AND MARKING

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. Various lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are summarized in the following section.

Airport Identification Lighting

The location of the airport is universally identified by a rotating beacon at night. The rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The beacon operates from sunset to sunrise and is located on top of the ATCT.

Pavement Edge Lighting

Pavement edge lighting defines the lateral limits of the pavement to ensure safe operations during the night and/or low-visibility times. This maintains safe and efficient access to and from the runway and aircraft parking areas. As stated previously, both Runway 18L-36R and Runway 18R-36L are equipped with MIRL. Runway 18R-36L is equipped with LED lighting and Runway 18L-36R is equipped with a conventional incandescent lighting system. Each runway end is equipped with threshold lights that emit green light outward from the runway and red light toward the runway. Green lights indicate the landing threshold for arriving aircraft, while red lights indicate the end of the runway for departing aircraft.

The entirety of the taxiway system at DTO is equipped with elevated blue MITL.

Visual Approach Aids

Visual glideslope approach aids provide visual cues to pilots, alerting them as to whether they are on the correct glide path to landing. Both ends of each runway are outfitted with four-light precision approach path indicator lights (PAPI) with 3.00-degree standard glide paths. Pilots interpret the system of red and white lights, which gives an indication of a pilot's position above, below, or on the designated descent path to the runway.

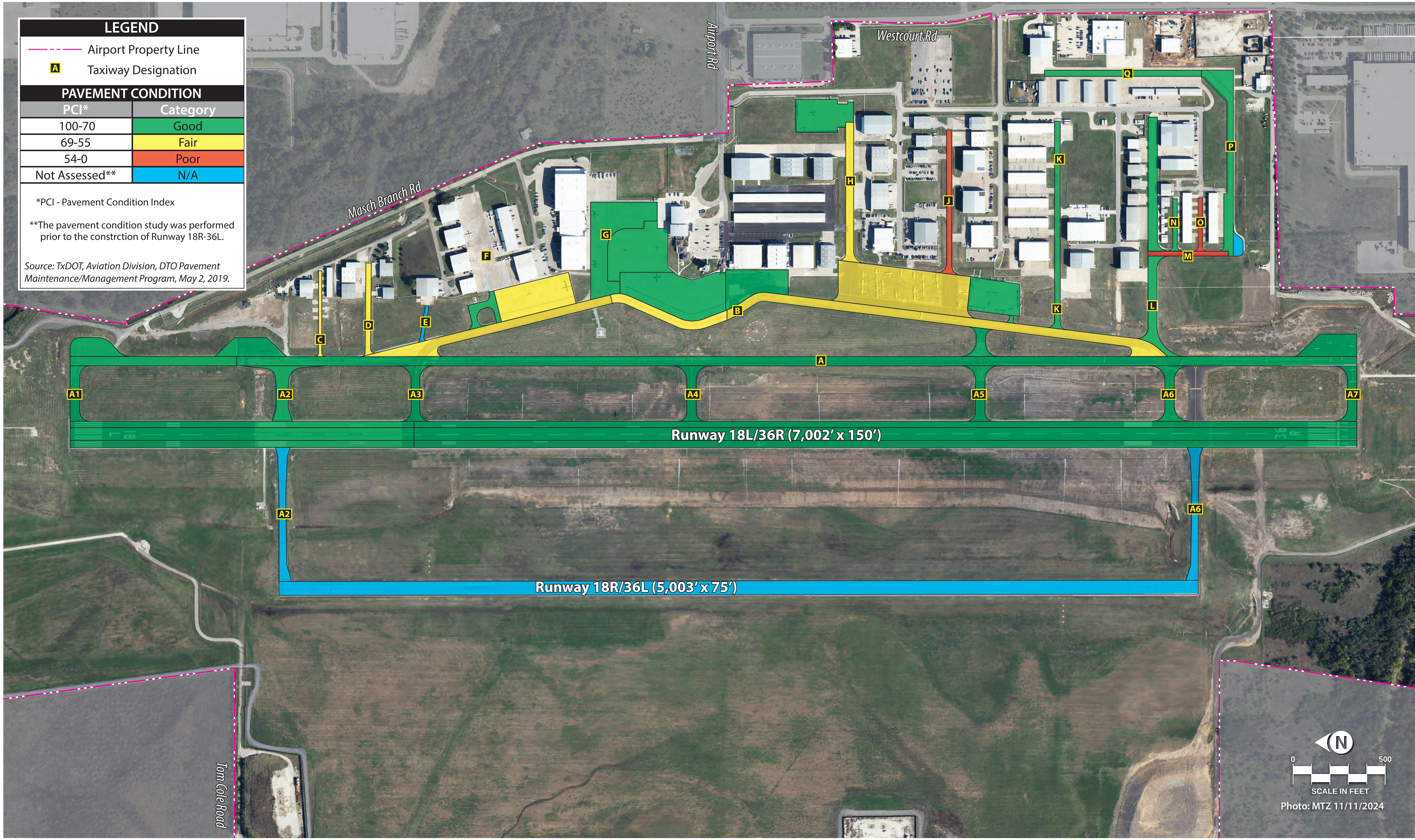


Exhibit 1E
EXISTING PAVEMENT CONDITIONS

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Approach Lighting System (ALS)

An ALS is a configuration of lights positioned symmetrically along the extended runway centerline to supplement navigational aids, such as an ILS, in order to provide lower visibility minimums. Runway 18L is equipped with a medium intensity approach lighting system with runway alignment (MALSR), which supports a Category I precision instrument approach. The full MALSR system extends for a length of 2,200 feet from the end of the runway and includes a combination of threshold lamps and steady-burning light bars and flashers. This system provides pilots with visual cues concerning aircraft alignment, roll, height, and position relative to the threshold. The MALSR is owned and maintained by the FAA.

Airfield Signage

Airfield identification signs assist pilots in identifying runways, taxiway routes, and critical areas. The airfield at DTO is equipped with lighted location, directional, and mandatory instruction signs.

Pavement Markings

Pavement markings aid in the safe and efficient movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. DTO provides and maintains marking systems in accordance with FAA AC 150/5340-1M, *Standards for Airport Marking*, and AC 150/5300-13B, *Airport Design*.

As detailed previously, Runway 18L has precision markings, while Runways 36R and 18R-36L have non-precision instrument markings. Runway and taxiway markings at the airport indicate thresholds, holding positions, and centerlines. Taxiway markings include centerlines, leadoff lines on normally used exits, and continuous-type edge markings along paved shoulders. A dashed-type edge marking is situated approximately 65 feet from the Taxiway B centerline to designate the boundary of the taxiway object free area (TOFA) on the adjoining apron areas.

Instrument Landing System (ILS) Equipment

Airports offering full ILS approaches are equipped with both a glideslope antenna and localizer antenna array. The glideslope antenna provides vertical guidance to landing aircraft and can be located on either side of the runway; however, it is best to locate the glideslope antenna on the side of the runway with the lowest possibility of signal reflections from buildings, power lines, aircraft, etc. The glideslope antenna for Runway 18L is located on the west side of the runway, 1,030 feet from the threshold.

The localizer antenna array provides horizontal guidance and is used to establish and maintain the position of an approaching aircraft relative to the runway centerline until visual contact confirms the runway alignment and location. Typically, the localizer antenna array is situated on the extended runway centerline, between 600 and 2,000 feet from the end of the runway. The localizer antenna array for Runway 18L is located beyond the Runway 36R end, approximately 500 feet off the end of the runway. The equipment shelter, which houses electric equipment, is located approximately 280 feet east of the runway centerline.

After-Hours Lighting

During the times the ATCT is not active (10:00 p.m. to 6:00 a.m.), certain airport lights are programmed to operate continuously. For example, the MIRL systems on Runway 18L-36R and Runway 18R-36L are preset to low intensity. Pilots can utilize the common traffic advisory frequency (CTAF) to increase the intensity of the MIRLs and to activate the MALSR and PAPIs.

HOLDING BAYS

A holding bay is a designated area on the airfield that is typically located at the end of a taxiway near a runway end. The ATCT may instruct aircraft to hold on the apron until it is safe for the aircraft to proceed to the runway for takeoff. Pilots may also request to utilize holding bays to conduct final preflight checks prior to takeoff.

There are three designated holding bays on the airfield. There are two holding bays on the north end of Taxiway A that are approximately 2,600 square yards (sy) and 3,000 sy. The holding bay at the south end of Taxiway A is approximately 3,400 sy. All holding areas can accommodate multiple aircraft at one time.

WEATHER AND COMMUNICATION AIDS

Automated Surface Observing System (ASOS)

DTO is equipped with an ASOS, which provides aviation weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. Pilots can obtain the weather information via frequency 119.325 megahertz (MHz) or by calling (940) 383-8457. The ASOS reports cloud ceiling visibility, temperature, dew point, wind direction and speed, altimeter setting (barometric pressure), and density altitude (airfield elevation adjusted for temperature). The ASOS equipment is located adjacent to the glideslope antenna.

Wind Cone and Segmented Circle

DTO has a lighted wind cone and segmented circle, which are located near mid-field between the parallel runways . The wind cone informs pilots of the wind direction and speed, while the segmented circle indicates aircraft traffic pattern information.

Common Traffic Advisory Frequency (CTAF)

When the ATCT is closed (10:00 p.m. to 6:00 a.m.), pilots are instructed to utilize the CTAF. This radio frequency (119.95 MHz) is used by pilots in the vicinity of the airport to communicate with each other about approaches to or departures from the airport. In addition, a UNICOM frequency, which is infrequently used, is also available (122.95 MHz), through which a pilot can obtain information pertaining to the airport.

AREA AIRSPACE AND AIR TRAFFIC CONTROL

The *Federal Aviation Administration Act of 1958* established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA has established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS covers the common network of U.S. airspace, including air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. The system also includes components shared jointly with the military.

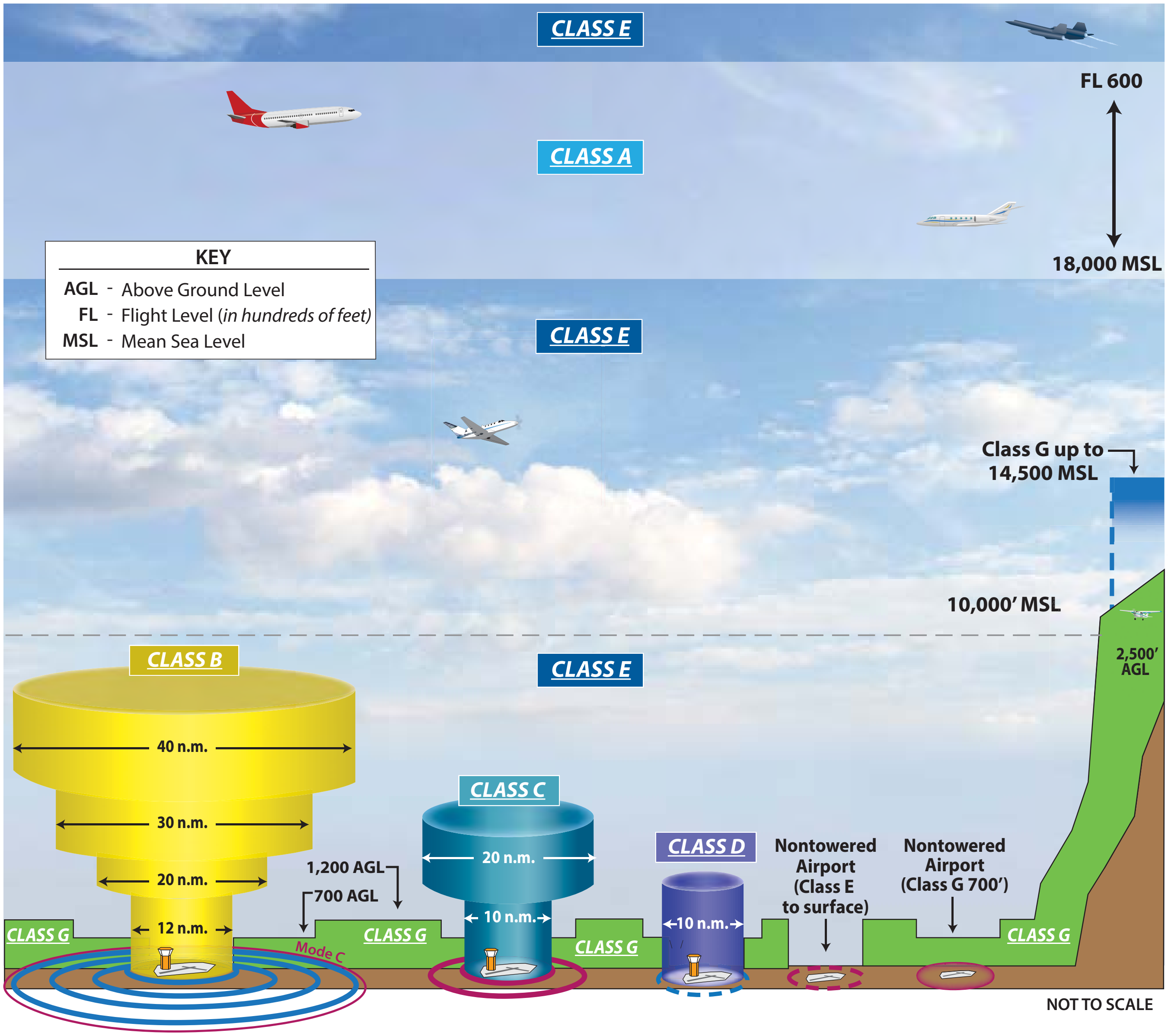
AIRSPACE STRUCTURE

Airspace within the United States is broadly classified as either controlled or uncontrolled. The difference relates primarily to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated in the United States, as shown on **Exhibit 1F**. Airspace designated as Class A, B, C, D, or E is considered controlled airspace. Aircraft operating within controlled airspace are subject to varying requirements for positive air traffic control.

Class A | Class A is controlled airspace and includes all airspace from 18,000 feet MSL to flight level 600 (approximately 60,000 feet MSL). This airspace is designated in FAR Part 71.193 for positive control of aircraft. The positive control area (PCA) allows only flights governed under IFR operations. An aircraft must have special radio and navigational equipment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace. Additionally, the pilot must possess an instrument rating to operate in Class A airspace.

Class B | Class B is controlled airspace surrounding high-activity commercial service airports. Class B airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance passenger-carrying aircraft at major airports. To fly within Class B airspace, an aircraft must be equipped with special radio and navigation equipment and must obtain clearance from air traffic control. A pilot is required to have at least a private pilot certificate or be a student pilot who has met the requirements of FAR Part 61.95, which requires special ground and flight training for Class B airspace. Aircraft are also required to utilize a Mode C transponder within a 30-nautical-mile (nm) range of the center of the Class B airspace. A Mode C transponder allows air traffic control to track the location and altitude of the aircraft. DTO lies below the Dallas-Fort Worth International Airport (DFW) Class B airspace. The Class B airspace over DTO begins at 4,000 feet MSL and extends up to a ceiling of 11,000 feet MSL. A Class B ring beginning approximately 1.8 nm south/southeast of DTO has a floor of 3,000 feet MSL and a ceiling of 11,000 feet MSL.

Class C | Class C is controlled airspace surrounding lower-activity commercial service and some military airports. The FAA has established Class C airspace at 120 airports around the country as a means of regulating air traffic in these areas. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance passenger-carrying aircraft at major airports. To operate inside Class C airspace, an aircraft must be equipped with a two-way radio and an encoding transponder, and the pilot must have established communication with ATC.



DEFINITION OF AIRSPACE CLASSIFICATIONS

CLASS A	Think A - Altitude. Airspace above 18,000 feet MSL up to and including FL 600. Instrument Flight Rule (IFR) flights only, ADS-B 1090 ES transponder required, ATC clearance required.
CLASS B	Think B - Busy. Multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports. ADS-B 1090 ES transponder required, ATC clearance required.
CLASS C	Think C - Mode C. Mode C transponder required. ATC communication required. Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Think D - Dialogue. Pilot must establish dialogue with tower. Generally airspace from the surface to minimum 2,500 feet AGL surrounding towered airports.
CLASS E	Think E - Everywhere. Controlled airspace that is not designated as any other Class of airspace.
CLASS G	Think G - Ground. Uncontrolled airspace. From surface to a 1,200 AGL (in mountainous areas 2,500 AGL) Exceptions: near airports it lowers to 700' AGL; some airports have Class E to the surface. Visual Flight Rules (VFR) minimums apply.

Source: www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/15_phak_ch15.pdf

Class D | Class D is controlled airspace surrounding most airports with an operating ATCT and not classified under B or C airspace designations. Class D airspace typically constitutes a cylinder with a horizontal radius of four or five nm from the airport extending from the surface up to a designated vertical limit, which is typically set at approximately 2,500 feet above the airport elevation. If an airport has an instrument approach or departure, the Class D airspace sometimes extends along the approach or departure path.

DTO is located within Class D airspace that underlies the DFW Class B airspace, as shown on **Exhibit 1G**. DTO's Class D airspace extends from the surface to 2,500 feet above ground level (AGL) and has a radius of four nm with north and south extensions accommodating instrument approaches. Pilots planning to operate within DTO's Class D airspace are required to contact DTO air traffic control prior to entering or departing DTO airspace and must remain in contact while within the controlled airspace. When the control tower is closed (10:00 p.m. to 6:00 a.m.), the airspace reverts to Class G airspace from the surface up to 700 feet AGL with Class E airspace extending from 700 feet to 18,000 feet MSL.

Class E | Class E is controlled airspace surrounding an airport that encompasses all instrument approach procedures and low-altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with the appropriate ATC facility when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio contact with ATC facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.

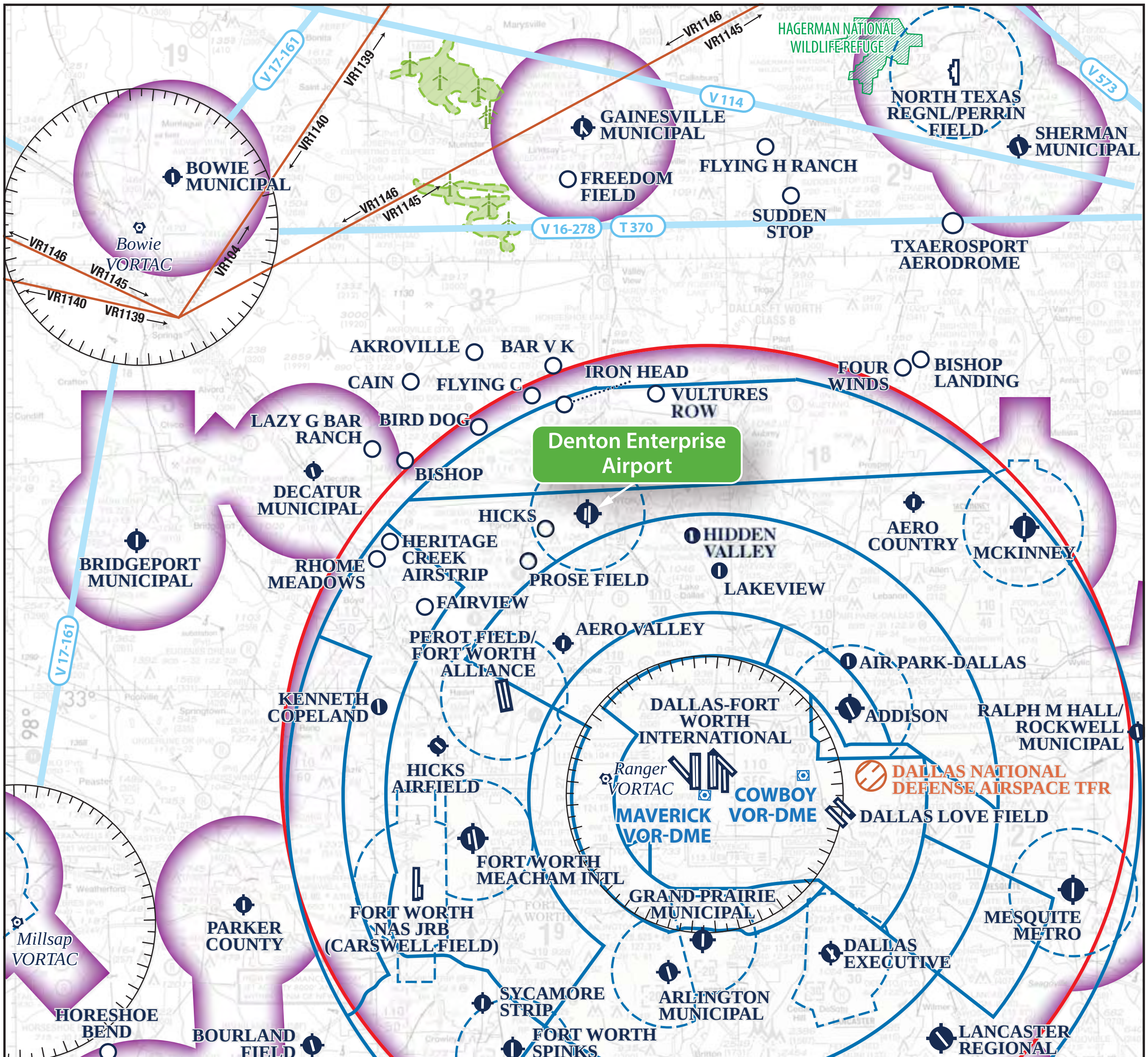
Class G | Class G is uncontrolled airspace that is typically found in rural areas and does not require communication with an ATC facility. Class G airspace lies between the surface and the overlying Class E airspace (700 to 1,200 feet AGL). While aircraft may technically operate within Class G airspace without any contact with ATC, it is unlikely that many aircraft will operate this low to the ground. Furthermore, FAR Part 91.119, *Minimum Safe Altitudes*, specifies minimum altitudes for flight.

SPECIAL USE AIRSPACE

Special use airspace is defined as airspace in which activities must be confined because of their nature, or in which limitations are imposed on aircraft not taking part in those activities. Special use airspace identifies for other users the areas in which these non-standard operations may be occurring by outlining active times and/or altitudes to provide separation information for the areas. Most special use airspace is designated on FAA aeronautical charts. The special use airspace in the vicinity of DTO is depicted on **Exhibit 1G**.

Victor Airways | Victor airways are a system of federal airways established for aircraft arriving or departing a regional area and navigating by using very high frequency omnidirectional range (VOR) facilities. Victor airways are corridors of airspace eight miles wide that extend upward from 12,000 feet AGL to 18,000 feet MSL and extend between VOR facilities. The Victor airways in the regional area are identified with blue lines marked with a "V" preceding a designation number on **Exhibit 1G**.

Military Operations Areas | A military operations area (MOA) is an area of airspace designated for military training use. An MOA is not restricted airspace; however, pilots who use this airspace should be on alert for the possibility of military traffic. A pilot may need to be aware that military aircraft can be



LEGEND

- Airport with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- Airport with other than hard-surfaced runway
- Compass Rose
- VORTAC
- VOR-DME
- Wind Turbine Farm
- Class B Airspace
- Class D Airspace
- Class E (sfc) Airspace with floor 700 ft. above surface that laterally abuts 1200 ft. or higher Class E airspace
- Mode C
- Victor Airways
- Military Training Routes
- Wildlife Refuge

NORTH

NOT TO SCALE

Source:
Dallas-Fort Worth Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration, May 16, 2024

present in high concentrations, conducting aerobatic maneuvers and possibly operating at high speeds and/or at lower elevations. The nearest MOA to DTO is the Sheppard 2 MOA, which is approximately 50 nm northwest of the airport. Each MOA will have its own designated airspace block and hours of operation. The activity status of an MOA is advertised by a Notice to Air Missions (NOTAM) and notated on sectional charts. The Sheppard 2 MOA is controlled by the Fort Worth Air Route Traffic Control Center (ARTCC). Active military aircraft operate in the Sheppard 2 MOA from 8,000 feet MSL to (but not including) 18,000 feet MSL. This MOA is operated Monday through Friday from one hour before sunrise to one hour after sunset.

Restricted Airspace | Restricted airspace is an area (volume) of airspace, typically used by the military, in which the local controlling authorities have determined that air traffic must be restricted (if not continually prohibited) for safety or security concerns. Restricted airspace is depicted on aeronautical charts with the letter "R" followed by a serial number. Restricted areas denote the existence of unusual and often invisible hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the penetrating aircraft and its occupants. Restricted airspace zones may not always be active; in such cases, schedules of local dates and times, specifying when the zone is active, are typically available to aviators. At other times, the airspace is subject to normal operation for the applicable airspace class. There are no restricted areas in the vicinity of DTO.

Alert Areas | Alert areas are depicted on aeronautical charts to inform non-participating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity, such as military operations. Pilots should be particularly alert when flying in these areas. Military activities or other flight training activities in these areas typically operate at lower altitudes and may occur at any time of the day or night. General aviation flights are not restricted within these areas, but pilots are strongly cautioned to be alert for high-speed military training aircraft. There are no alert areas in the vicinity of DTO.

Military Training Routes | Military training routes (MTRs) are designated airspace established for use by high-performance military aircraft to train below 10,000 feet AGL and at speeds exceeding 250 knots. There are visual (VR) and instrument (IR) designated MTRs; MTRs with no segment above 1,500 feet AGL will be designated with VR or IR, followed by a four-digit number. MTRs with one or more segments above 1,500 feet AGL are identified by the route designation, followed by a three-digit number. The arrows on the route show the direction of travel. MTRs in the vicinity of DTO are depicted on **Exhibit 1G** using brown lines with their identifying number(s).

AIRSPACE CONTROL

The FAA has established 21 ARTCCs throughout the continental United States to control aircraft operating under IFR within controlled airspace and while en route. An ARTCC assigns specific routes and altitudes along federal airways to maintain separation and orderly traffic flow. The Fort Worth ARTCC controls IFR air traffic en route to and from DTO.

Flight Service Station (FSS)

A flight service station is an air traffic facility that provides pilot briefings, flight plan processing, in-flight radio communications, search and rescue (SAR) services, and assistance to lost aircraft in emergency situations. FSS facilities also relay ATC clearances, process NOTAMs, broadcast aviation meteorological and aeronautical information, and notify Customs and Border Protection of trans-border flights. The Fort Worth Flight Service Station is the nearest FSS to DTO.

Air Traffic Control Tower (ATCT)

The DTO ATCT operates daily from 6:00 a.m. to 10:00 p.m. The ATCT is located on the east side of the airfield, immediately southwest of the terminal, and is accessible via Airport Road. Tower employees utilize the employee parking lot adjacent to the tower.

The primary responsibilities for tower controllers are to sequence and separate local arriving and departing traffic and to provide ground control direction to aircraft taxiing on the ground. Tower radio frequencies are 119.95 MHz for Denton Tower and 123.95 MHz for Denton Ground. Clearance delivery is provided on 123.95 MHz, while regional approach and departure services are provided on 118.1 MHz. For clearance delivery when the ATCT is closed, pilots can contact regional approach at (972) 615-2799.

Airport Traffic Control Tower

NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies, which pilots of properly equipped aircraft can translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to/from DTO include a VOR facility and global positioning system (GPS).

The VOR provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Distance measuring equipment (DME) is frequently combined with VOR (VOR-DME) to provide distance, as well as direction, information to pilots. Military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form VORTACs. A VORTAC provides distance and direction information to both civil and military pilots. The Ranger VORTAC is the closest to DTO and is located 18.8 nm south of the airport.

GPS was initially developed by the United States Department of Defense for military navigation around the world; however, GPS is now used extensively for a wide variety of civilian uses, including civil aircraft navigation. GPS uses satellites placed in orbit around the earth to transmit electronic radio signals, which pilots of properly equipped aircraft can use to determine altitude, speed, and other navigational information. This provides more freedom in flight planning and allows for more direct routing to destinations. GPS provides en route navigation and non-precision instrument area navigation approaches to both runways at DTO.

FLIGHT PROCEDURES

Flight procedures are a set of predetermined maneuvers established by the FAA that use electronic or visual navigational aids to assist pilots in locating, landing at, or departing from an airport. Flight procedures at DTO include standard terminal arrivals (STARs), instrument approach procedures, and departure procedures.

Standard Terminal Arrivals (STARs)

A STAR is a preplanned, coded ATC IFR arrival route established for application to arriving IFR aircraft that are destined for certain airports. STARs simplify clearance delivery procedures and facilitate transition between en route and instrument approach procedures. There are currently eight published STAR procedures into DTO.

Instrument Approach Procedures

Instrument approach procedures assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. They are categorized as precision, approach with vertical guidance (APV), or non-precision.

Precision instrument approaches provide an exact course alignment and vertical descent path for an aircraft on final approach to a runway with a height above touchdown (HAT) lower than 250 feet and visibility lower than ¾-mile. Examples of precision approaches include an ILS and ground-based augmentation system (GBAS) landing system (GLS). Runway 18L is equipped with a precision ILS approach.

APVs also provide course alignment and vertical descent path guidance but have HATs of 200 feet or more and visibility minimums of ½-mile or greater. Examples include vertical navigation (VNAV), localizer performance with vertical guidance (LPV), or area navigation (RNAV)/required navigation performance (RNP). Each runway end at DTO is equipped with APVs.

Non-precision instrument approach aids provide only course alignment information with no vertical component. Non-precision approaches have HATs of 250 feet or more and visibility minimums of ½-mile or greater. Examples include VOR, RNAV, lateral navigation (LNAV), localizer performance (LP), and localizer (LOC) approaches. Each runway end at DTO is equipped with non-precision approaches.

Instrument approach minimums are published for different aircraft categories and are comprised of a minimum decision altitude and required visibility. (Aircraft categories are described in greater detail in Chapter 2.) According to FAR 91.175, a pilot must be able to make a safe landing and have the runway in sight, and the visibility requirement must be met. There are no cloud ceiling requirements; the decision altitude is the point at which the pilot must meet all three criteria for landing, otherwise they cannot land using the published instrument approach.

There are currently five published instrument approach procedures at DTO, as detailed in **Table 1J**.

TABLE 1J | Instrument Approach Procedures

Approach	Category	Minimums by Aircraft Approach Category (Example: 200'-½ = 200' decision altitude and ½-mile visibility minimums)			
		A	B	C	D
ILS or LOC – Runway 18L	S-ILS 18L	200'-½			
	S-LOC 18L	518'-½		518'-1	
	Sidestep 18R	617'-1		617'-1¾	617'-2
	Circling	617'-1		737'-2	737'-2¼
RNAV GPS – Runway 18L	LPV DA	200'-½			
	LNAV/VNAV DA	308'-½			
	LNAV MDA	378'-½		378'-¾	
	Sidestep 18R	457'-1		457'-1½	457'-2
	Circling	457'-1	617'-1	737'-2	737'-2¼
RNAV GPS – Runway 18R	LPV DA	250'-¾			
	LNAV/VNAV DA	283'-⅞			
	LNAV MDA	457'-1		457'-1⅜	
	Sidestep 18L	458'-1¼		458'-1¾	458'-2¼
	Circling	457'-1	617'-1	737'-2	737'-2¼
RNAV GPS – Runway 36L	LPV DA	250'-¾			
	LNAV/VNAV DA	351'-1			
	LNAV MDA	359'-1			
	Sidestep 36R	401'-1		401'-1½	401'-2
	Circling	457'-1	617'-1	737'-2	737'-2¼
RNAV GPS – Runway 36R	LPV DA	200'-¾			
	LNAV/VNAV DA	325'-1			
	LNAV MDA	401'-1		401'-1⅛	
	Sidestep 36L	399'-1		399'-1½	399'-2
	Circling	457'-1	617'-1	737'-2	737'-2¼

Source: FAA Instrument Flight Procedures Gateway, procedures valid from July 11, 2024, through August 8, 2024

Departure Procedures

Like a STAR, a departure procedure is a preplanned procedure for pilots to follow during departure in IFR conditions. These charted routes provide for obstacle clearance and a transition from the terminal area to the appropriate en route structure. There are nine published departure procedures at DTO.

RUNWAY USE AND TRAFFIC PATTERNS

The traffic pattern at the airport is maintained to provide the safest and most effective use of the airspace. At DTO, Runways 18L and 36L have left-hand traffic patterns, which means aircraft make left turns when in the pattern for landing. Runways 18R and 36R have right-hand traffic patterns, so aircraft make right turns when in the pattern for landing. These patterns ensure the parallel runways can be used simultaneously without overlapping traffic patterns. Runway 18L and Runway 18R are designated as calm wind runways.

FAA automatic dependent surveillance-broadcast (ADS-B) data for DTO operations in 2023 indicate that Runway 18L is the most frequently used runway, accommodating 63.6 percent of aircraft departures and 61.8 percent of aircraft arrivals. Runway 36R accommodates 28.0 percent of departures and 26.6 percent of arrivals; Runway 18R accommodates 6.0 percent of departures and 8.4 percent of arrivals; and Runway 36L accommodates the remaining 2.4 percent of departures and 3.2 percent of arrivals.

DTO does not have aircraft restrictions, curfews, or a mandatory noise abatement program, as these programs would violate the *Federal Airport Noise and Capacity Act (ANCA) of 1990*. Federal law requires the airport to remain open 24 hours a day, seven days a week, and accept all civilian and military aircraft that can be safely accommodated.

REGIONAL AIRPORTS

A review of other public-use airports with at least one paved runway within a 30-nm radius of DTO was conducted to identify and distinguish the types of air service provided in the region. It is important to consider the capabilities and limitations of these airports when planning for future changes or improvements to DTO. **Table 1K** provides basic information on these airports. It should be noted that only public-use airports with at least 4,000 feet of runway length have been included in the comparison.

TABLE 1K | Regional Airports within 30 Nautical Miles – Denton Enterprise Airport

Airport	Nautical Miles/ Direction from DTO[1]	FAA Service Level[2]	Towered[3]	Based Aircraft[3]	2023 Annual Operations[4]	Longest Runway[3]	Visibility Minimum[1]
Denton Enterprise Airport (DTO)	–	Reliever	Yes	412[5]	204,797	7,002'	½-mile
Fort Worth Alliance Airport (AFW)	14.1 nm SSW	Reliever	Yes	16	111,778	11,125'	½-mile
Decatur Municipal Airport (LUD)	19.4 nm W	GA	No	39	36,500[3]	4,200'	1-mile
Kenneth Copeland Airport (4T2)	20.0 nm SW	–	No	5	2,700[3]	5,943'	1-mile
Dallas-Fort Worth International Airport (DFW)	20.0 nm SSE	Primary	Yes	0	689,569	13,401'	½ mile
Aero Country Airport (T31)	23.0 nm E	–	No	255	2,100[3]	4,352'	–
Addison Airport (ADS)	23.0 nm SE	Reliever	Yes	598	119,149	7,203'	¾-mile
Fort Worth Meacham Airport (FTW)	24.4 nm SSW	Reliever	Yes	290	181,712	7,502'	½-mile
Gainesville Municipal Airport (GLE)	27.0 nm N	GA	No	114	70,000[3]	6,000'	¾-mile
Dallas Love Field Airport (DAL)	27.6 nm SE	Primary	Yes	307	251,988	8,800'	½-mile

Notes: GA = General Aviation
nm = nautical mile

Sources:
[1]*Airnav.com*
[2]*FAA, National Plan of Integrated Airports System (NPIAS)*
[3]*FAA, Airport Data and Information Portal (ADIP) or National Based Aircraft Inventory Program*
[4]*Annual operations are derived from FAA OPSNET unless otherwise noted.*
[5]*DTO based aircraft count only includes validated aircraft.*

LANDSIDE FACILITIES

Landside facilities are those that support the aircraft and pilot/passenger handling functions, as well as other non-aviation facilities that typically provide a revenue stream to the airport. These facilities include the general aviation facilities, automobile parking, and other non-aviation businesses located at the airport. All landside facilities at DTO are identified on **Exhibit 1H**.

Landside Facilities – View from North

Landside Facilities – View from South

TERMINAL/GENERAL AVIATION ADMINISTRATION BUILDING

The airport's terminal – designated the GA Administration Building – was constructed in 2007 and is an approximately 4,800-square-foot (sf) facility that includes offices, a pilot briefing and flight planning area, a pilots' lounge, and restrooms. The terminal is located near midfield and is directly accessible via the main airport access road, Airport Road. The building is open daily from 6:00 a.m. to 10:00 p.m. and the airport administrative office is open Monday through Friday from 8:00 a.m. to 5:00 p.m.

GA Administration Building

Existing Landside Facilities

Bldg. #	Operating Business	Land Lease Tenant	Size
1	DSR-Cherokee 180, LLC dba In the Pattern	-	7,000'
2	DSR-Cherokee 180, LLC dba In the Pattern	-	5,100'
3	Private Hangar	First Financial Resources	8,100'
4	Private Hangar	-	6100'
5	DSR-Cherokee 180, LLC dba In the Pattern	-	5,700'
6	DSR-Cherokee 180, LLC dba In the Pattern	-	3,600'
7	CFD Integration, LLC dba CFDI Aero	-	12,200'
8	DSR-Cherokee 180, LLC dba In the Pattern	Ezell Aviation	10,000'
9	CFD Integration, LLC dba CFDI Aero	Ezell Aviation	9,900'
10	Precision Aircraft Maintenance	Ezell Aviation	9,900'
11	Sheltair Aviation Denton, LLC	-	6,500'
12	Marklyn Jet Spares	Ezell Aviation	14,500'
13	Sheltair Aviation Denton, LLC	-	9,400'
14	Sheltair Aviation Denton, LLC	-	5,100'
15	Sheltair Aviation Denton, LLC	-	60,000'
16	Sheltair Aviation Denton, LLC	-	25,500'
17	City of Denton - Airport Terminal	-	4,800'
18	Sykes-Vaughan Investments, LLC	Sheltair Aviation Denton, LLC	20,500'
19	Avitech Aircraft Maintenance & Paint, LLC	Sheltair Aviation Denton, LLC	12,700'
20	Shared Corporate Hangar	Sheltair Aviation Denton, LLC	13,200'
21	Roberts and Roberts Maintenance/ Assent Aeronautics, LLC	Sheltair Aviation Denton, LLC	9,200'
22	H5 T-Hangar (24 units)	Sheltair Aviation Denton, LLC	25,000'
23	H6 T-Hangar (24 units)	Sheltair Aviation Denton, LLC	22,600'
24	Shared Corporate Hangar	Sheltair Aviation Denton, LLC	23,800'
25	Shared Corporate Hangar	Sheltair Aviation Denton, LLC	12,200'
26	Shared Corporate Hangar	Sheltair Aviation Denton, LLC	12,600'
27	Aerospace Instrument Support	Sheltair Aviation Denton, LLC	15,000'
28	Sykes-Vaughan Investments, LLC	Sheltair Aviation Denton, LLC	12,900'
29	Corporte hangars (2units)	Sheltair Aviation Denton, LLC	13,000'
30	Sykes-Vaughan Investments, LLC	Sheltair Aviation Denton, LLC	13,500'
31	Civil Air Patrol	RWDW Investments	6,000'
32	Vinrose dba US Sport Planes	Samsev, LLC	5,100'
33	Shared Corporate Hangar	Derafi Technology, LLC	5,800'
34	Sykes-Vaughan Investments, LLC	-	13,000'
35	Private Hangar - Storage	-	5,700'
36	Private Hangar - Storage	-	6,500'
37	Sykes-Vaughan Investments, LLC	Sheltair Aviation Denton, LLC	14,400'
38	Sykes-Vaughan Investments, LLC	Sheltair Aviation Denton, LLC	14,400'
39	Sykes-Vaughan Investments, LLC,	-	14,200'
40	Box hangar (4 units)	Mark Hicks Transport, LLC	12,500'
41	T-hangar (8 units)	Mark Hicks Transport, LLC	12,400'
42	T-hangar (8 units)	Mark Hicks Transport, LLC	12,400'
43	T-hangar (8 units)	Mark Hicks Transport, LLC	10,800'
44	T-hangar (8 units)	Mark Hicks Transport, LLC	10,800'
45	Corporate Hangar	Mark Hicks Transport, LLC	16,100'
46	ATP Flight School	GKY Holdings 1, LLC	20,000'
47	Corporate Hangar	US Trinity Holdings, LLC	10,400'
48	Private Hangar - Storage	-	3,000'
49	Private Hangar - Storage	-	3,500'
50	Corporate Hangar	MPM Enterprises	4,100'
51	Private Hangar - Storage	HangarsPlus, Inc.	2,500'
52	Corporate Hangar	KPD, Inc	3,800'
53	Box Hangar (3 units)	4845 Lockheeds Assoc., LTD	10,700'
54	Corporate Hangar	Polygon Enterprises, Inc.	10,000'
55	Box hangar (6 units)	Mark Hicks Transport, LLC	21,600'
56	Box Hangar (3 units)	Mark Hicks Transport, LLC	10,800'
57	Private Hangar - Storage	HangarsPlus, Inc.	3,400'
58	Private Hangar - Storage	-	2,300'
59	Private Hangar - Storage	-	1,100'
60	Private Hangar - Storage	HangarsPlus, Inc.	1,100'
61	Private Hangar - Storage	-	1,100'
62	Private Hangar - Storage	HangarsPlus, Inc.	1,600'
63	T-Hangars (12 Units)	Douglas C. Weyer	13,700'
64	T-Hangars (12 Units)	Douglas C. Weyer	13,700'
65	Global Maritime Supply Management, LLC	Global Maritime Supply Management, LLC	9,100'
66	Corporate Hangar	Mark Hicks Transport, LLC	15,500'
67	Denton Med-Trans	THP Air, LLC	31,500'
68	Box Hangar (3 units)	City of Denton	3,861'
69	T-hangars (5 units)	City of Denton	5,909'
70	T-hangars (5 units)	City of Denton	6,200'
71	T-hangars (5 units)	City of Denton	6,200'
72	Box Hangar (3 units)	City of Denton	4,200'
73	Box Hangar (3 units)	City of Denton	4,200'
74	Box Hangar (3 units)	City of Denton	4,200'

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AIRPORT BUSINESSES

Fixed Base Operators (FBOs)

FBOs are airport service centers that are responsible for aircraft services, such as passenger handling, aircraft fueling, parking, maintenance, aircraft towing and storage, and other related services. DTO currently has one full-service FBO: Sheltair Aviation Denton, LLC. Sheltair operates out of Buildings 13, 14, 15, and 16 and leases space in several other hangars on the airport.

Sheltair Hangar

SASOs and Other Businesses

A number of specialty aviation service operators (SASOs) and other businesses are located at the airport, including air charter operators, flight schools, and aircraft maintenance providers. **Exhibit 1H** includes information about the operating businesses and land lease tenants located on the airfield.

AIRCRAFT HANGAR FACILITIES

Existing hangar facilities at DTO consist of conventional-style hangars utilized by the various FBOs/SASOs on the airport, mid-sized corporate/box hangars, and T-hangars that are designed to accommodate smaller aircraft. Conventional hangars typically offer more than 10,000 sf of storage space, while corporate/box hangars usually range in size from 2,500 sf to 10,000 sf. Conventional and corporate/box hangars make up the majority of hangars at DTO. Hangars at DTO are identified on **Exhibit 1H**.

Approximate total square footages of the existing hangar types are:

- Conventional hangars – 434,950 sf
- Corporate/box hangars – 141,061 sf
- T-hangars – 160,709 sf

Conventional Hangar

Corporate Hangars

Box Hangars and T-Hangars

Box Hangars

T-Hangars

AIRCRAFT PARKING APRONS

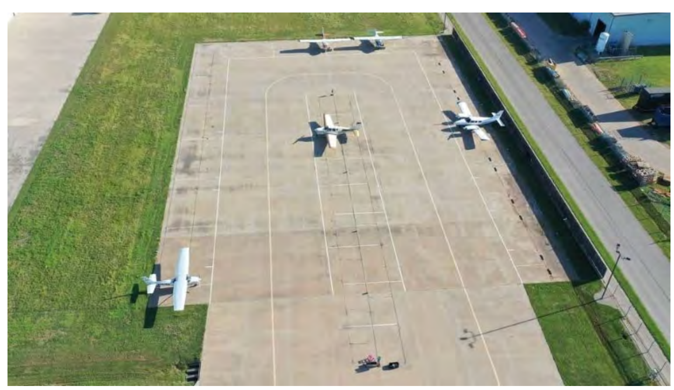
Aircraft aprons are pavement areas that are sufficiently removed from aircraft taxiways and movement areas to facilitate the safe and efficient transition of passengers from the airside elements (runways and taxiways) to the landside elements. Aprons provide access to the terminal facility, FBO/SASOs, and hangars and provide for short- and long-term aircraft parking. DTO has five distinct apron areas, which offer approximately 60,175 sy of combined apron space. The five apron areas at DTO are described below and identified on **Exhibit 1H**.

- The terminal apron comprises approximately 33,375 sy and is the main area for transient aircraft parking at the terminal and Sheltair facilities.
- Apron 1 comprises approximately 6,400 sy and is located north of the terminal. This apron is primarily utilized for transient aircraft parking.
- Aprons 2 and 3 provide approximately 9,200 sy and 6,700 sy of pavement, respectively. These aprons are leased by U.S. Aviation to support its flight training operations and are not available for public use.
- Apron 4 comprises 4,500 sy of pavement and is utilized primarily by locally based aircraft.


Terminal Apron


Apron 1


Aprons 2 and 3


Apron 4

VEHICLE PARKING

There are approximately 730 marked, publicly accessible vehicle parking spaces to support facilities at the airport, including accessible parking spaces. These do not include private parking spaces at businesses within the fenced airport property. The terminal building has a primary parking area with approximately 87 spaces. The contract tower and the FBO have their own designated parking areas. Marked vehicle parking spaces outside the airport security fencing are identified on **Exhibit 1J**. The airport also has 244 temporary unpaved parking spaces available on the east end of the airport.

Terminal Parking Lot

SUPPORT FACILITIES

AIRCRAFT RESCUE AND FIREFIGHTING (ARFF) SERVICES

DTO is not currently a Part 139 certificated airport, so it is not required to have on-site ARFF facilities/equipment; however, previous planning has explored pursuing a Part 139 AOC. Part 139 airports are required to provide ARFF services during air carrier operations. Each certificated airport maintains equipment and personnel based on an ARFF index that is established according to the length of aircraft and scheduled daily flight frequency. There are five ARFF indices: A through E. Index A is applicable to the smallest aircraft and Index E is applicable to the largest aircraft, based on aircraft length.

Although DTO does not experience scheduled air service, but as a reliever airport, DTO can provide FAA Index A upon request. Prior permission is required 48 hours in advance of any air carrier operations to ensure availability of ARFF 15 minutes before and after an air carrier arrival and departure.

An on-site fire station (Station #9) was completed in July 2024 and has response duties for the airport and the western portion of Denton. Station #9 is equipped with one ARFF vehicle, a 2021 Oshkosh Striker 3000 6x6, with 3,000 gallons of water, 420 gallons of aqueous film forming foam (AFFF), 460 pounds of Halotron, and 500 pounds of Purple K dry chemical.

Exhibit 1J
VEHICLE PARKING LOTS

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Denton Fire Department ARFF Vehicle


Fire Station #9

FUEL STORAGE

Aviation fuel services at DTO are offered by Sheltair, which owns or leases all fuel storage facilities on the airport. Seven above ground fuel storage tanks are located along Skylane near the intersection with Lockheed Lane and at the east ends of Taxilanes K and L. Fuel storage tanks consist of one 12,340-gallon tank for 100LL, one 12,340 gallon tank for Jet A, two 12,000-gallon tanks for 100LL, two 12,000-gallon tanks for Jet A, and one 1,000-gallon tank for 100LL. Additionally, the airport has several mobile fuel trucks including two 5,000-gallon Jet A trucks, one 3,000-gallon Jet A truck, two 1,200-gallon 100LL trucks, one 1,000-gallon 100LL truck, and one 200-gallon Jet A truck.

Fuel flowage records by fiscal year indicate that the airport averages approximately 409,000 gallons of 100LL flowage and 1.3 million gallons of Jet A flowage annually. Fuel flowage history is provided in **Table 1L**.


Fuel Storage Tanks

TABLE 1L | Fuel Flowage History

Fiscal Year	100LL (gallons)	Jet A (gallons)
2014	435,123	1,121,151
2015	489,480	1,447,476
2016	429,867	1,389,623
2017	409,560	1,432,064
2018	341,425	1,309,775
2019	390,617	1,106,665
2020	405,458	945,765
2021	339,541	1,203,011
2022	377,901	1,522,258
2023	476,312	1,344,331
2024*	406,591	875,418

Note: Fiscal year runs from October to September.
*2024 data are through June.

Source: DTO records

AIRPORT MAINTENANCE FACILITIES

The airport has an airport maintenance facility that is located on the south end of the field and is accessible via the perimeter service road. Maintenance equipment, such as movers, runway sweepers, portable generators, tractors, and a deicing storage tank are stored in this building.

Maintenance Shop

PERIMETER ACCESS ROAD AND FENCING

Ground vehicles authorized by the airport to operate on movement and safety areas are limited to vehicles that are necessary for airport operations. These include airport maintenance vehicles, police patrol vehicles, fire and rescue vehicles, aircraft fuel and service vehicles, and others authorized by the airport, such as FBO vehicles, construction vehicles, FAA vehicles, and airport operations staff vehicles.

A perimeter service road provides access to areas of the airfield that are not accessible from public roadways. The perimeter road is accessed by a security gate from Westcourt Road and starts as a paved road before turning south as an unpaved/gravel road. This perimeter road wraps around the southern end of Runway 36R, passing around the localizer equipment and then around Runway 36L. The perimeter road runs parallel to Tom Cole Road on the west side of the airfield, providing access to two natural gas wells located on airport property, and meanders around the north side of Runways 18R and 18L, where it ends at a security gate accessible from Masch Branch Road. An additional natural gas well site can is accessible from the perimeter road at its intersection with Westcourt Road.

The perimeter of the airport is enclosed with security fencing; however, some existing fencing gaps are currently being addressed. The main fencing around the airport is a six-foot-high chain-link security fence with three-strand barbed wire. The north and south ends of the airfield are supplemented with 10-foot-high game fencing. Signs prohibiting unauthorized entry are displayed on all gates and in other prominent locations to control inadvertent entry to the airfield. Gates located at various points on the airfield allow access to movement and non-movement areas and are locked either electronically or with padlocks.

The perimeter access road and fencing are identified on **Exhibit 1K**.

MOBILITY PLAN

On March 22, 2022, the Denton City Council adopted the *2022 Mobility Plan*, which is a multimodal transportation master plan for the City of Denton. Of key importance to this master plan is the planned roadway infrastructure in the vicinity of the airport. As shown on **Exhibit 1L**, the city plans to construct a future extension of the US 288 loop from Interstate 35 to FM 2449, along with several new primary and secondary arterial roadways that would provide new access points to the airport. In particular, the new arterials have the potential to provide greater accessibility to the west side of the airport to support new landside developments.

ENVIRONMENTAL INVENTORY

The purpose of the following environmental inventory is to identify potential environmental sensitivities that should be considered when planning future improvements at the airport. Research was performed for each of the 13 impact categories within FAA Order 1050.1G, *FAA National Environmental Policy Act Implementing Procedures* (§1.2(b)(1)). When considering the effects to the impact categories listed below, the FAA may examine both the short and long-term effects, beneficial and adverse effects, effects on public health and safety, economic effects, and the effects on the quality of life to American people.

i. Aviation Emissions and Air Quality
ii. Biological Resources (including fish, wildlife, and plants)
iii. Coastal Resources
iv. *Department of Transportation Act*, Section 303 (referred to as “Section 4(f)”) and Land and Water Conservation Fund (referred to as “Section 6(f)”)
v. Farmlands
vi. Hazardous Materials, Solid Waste, and Pollution Prevention
vii. Historical, Architectural, Archeological, and Cultural Resources
viii. Land Use
ix. Natural Resources and Energy Supply
x. Noise and Noise-Compatible Land Use
xi. Socioeconomic and Children’s Health and Safety Risks

xii. Visual Effects (including light emissions)
xiii. Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

AVIATION EMISSIONS AND AIR QUALITY

The concentration of various pollutants in the atmosphere defines the local air quality. The significance of a pollutant's concentration is determined by comparing it to the state and federal air quality standards. In 1971, the U.S. Environmental Protection Agency (EPA) established standards that specify the maximum permissible short- and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for criteria pollutants: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb). Based on federal air quality standards, a specific geographic area can be classified as an attainment, maintenance, or nonattainment area for each pollutant. The threshold for nonattainment designation varies by pollutant.

DTO is in Denton County, Texas, which is in nonattainment for eight-hour ozone (severe-15 [2008 standard]) and eight-hour ozone (serious [2015 standard]), as of June 30, 2024.[2]

BIOLOGICAL RESOURCES

Biological resources include the various types of plants and animals that are present in an area. The term also applies to rivers, lakes, wetlands, forests, and other habitat types that support plants and animals. The airport is flat with elevations ranging from roughly 615 to 670 feet above MSL. Habitat includes ruderal vegetation and grasses. There are no trees, except those used in landscaping within the developed landside areas of the airport.

The U.S. Fish and Wildlife Service (USFWS) is charged with overseeing the requirements set forth in Section 7 of the *Endangered Species Act* (ESA). The ESA provides a framework to conserve and protect animal or plant species whose populations are threatened by human activities. The FAA and USFWS review projects to determine if a significant impact on protected species will result from the implementation of a proposed project. Significant impacts occur when a proposed action could jeopardize the continued existence of a protected species or would result in the destruction or adverse modification of federally designated critical habitat in the area. The USFWS Information for Planning and Consultation (IPaC) resource list describes species and habitats protected under the ESA within the vicinity of the airport (**Table 1M**).

Section 3 of the ESA is used to protect critical habitat areas. Designated critical habitat areas are geographically defined and have been determined to be essential to the recovery of specific species. There are no critical habitat areas at or near the airport.

2 U.S. EPA – Green Book – Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (https://www3.epa.gov/airquality/greenbook/anayo_tx.html)

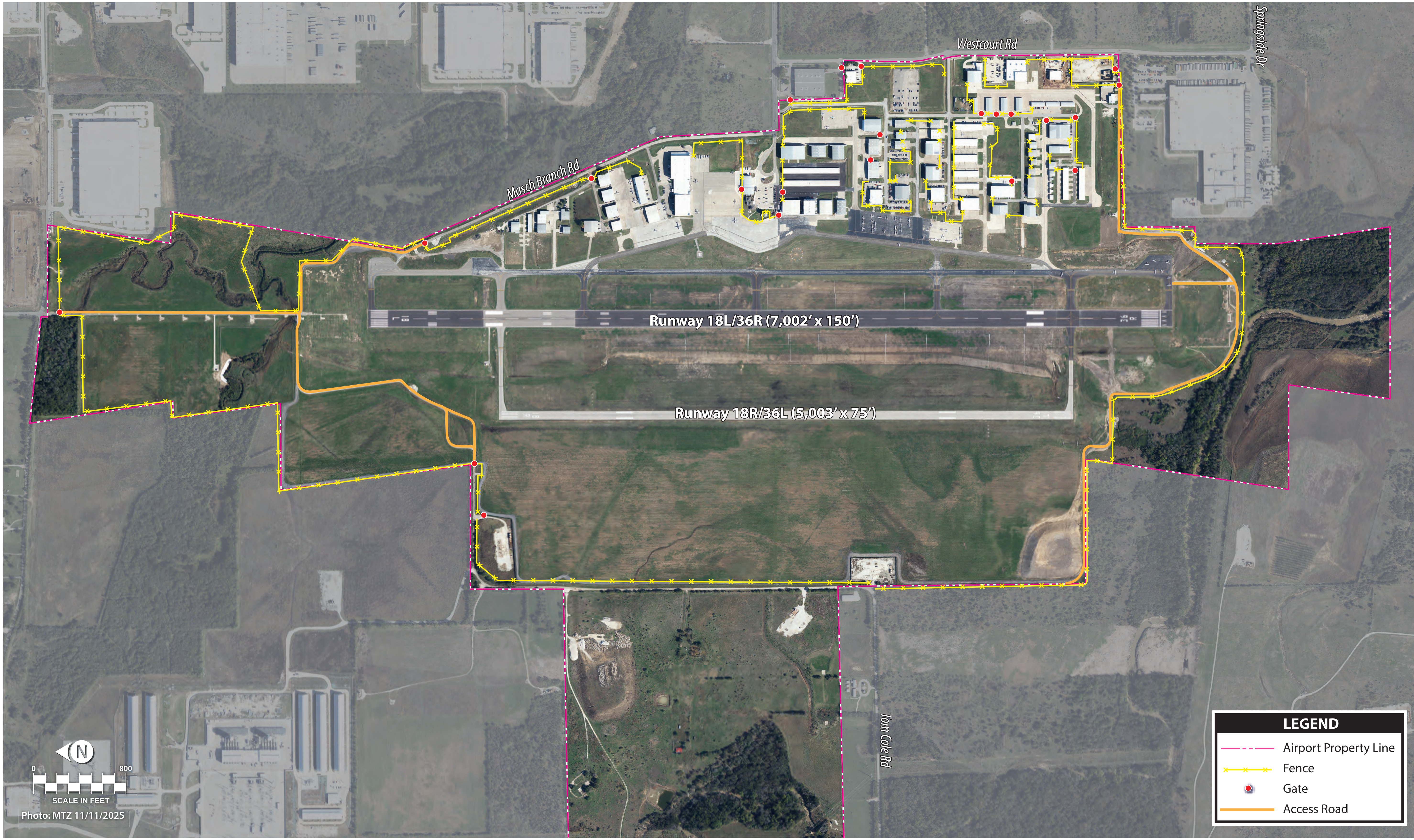

Exhibit 1K
FENCING AND ACCESS ROADS

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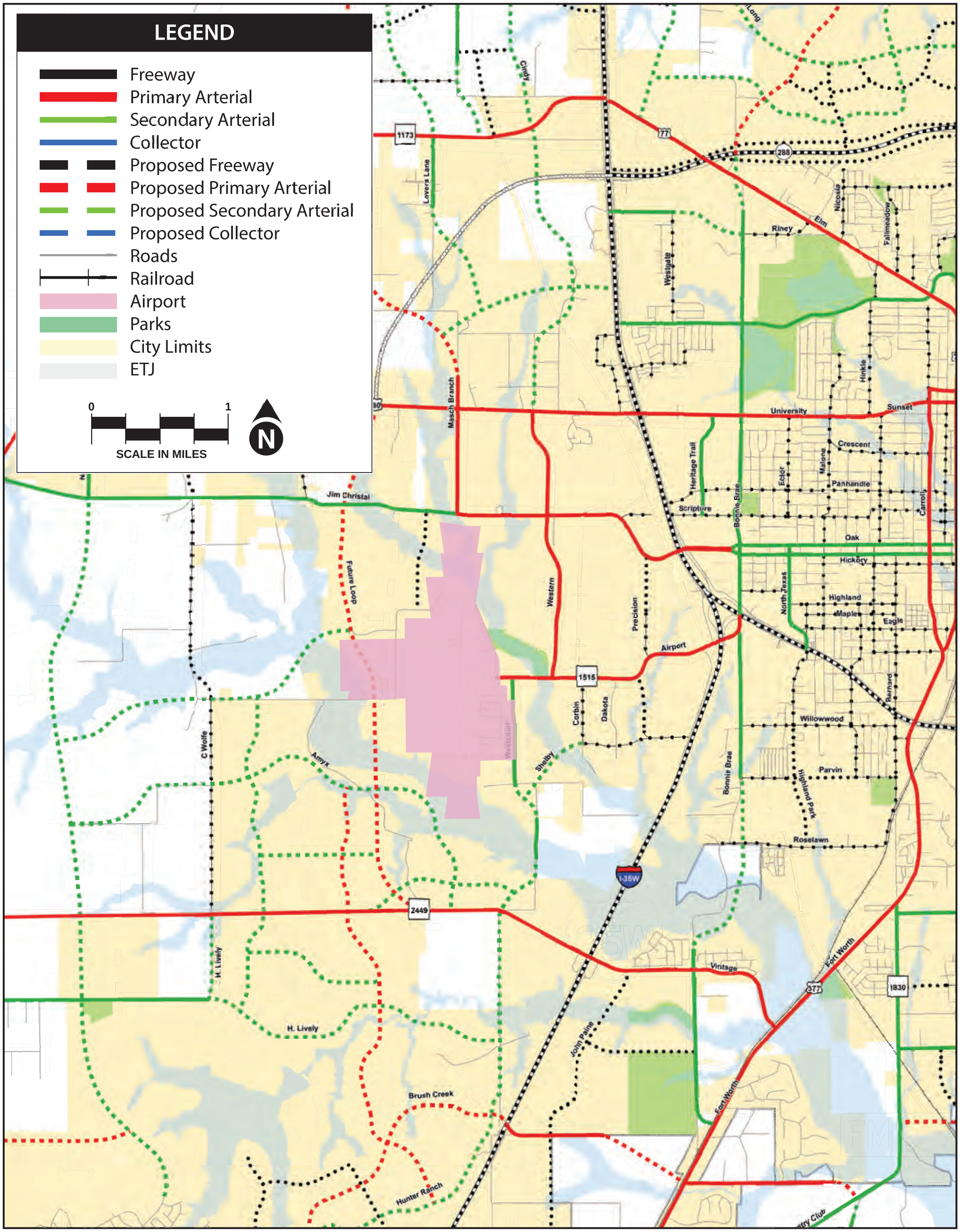


Source: *City of Denton 2022 Thoroughfare Plan*

The federal *Migratory Bird Treaty Act* (MBTA) protects migratory birds and their eggs, nests, and feathers. Potential impacts to species protected under the MBTA are evaluated by the USFWS in consultation with other federal agencies. Habitat for migratory birds may occur if bushes or other ground nesting substrate is present. The typical breeding season for the migratory birds that would be present is from February through October.

Based on the City of Denton's wildlife corridor map, shown on **Exhibit 1M**, areas to the east of DTO have been identified as a wildlife corridor.[3]

TABLE 1M | Federally Endangered, Threatened, and Candidate Species to be Considered for Airport Development Actions at DTO

Common Name (*Scientific Name*)	Federal/State Status	Habitat and Range	Potential for Occurrence
Birds			
piping plover (*Charadrius melodus*)	Federal Threatened/ State Threatened	This species lives on beaches, sandflats, and dunes along the Gulf Coast beaches and adjacent offshore islands.	**Not likely to occur.** The airport is over 300 miles from the coastline of the Gulf of Mexico.
rufa red knot (*Calidris canutus rufa*)	Federal Threatened/ State Threatened	This species prefers sandy beaches and mudflats. In general, nests are found in sparsely vegetated, dry, sunny, slightly elevated tundra locations, often on windswept ridges or slopes with low cover.	**Not likely to occur.** The airport does not contain suitable habitat for this species.
whooping crane (*Grus americana*)	Federal Endangered/ State Endangered	Whooping cranes reside in wetlands, marshes, mudflats, wet prairies, and fields. This species spends winters in Texas in the coastal marshes of Aransas, Calhoun, and Refugio Counties.	**May occur.** The airport contains freshwater emergent wetlands along the western portion of the airport.
Reptiles			
alligator snapping turtle (*Macrochelys temminckii*)	Federal Proposed Threatened	The alligator snapping turtle prefers river systems, lakes, and wetlands. This species is almost exclusively aquatic, tends to stay away from land (except for egg-laying), and is found throughout the United States from northern Florida to eastern Texas.	**May occur.** The southern boundary of the airport traverses Hickory Creek, which could provide habitat for alligator snapping turtles.
Insects			
monarch butterfly (*Danaus plexippus)*	Federal Proposed Threatened	The monarch butterfly is a migratory species found in a variety of habitats. This species requires milkweed (*Asclepias* spp.) for breeding. Migrating monarch butterflies often occur near water sources (e.g., rivers, creeks, riparian corridors, roadside ditches, and irrigated gardens).	**May occur.** The airport is surrounded by agricultural fields that could provide habitat for foraging.

*USFWS Status Definitions for Federally Listed Species
- Endangered = an animal or plant species in danger of extinction throughout all or a significant portion of its range
- Proposed Threatened = an animal or plant species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and has been proposed to be listed as threatened; proposed threatened species are not protected by the take prohibitions of Section 9 of the ESA.
- Threatened = an animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range

Sources: USFWS, IPaC (https://ipac.ecosphere.fws.gov/); Texas Parks & Wildlife Department, Annotated County Lists of Rare Species (Nueces County) (https://tpwd.texas.gov/gis/rtest/)

[3] City of Denton, Wildlife Corridor Map, (https://gis.cityofdenton.com:9002/mapviewer/#)

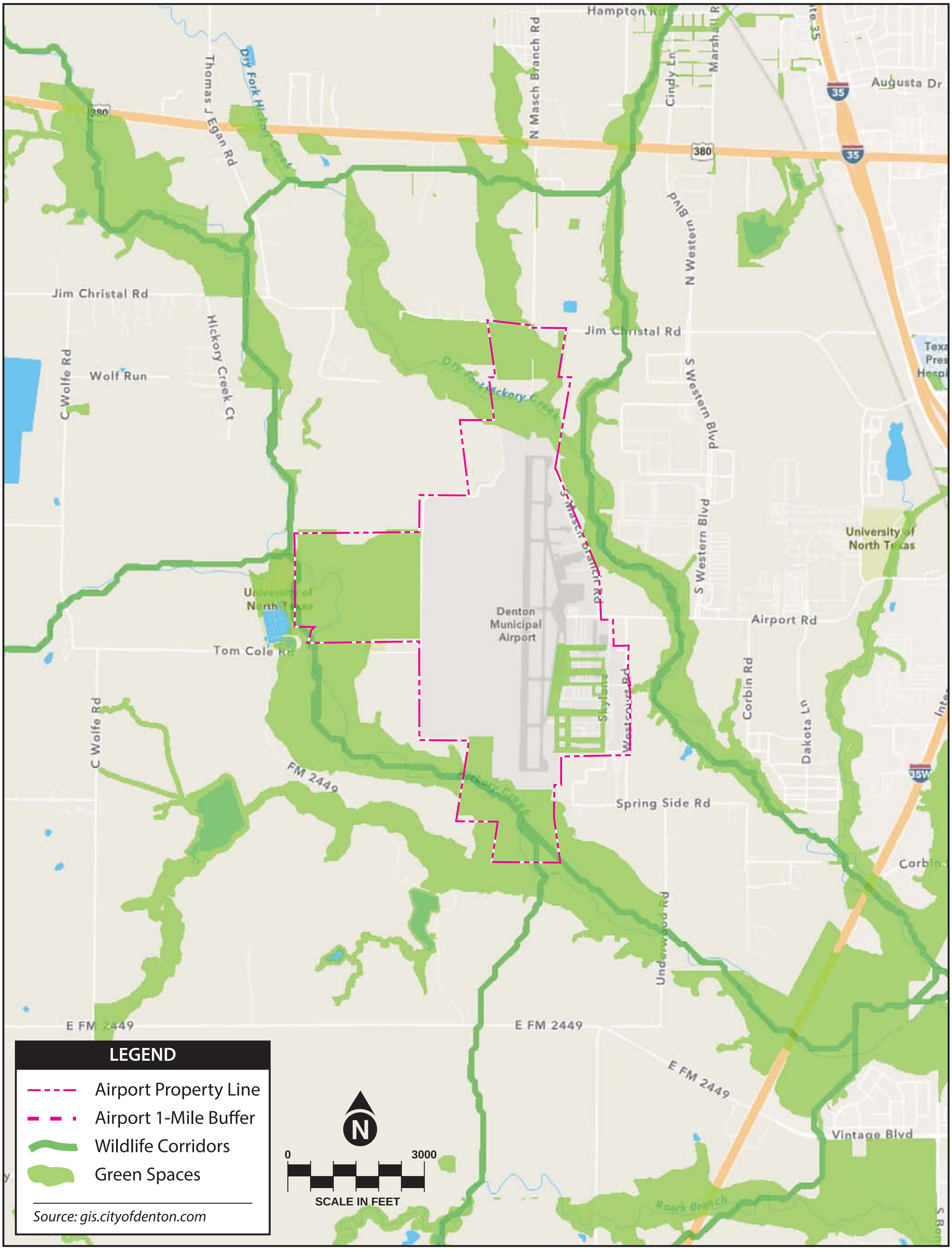


Exhibit 1M: WILDLIFE CORRIDOR AND GREEN SPACES NEAR DTO

Terrestrial and avian species identified for Denton County on the Texas Parks & Wildlife Department's (TPWD) *Annotated County Lists of Rare Species*[4] that are state listed, but not federally listed, are identified below. No aquatic habitat at the airport is suitable to support marine mammals or fish listed by the TPWD for Denton County.

Birds

- black rail (*Laterallus jamaicensis*) – state threatened
- white-faced ibis (*Plegadis chihi*) – state threatened

Reptiles

- Texas horned lizard (*Phrynosoma cornutum*) – state threatened

COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act*, the *Coastal Zone Management Act*, and Executive Order (E.O.) 13089, *Coral Reef Protection*.

The airport is not located within a coastal zone and is over 300 miles inland from the Gulf of Mexico. The nearest National Marine Sanctuary is Flower Garden Banks National Marine Sanctuary, located 150 miles away from the airport.

DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

Section 4(f) of the *Department of Transportation Act*, which was recodified and renumbered as Section 303(c) of Title 49 United States Code, provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly or privately owned historic sites, public parks or recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance, unless there is no feasible and prudent alternative to the use of such land and the project includes all possible planning to minimize harm resulting from the use.

There are no potential Section 4(f) resources within one mile of the airport.

The nearest historic feature and district listed on the National Register of Historic Places (NRHP) are the Denton County Courthouse at the intersection of E McKinney Street and Jannie Street and the Denton County Courthouse Square Historic District, both of which are over three miles away from the airport.[5]

The nearest waterfowl and wildlife refuge, wilderness area, and national recreation area are:

- Wildlife/Waterfowl Refuge – Hagerman National Wildlife Refuge (40 miles from the airport)

[4] Texas Parks & Wildlife Department, Annotated County Lists of Rare Species (Nueces County) (https://tpwd.texas.gov/gis/rtest/)
[5] U.S. Department of the Interior, National Park Service, National Register of Historic Places (https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466)

- Wilderness Area – Wichita Mountains Wilderness (135 miles from the airport)
- National Recreation Area – Chickasaw National Recreation Area (85 miles from the airport)

FARMLANDS

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and consider the adverse effects of federal programs on the preservation of farmland, consider appropriate alternative actions that could lessen adverse effects, and ensure that such federal programs are (to the extent practicable) compatible with state or local government programs and policies to protect farmland. The FPPA guidelines were developed by the U.S. Department of Agriculture (USDA) and apply to farmland classified as prime, unique, or of statewide or local importance, as determined by the appropriate government agency with concurrence by the Secretary of Agriculture.

The USDA Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey shows the types of soils and their farmland classifications on and adjacent to the airport (**Exhibit 1N**). The airport is located outside of a census-designated urbanized area[6] and might be subject to the FPPA because it contains soils with prime farmland rating.

The airport has three types of farmland classification: *all areas are prime farmland*, *farmland of statewide importance*, and *not prime farmland*. Most of the land within the airport is recognized as prime farmland (**Table 1N**). The area of the airport to the northeast of the airfield and the areas south of the airfield have been designated as *not prime farmland*.

Exhibit 1N also shows the soil ratings for the area within one mile of the airport. Much of this land is farmed and is rated as either prime farmland or farmland of statewide importance.

TABLE 1N | Farmland Classification – Summary Map Unit – Denton County, Texas (TX121)

Web Soil Survey Symbol	Soil Type	Farmland Rating
2	Altoga silty clay, 2 to 5 percent slopes	Farmland of statewide importance
7	Arents, hilly, occasionally flooded	Not prime farmland
21	Burleson clay, 0 to 1 percent slopes	All areas are prime farmland
22	Burleson clay, 1 to 3 percent slopes	All areas are prime farmland
34	Frio clay loam, 0 to 1 clay percent slopes, frequently flooded	Not prime farmland
40	Gowen clay loam, frequently flooded	Not prime farmland
46	Justin fine sandy loam, 1 to 3 percent slopes	All areas are prime farmland
53	Lewisville clay loam, 3 to 5 percent slopes	All areas are prime farmland
54	Lindale clay loam, 1 to 3 percent slopes	All areas are prime farmland
66	Ponder loam, 1 to 3 percent slopes	All areas are prime farmland
67	Sanger clay, 1 to 3 percent slopes	All areas are prime farmland
83	Wilson clay loam, 0 to 1 percent slopes	Farmland of statewide importance
84	Wilson clay loam, 1 to 3 percent slopes	Farmland of statewide importance

Source: USDA-NRCS, Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx)

[6] U.S. EPA, EJScreen (Version 2.2), Boundaries – Urban Areas (https://ejscreen.epa.gov/mapper/)

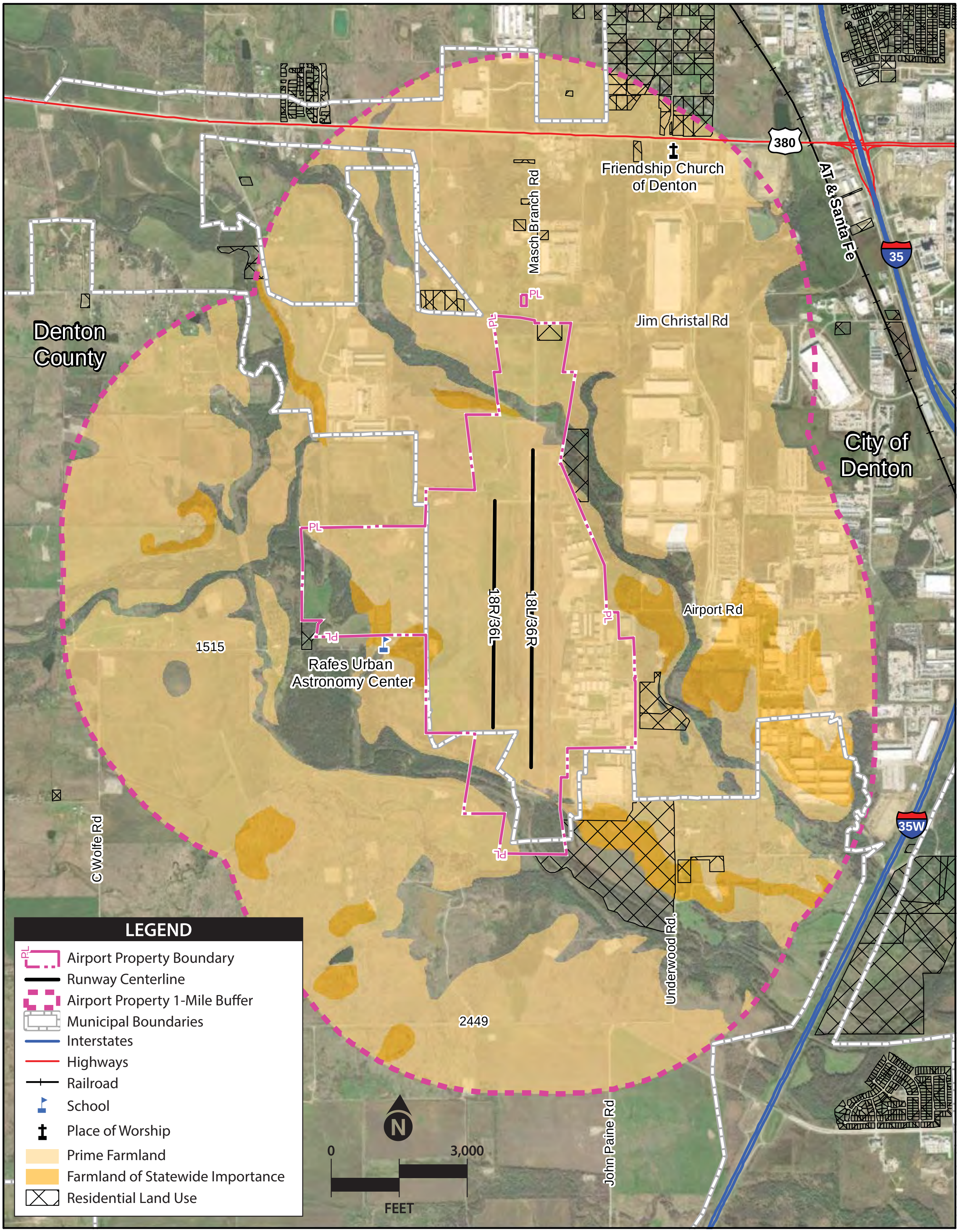


Exhibit 1N: SENSITIVE LAND USES
WITHIN ONE MILE OF THE AIRPORT

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal, state, and local laws regulate hazardous materials usage, storage, transportation, and disposal. These laws may extend to past and future landowners of properties containing these materials. Disrupting sites that contain hazardous materials or contaminants may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources.

The two statutes of most importance to airport projects are the *Resource Conservation Recovery Act* (RCRA), as amended by the *Federal Facilities Compliance Act of 1992*, and the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as amended (also known as Superfund). The RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. The CERCLA provides for the cleanup of any release of a hazardous substance that may endanger public health or the environment. Locations identified as Superfund sites are listed on the National Priorities List (NPL). According to the U.S. EPA's EJScreen online tool, there are no Superfund or brownfield sites within one mile of the airport.[7]

Based on the Texas Commission on Environmental Quality's (TCEQ) database, a leaking petroleum storage tank was present at the airport in the past; however, this case was closed in 1999.[8]

The airport has four fuel farms and multiple fuel trucks that can be utilized by its visitors. Spill prevention, control, and countermeasure (SPCC) plans are required for these facilities, per U.S. EPA regulations.

National Pollutant Discharge Elimination System (NPDES) permits outline the regulatory requirements of municipal stormwater management programs and establish requirements to help protect the beneficial uses of receiving waters. The program requires permittees to develop and implement best management practices (BMPs) to control/reduce the discharge of pollutants to waters of the United States, to the maximum extent practicable. In Texas, the Texas Pollutant Discharge Elimination System (TPDES) program has federal regulatory authority over discharges of pollutants to Texas surface waters.[9] This program is administered by the TCEQ, except for permits associated with oil, gas, and geothermal exploration, which are regulated by the Railroad Commission of Texas. The TPDES Stormwater Multi-Sector General Permit (MSGP), is a common permit administered by TCEQ, for the discharge of stormwater associated with industrial activity. This permit can be applied to airports under Sector S of Industrial Activity – Air Transportation Facilities. To obtain coverage for any materials storage or handling areas at an airport, the permittee must develop and implement a stormwater pollution prevention plan (SWPPP). The SWPPP should include the following[10]:

- A list of pollutants that may be present at the airport and have the potential to be exposed to precipitation or runoff.

[7] U.S. EPA, EJScreen (Version 2.2), EJScreen Community Report (https://ejscreen.epa.gov/mapper/)
[8] Texas Open Data Portal, TCEQ Leaking Petroleum Storage Tank Sites (https://data.texas.gov/dataset/Texas-Commission-on-Environmental-Quality-Leaking-/hedz-nn4q/data_preview)
[9] TCEQ, Wastewater and Stormwater, What Is the "Texas Pollutant Discharge Elimination System (TPDES)"? (https://www.tceq.texas.gov/permitting/wastewater/pretreatment/tpdes_definition.html)
[10] Texas Commission on Environmental Quality, Assistance Tools for Industrial Stormwater General Permit, (https://www.tceq.texas.gov/assistance/water/stormwater/sw-industrial.html)

- A map providing the location of all the material storage and handling areas that would be included under the MSGP authorization.
- A description of best management practices (BMPs) and how they would be implemented to address any material that might be exposed to rainfall or runoff.

The TCEQ also administers Title 30 Texas Administrative Code (TAC) Part 1, Chapter 330, *Municipal Solid Waste*, which regulates waste management. The closest landfill to the airport is the City of Denton Landfill, which is located at the intersection of Treatment Plant Road and Landfill Road, more than six miles east of the airport. This landfill accepts most types of construction waste that are not considered commercial hazardous waste.

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act of 1966* (NHPA), as amended, the *Archaeological and Historic Preservation Act of 1974* (AHPA), the *Archaeological Resources Protection Act* (ARPA), and the *Native American Graves Protection and Repatriation Act of 1990* (NAGPRA). The *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historic, architectural, archaeological, and cultural resources. Impacts may occur when a proposed project causes an adverse effect on a resource that has been identified (or is identified after being unearthed during construction) as having historic, architectural, archaeological, or cultural significance.

From the information available at the time this report was prepared, no systematic airport-wide cultural surveys have been conducted. Much of the airport has been developed or disturbed by construction; however, there is still a chance that intact cultural resources may be present on the ground surface or subsurface.

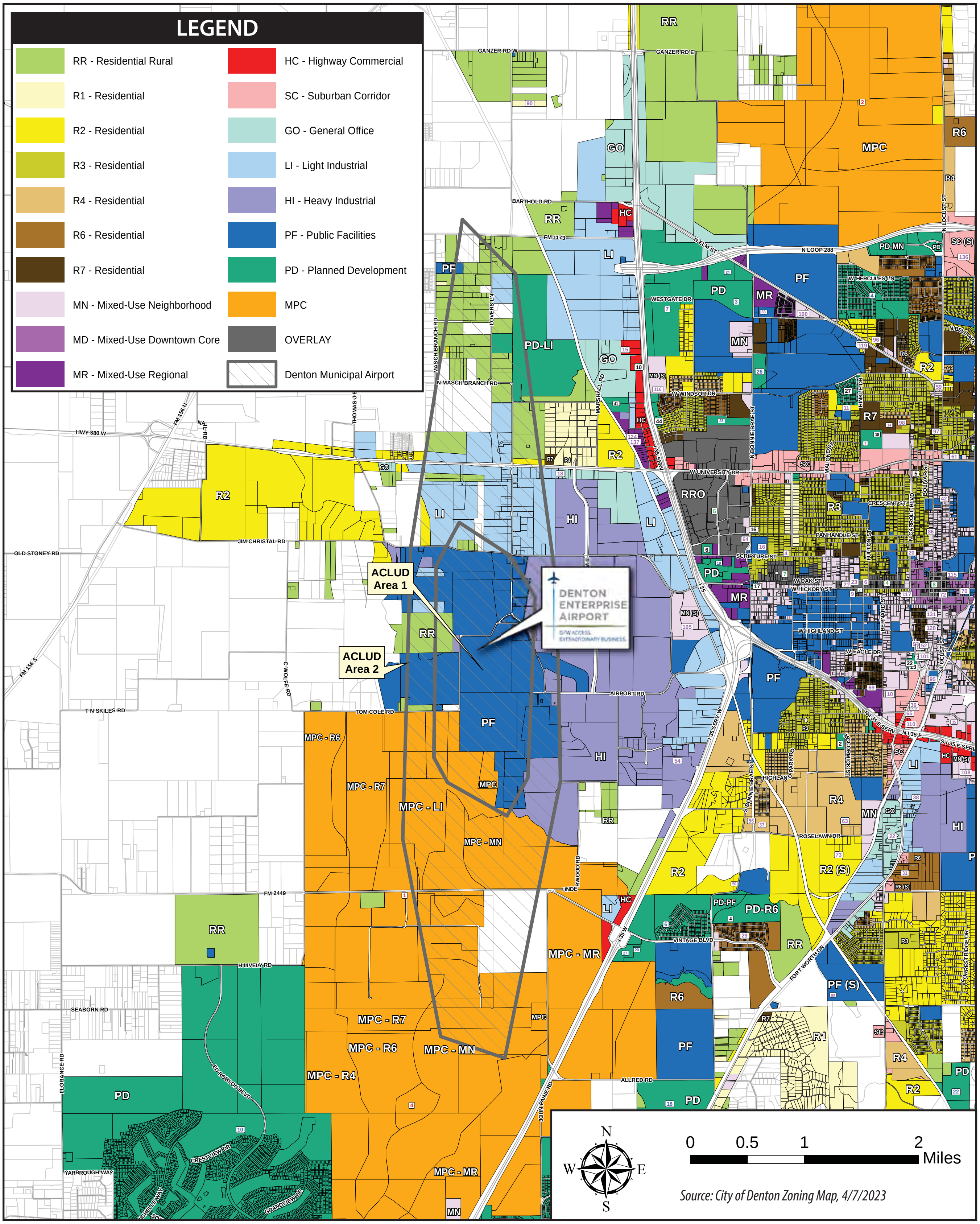
The airport was opened to the public in December 1946; based upon airport records there are buildings at the airport that are of historic age (i.e., 50 years or older), however, these buildings are not considered historically significant.

LAND USE

Land use regulations near airports are achieved through local government codes, city policies, and plans that include airport districts and planning areas. Regulations are used to avoid land use compatibility conflict around airports.

According to the City of Denton's zoning map, shown on **Exhibit 1P**, the airport is zoned as PF (public facilities). Based on the city's development code, a PF zoning designation is intended to provide land for public and quasi-public community uses and services, such as fire stations, schools, libraries, community centers, hospitals, civic buildings, open space, parks, utilities, and other public-related facilities.

The airport is currently surrounded by industrial land uses to the east of the airport and undeveloped land to the west, north, and south. Existing and future general land uses within one mile of the airport –



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. Although every effort was made to ensure the accuracy of this data, no such guarantee is given or implied. Utilization of this map indicates the understanding that there is no guarantee to the accuracy of this data.

including those that could be sensitive to airport noise or other effects – are identified on **Exhibit 1Q**. Future land use is mapped as industrial commerce for the land surrounding the airport to the east and west. A master planned community is shown south of the airport, along with low-density residential use.

The *Denton 2040 Comprehensive Plan* was adopted in 2022. Outlined in the comprehensive plan are a list of policies and actions that have been designed to protect the airport as an economic asset,[11] including:

- Recruit new businesses to DTO;
- Utilize economic incentives to direct financial investments into the airport; and
- Coordinate with freight operations when planning for the future of the airport.

NATURAL RESOURCES AND ENERGY SUPPLY

It is the policy of FAA Order 1053.1C, *Energy and Water Management Program for FAA Buildings and Facilities*, to encourage the development of facilities that exemplify the highest standards of design, including principles of sustainability.

The City of Denton has four ecological habitats that have been identified as environmentally sensitive: floodplains, riparian buffers, water-related habitats, and cross-timbers upland habitat.[12] Based on a review of the City's Environmentally Sensitive Area's Mapper, there may be riparian habitat present at DTO.

Water for the City of Denton is provided by the City of Denton Water Utilities, which provides water, and wastewater services.[13] Drainage services are provided by the city's Public Works Department.

Texas has a deregulated electricity market, so there are numerous electricity providers throughout the state. Over 30 percent of the energy produced in Texas is from renewable sources, such as wind and solar energy, and most Texas energy providers include about 20 percent green energy in their mix of energy sources.[14] Electricity is provided to the City of Denton through Denton Municipal Electric.[15]

NOISE AND NOISE-COMPATIBLE LAND USE

Federal land use compatibility guidelines are established under 14 CFR Part 150, *Airport Noise Compatibility Planning*. According to 14 CFR Part 150, residential land and schools are noise-sensitive land uses that are not considered compatible with a 65-decibel (dB) day-night average sound level (Ldn or DNL). Other noise-sensitive land uses (such as religious facilities, hospitals, or nursing homes), if located within a 65-dB DNL contour, are generally compatible when an interior noise level reduction of 25 dB is incorporated into the design and construction of such structures. Special consideration should also be

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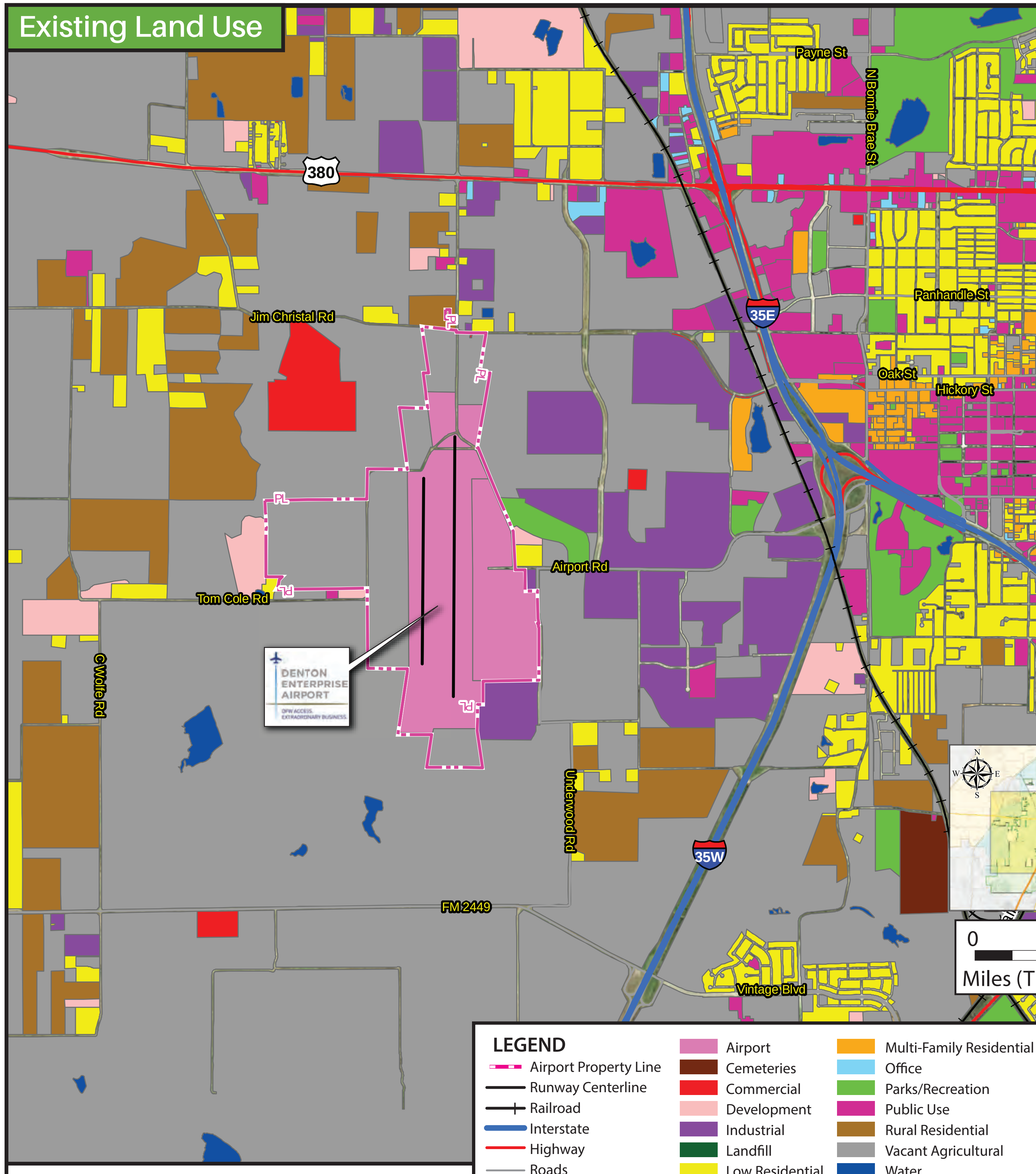
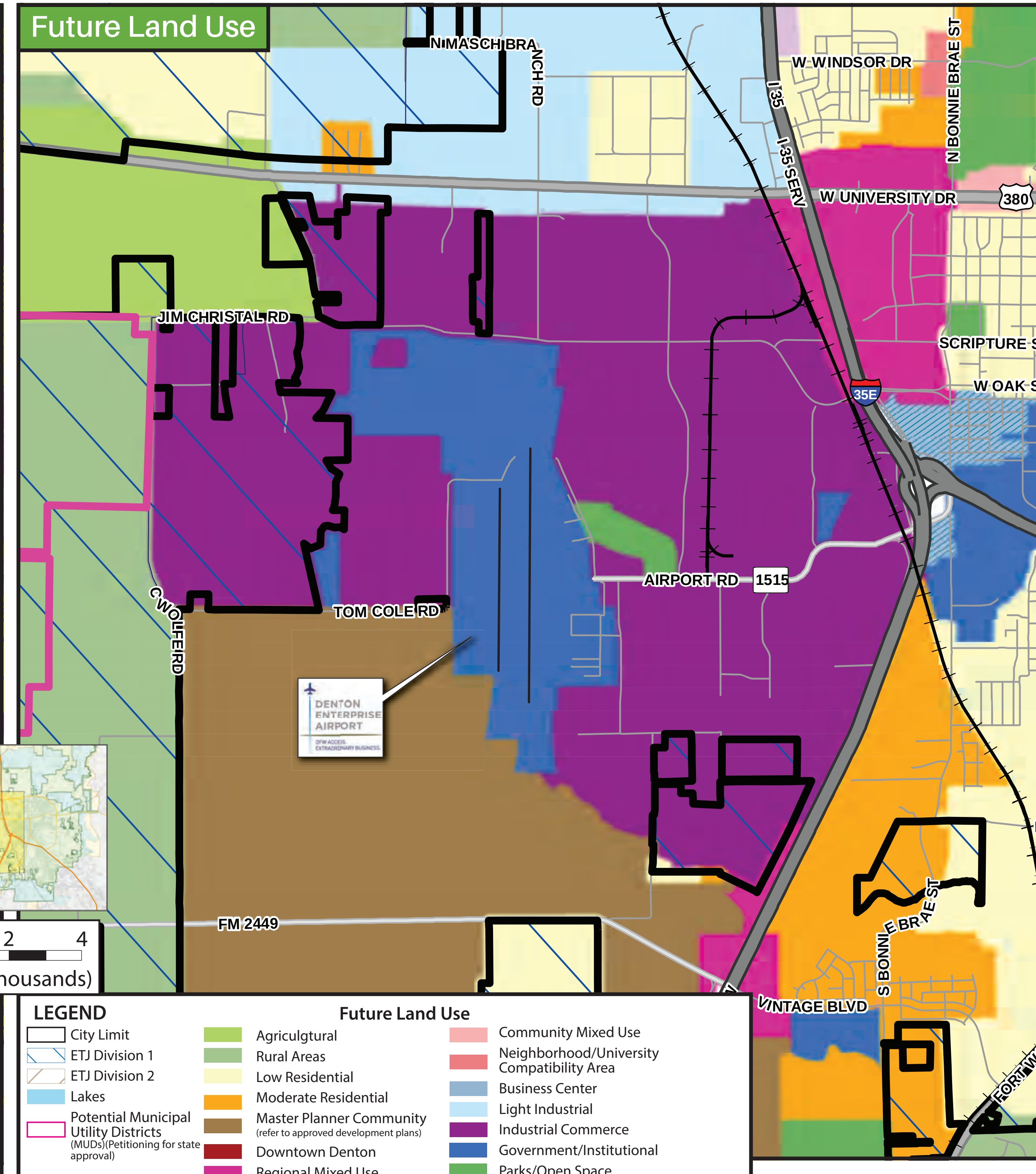
11 City of Denton, Denton 2040 Comprehensive Plan (https://www.cityofdenton.com/256/Land-Development)
12 City of Denton, Environmentally Sensitive Areas, (https://www.cityofdenton.com/244/Environmentally-Sensitive-Areas#:~:text=The%20City%20of%20Denton%20has,ways%20and%20are%20environmentally%20sensitive.),
13 City of Denton, Texas, Waste & Wastewater (https://www.cityofdenton.com/383/Water-Wastewater)
14 Texas Electricity Ratings – Corpus Christi Electricity Rates, Plans & Supplies (https://www.texaselectricityratings.com/electricity-rates/texas/corpus-christi)
15 City of Denton, Texas, Denton Municipal Electric (DME) (https://www.cityofdenton.com/331/Denton-Municipal-Electric-DME)



Source: City of Denton, 2020 Existing Land Use Map.

The City of Denton has prepared maps for departmental use. These are not official maps of the City of Denton and should not be used for legal, engineering or surveying purposes but rather for reference purposes. These maps are the property of the City of Denton and have been made available to the public based on the Public Information Act. The City of Denton makes every effort to produce and publish the most current and accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use, or its interpretation. Utilization of this map indicates understanding and acceptance of this statement.



Source: City of Denton, 4/1/2022

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Exhibit 1Q
EXISTING/FUTURE LAND USE MAPS

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given to noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in 14 CFR Part 150 do not account for the value, significance, and enjoyment of the area in question.[16]

There are no hospitals or live-in medical care facilities within one mile of the airport. Only one place of worship is located within one mile of the airport. (See **Table 1P** and **Exhibit 1N**.) The closest residents live southeast of the airport boundaries along Underwood Road, roughly 0.4 miles from the airport. In addition to this, planned residential development to the south of the airport situated along Interstate 35W and Robson Ranch Road, known as the Cole-Hunter Ranch Project, is set to occur in the near future.[17]

TABLE 1P | Noise-Sensitive Land Uses Within One Mile of the Airport

Facility	Location	Distance from Airport Boundary (miles)	Direction from Airport
Places of Worship			
Friendship Church of Denton	3818 W University Dr.	0.95 miles	Northeast
School			
Rafes Urban Astronomy Center	2350 Tom Cole Rd.	0.10 miles	West

Source: Google Earth Aerial Imagery, June 2024

SOCIOECONOMICS AND CHILDREN'S ENVIRONMENTAL HEALTH & SAFETY RISKS

Socioeconomics

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment – such as population, employment, housing, and public services – might be affected by the proposed action or alternative(s). Potential impacts of airport projects on the human environment will be evaluated in more detail in the Environmental Overview, which will be included as part of Chapter Five later in this study.

Children's Environmental Health and Safety

Federal agencies are directed, per E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, to make it a high priority to identify and assess environmental health and safety risks that may disproportionately impact children. Such risks include those that are attributable to products or substances a child is likely to encounter or ingest (i.e., air, food, and water, including drinking water) or to which they may be exposed.

According to the 2017-2021 ACS estimates, 10 percent of the population within one mile of the airport is between the ages of one and 18 years old (roughly 15 children). No elementary schools, middle schools, high schools, parks, or other recreational facilities are located within one mile of the airport.

[16] 49 U.S. Code § 47141, Compatible Land Use Planning and Projects by State and Local Governments

[17] Hillwood, Hillwood Announces New Denton Residential, Mixed-Use Development, (https://www.hillwood.com/newsroom/press-releases/hillwood-announces-new-denton-residential-mixed-use-development/)

VISUAL EFFECTS

Visual effects deal broadly with the extent to which a proposed action or alternative(s) would either (1) produce light emissions that create an annoyance or interfere with activities; or (2) contrast with or detract from the visual resources and/or the visual character of the existing environment. Each jurisdiction will typically address outdoor lighting, scenic vistas, and scenic corridors in its zoning ordinances and general plan.

Light Emissions

These impacts typically relate to the extent to which any light or glare results from a source that could create an annoyance for people or interfere with normal activities. Section 7.11 of the city's unified development code, *Development Code of the City of Denton, Texas*, contains outdoor lighting design requirements to ensure that direct light emissions are not visible from adjacent areas.

Airfield lighting at the airport includes medium intensity runway edge lights (MIRL), medium intensity taxiway edge lights (MITL), and lighted guidance signs. Navigation lights include a rotating beacon, which emits flashes of white and green light, and four-light precision approach path indicator lights (PAPI-4) on Runways 18 and 36. (For further information, see the discussion of existing airfield lighting and visual navigational aids earlier in the inventory.) Landside outdoor lighting includes building and parking lot security lighting.

The airport is not surrounded by land uses (such as residential neighborhoods) that would be sensitive to light pollution. The closest residential neighborhoods are located 0.44 miles southeast of the airport boundary, where single-family homes are located along Underwood Road.

Visual Resources and Visual Character

Visual character refers to the overall visual makeup of the existing environment where a proposed action or its alternative(s) would be located. For example, highly developed and densely populated areas generally have a visual character that could be defined as urban, whereas less developed areas may have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, deserts, etc.

Visual resources include buildings, sites, traditional cultural properties, and other natural or human-made landscape features that are visually important or have unique characteristics. Visual resources may include structures or objects that obscure or block other landscape features. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the proposed action or alternative(s).

The airport is primarily within an agricultural area with pockets of residential, commercial, and industrial land uses scattered within one mile of its borders. Visually, the airport is characterized by dense airport development along the eastern airport boundary and flat open land on the western airport boundary. Dry Fork Hickory Creek and Hickory Creek border the airport to the northeast and south. Views of the airport are accessible from surrounding roadways; long-range views of the airport are not readily available from off airport property due to the relatively flat topography of the airport environs.

There are no national scenic byways in Texas;[18] however, the State of Texas has a state scenic byways program, the *Texas Scenic Byways Program*, which includes 30 potential state scenic byways. None of these byways are located near the airport; the closest designated Texas Scenic Byway is a segment of Texas State Highway 16, southeast of the airport.[19] No scenic corridors are identified in the *Denton 2040 Comprehensive Plan*, which was adopted in 2022; instead, the plan emphasizes identifying and protecting scenic open spaces.

WATER RESOURCES

Wetlands

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including wetlands with continuous surface connections to traditional navigable waters, under Section 404 of the *Clean Water Act* (CWA). Wetlands are defined in E.O. 11990, *Protection of Wetlands.* Wetlands can include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mudflats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: the soil is inundated or saturated to the surface at some time during the growing season (hydrology); the soil has a population of plants that are able to tolerate various degrees of flooding or frequent saturation (hydrophytes); and the soil is saturated enough to develop anaerobic (absent of air or oxygen) conditions during the growing season (hydric).

The USFWS manages the National Wetlands Inventory (NWI), which identifies surface waters and wetlands in the nation at a macro level via aerial photography.[20] Based on the NWI and Google Earth aerial maps, there are freshwater emergent wetlands associated with Hickory Creek on the western portion of the airport (**Exhibit 1R**). Hickory Creek ultimately connects to Lewisville Lake; therefore, the on-airport wetlands might be considered a jurisdictional water under Section 404 of the CWA.

Based on a review of the city's environmentally sensitive areas (ESA) mapper, there are ESAs located on the northern, western, and southwestern portion on the airport, these ESAs are associated with wetlands and floodplains that traverse the airport (See **Exhibit 1S**).[21] If airport development were to occur on portions of the airport that contains ESAs, field assessments would be required prior to development to determine the existence and condition of the habitat within the ESA area.[22]

[18] U.S. Department of Transportation, Federal Highways Administration, National Scenic Byways & All-American Roads (https://fhwaapps.fhwa.dot.gov/bywaysp/States/Show/TX), April 2024
[19] Scenic Texas, State Scenic Byway Program (https://www.scenictexas.org/state-scenic-byway-program), April 2024
[20] National Wetlands Inventory (https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/)
[21] City of Denton, (https://gis.cityofdenton.com:9002/mapviewer/)
[22] Denton Development Code, (https://tx-denton.civicplus.com/DocumentCenter/View/427/Denton-Development-Code-PDF), 2019 Edition

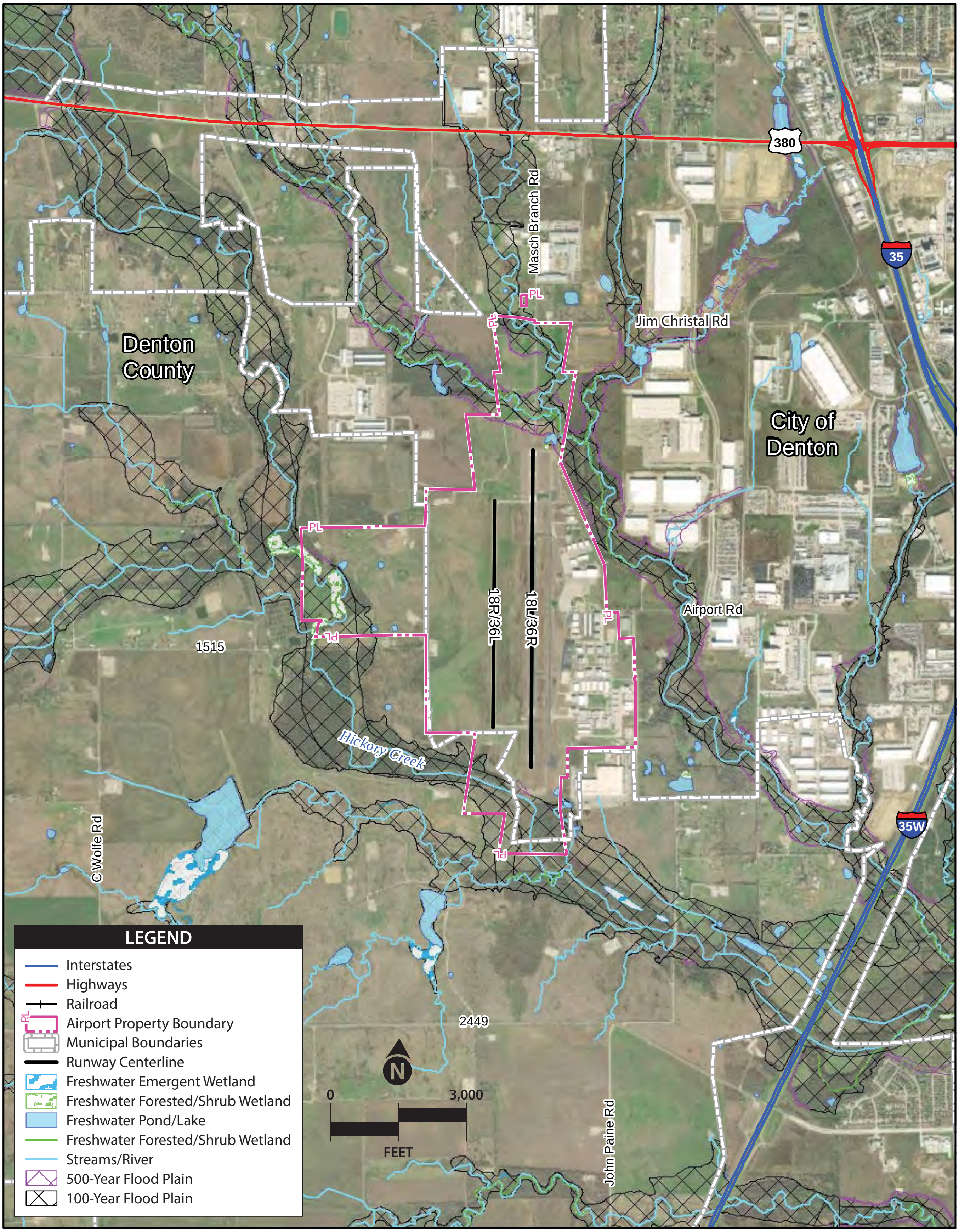
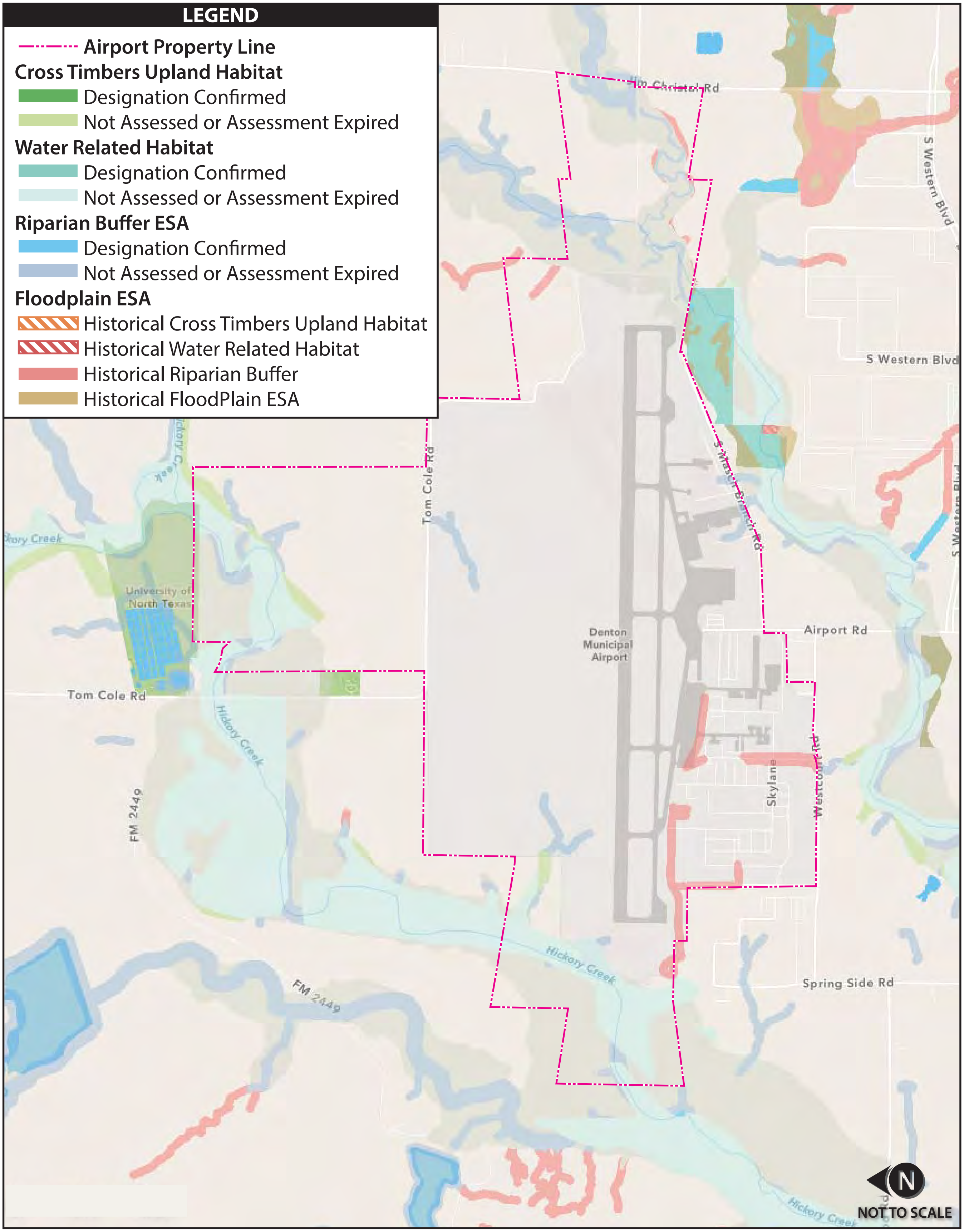


Exhibit 1R: NATURAL RESOURCES ENVIRONMENTAL SENSITIVITIES



Source: City of Denton, ArcGIS Mapper, (https://gis.cityofdenton.com:9002/arcgis/rest/services/MapViewer/ESAs/MapServer)

Floodplains

E.O. 11988, *Floodplain Management*, directs federal agencies to take action to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by the floodplains. U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, implements the guidelines contained in E.O. 11988.

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) panel number 48121C0355G, effective April 18, 2011, indicates that the majority of the airport is in Zone X, an area of minimal flood hazard; however, there are both 100-year and 500-year floodplains along the northern, western, eastern, and southern portions of the airport boundaries (**Exhibit 1R**).[23] Furthermore, as mentioned under the Wetlands section of the text, these floodplains are also associated with mapped ESAs, and would require field surveys prior to development in these areas.

Surface Waters

The CWA establishes water quality standards, controls discharges, develops waste treatment management plans and practices, prevents or minimizes the loss of wetlands, and regulates other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc. Additionally, U.S. Congress has mandated the NPDES under the CWA.

As previously discussed under *Hazardous Materials, Solid Waste, and Pollution Prevention*, the TPDES program has federal regulatory authority over discharges of pollutants to Texas surface waters. The airport is in the Upper Hickory Creek Watershed.[24] There are no reported impaired waterbodies within this watershed.

Groundwater

Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term *aquifer* is used to describe the geologic layers that store or transmit groundwater, such as wells, springs, and other water sources. Examples of direct impacts to groundwater could include withdrawal of groundwater for operational purposes or reduction of infiltration/recharge area due to new impervious surfaces.

The U.S. EPA's Sole Source Aquifer (SSA) program was established under Section 1424(e) of the *Safe Drinking Water Act* (SDWA). Since 1977, the program has been used by communities to help prevent contamination of groundwater by federally funded projects and has increased public awareness of the vulnerability of groundwater resources. The SSA program is authorized by Section 1424(e) of the SDWA (Public Law 93-523, 42 U.S.C. 300 et. seq), which states:

[23] FEMA Flood Map Service Center (https://msc.fema.gov/portal/search?AddressQuery=denton%20municipal%20airport)
[24] U.S. EPA, How's My Waterway (https://mywaterway.epa.gov/community/denton%20municipal%20airport/overview)

> *"If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register."*[25]

According to the U.S. EPA *Sole Source Aquifers for Drinking Water* website, no sole source aquifers are located within airport boundaries. The nearest sole source aquifer is the Arbuckle-Simpson Aquifer, located 80 miles away from the airport.[26]

Wild and Scenic Rivers

The *National Wild and Scenic Rivers Act* was established to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

The Nationwide River Inventory is a list of over 3,400 rivers or river segments that appear to meet the minimum eligibility requirements of the *National Wild and Scenic Rivers Act*, based on their free-flowing status and resource values. The development of the Nationwide River Inventory resulted from Section 5(d)(1) in the *National Wild and Scenic Rivers Act*, which directs federal agencies to consider potential wild and scenic rivers in the comprehensive planning process.

The closest designated National Wild and Scenic River identified is the Cossatot River, located more than 185 miles from the airport.[27] The nearest Nationwide River Inventory feature is the Brazos River, located 55 miles away from the airport.[28]

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[25] U.S. EPA, Overview of the Drinking Water Sole Source Aquifer Program (https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#Authority)
[26] U.S. EPA, Sole Source Aquifers (https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b)
[27] U.S. Department of the Interior, National Park Service, National Wild and Scenic River System in the U.S. (https://nps.maps.arcgis.com/apps/MapJournal/index.html?appid=ba6debd907c7431ea765071e9502d5ac#)
[28] U.S. Department of the Interior, National Park Service, Nationwide River Inventory (https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977)

Chapter Two

Forecasts

Chapter Two

Forecasts

An important factor when planning the future needs of an airport involves a definition of aviation demand that may reasonably be expected to occur in the near term (five years), intermediate term (10 years), and long term (20 years). Aviation demand forecasting for Denton Enterprise Airport (DTO) will primarily consider based aircraft, aircraft operations, and peak activity periods. Additionally, this chapter will consider the potential demand for commercial airline passenger activities at DTO. Capacity concerns at the two major commercial service airports in the Dallas-Fort Worth metropolitan area – Dallas Fort Worth International Airport (DFW) and Dallas Love Field (DAL) – have raised the question of whether a third commercial service airport is needed to serve the metroplex. This report will evaluate what demand levels could be expected if the City of Denton chooses to pursue commercial activity at DTO.

The Texas Department of Transportation (TxDOT) has oversight responsibility to review and approve aviation forecasts developed in conjunction with airport planning studies for non-primary airports in Texas. TxDOT reviews individual airport forecasts with the objective of comparing them to the Federal Aviation Administration (FAA) *Terminal Area Forecasts* (TAF) and the *National Plan of Integrated Airport Systems* (NPIAS). Even though the TAF is updated annually, there has almost always been a disparity between the TAF and master planning forecasts, primarily because the TAF forecasts are the result of a top-down model that does not consider local conditions or recent trends. While the FAA forecasts are a point of comparison for master plan forecasts, they also serve other purposes, such as asset allocation by the FAA and TxDOT.

When reviewing a sponsor's forecast from the master plan, TxDOT must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. As stated in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*, forecasts should be:

- Realistic;
- Based on the latest available data;
- Reflective of current conditions at the airport (as a baseline);
- Supported by information in the study; and
- Able to provide adequate justification for airport planning and development.

The forecast process for an airport master plan consists of a series of basic steps that vary in complexity, depending on the issues to be addressed and the level of effort required. The steps include a review of previous forecasts, determination of data needs, identification of data sources, collection of data, selection of forecast methods, preparation of the forecasts, and documentation and evaluation of the results. FAA Advisory Circular (AC) 150/5070-6C, *Airport Master Plans*, outlines seven steps involved in the forecast process:

1. **Identify Aviation Activity Measures**: Identify the levels and types of aviation activities likely to impact facility needs. For general aviation, this typically includes based aircraft and operations.
2. **Review Previous Airport Forecasts**: These may include the FAA TAF, state or regional system plans, and previous master plans.
3. **Gather Data**: Determine what data are required to prepare the forecasts, identify data sources, and collect historical and forecast data.
4. **Select Forecast Methods**: Several appropriate methodologies and techniques are available, including regression analysis, trend analysis, market share or ratio analysis, exponential smoothing, econometric modeling, comparison with other airports, survey techniques, cohort analysis, choice and distribution models, range projections, and professional judgement.
5. **Apply Forecast Methods and Evaluate Results**: Prepare the actual forecasts and evaluate them for reasonableness.
6. **Summarize and Document Results**: Provide supporting text and tables, as necessary.
7. **Compare Forecast Results with the FAA's TAF**: Based aircraft and total operations are considered consistent with the TAF if they meet one of the following criteria:
   - Forecasts differ by less than 10 percent in the five-year forecast period and less than 15 percent in the 10-year forecast period;
   - Forecasts do not affect the timing or scale of an airport project; or
   - Forecasts do not affect the role of the airport, as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems.*

Aviation activity can be affected by many influences on the local, regional, and national levels, making it virtually impossible to predict year-to-year fluctuations of activity over 20 years with any certainty; therefore, it is important to remember that forecasts are meant to serve as guidelines, and planning must remain flexible enough to respond to a range of unforeseen developments.

The following forecast analysis for the airport was produced following these basic guidelines. Existing forecasts are examined and compared against current and historical activity. The historical aviation activity is then examined with other factors and trends that can affect demand, with the intention of providing an updated set of aviation demand projections for the airport that will permit airport management to make planning adjustments as necessary to maintain a viable, efficient, and cost-effective facility.

The forecasts for this master plan will utilize a base year of 2024 with a long-range forecast out to 2044.

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet the budget and planning needs of the FAA and provide information that can be used by state and local authorities, the aviation industry, and the public. When this chapter was prepared, the current edition was *FAA Aerospace Forecast – Fiscal Years* (FY) *2024-2044*. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets. The following discussion is a brief synopsis of highlights from the FAA's national general aviation forecasts. A summary is also shown on **Exhibit 2A**.

NATIONAL GENERAL AVIATION (GA) TRENDS

The long-term outlook for general aviation is promising, as growth at the high end of the segment offsets continuing retirements at the traditional low end. The active general aviation fleet is forecast to remain relatively stable between 2024 and 2044, increasing by just 0.4 percent. While steady growth in both gross domestic product (GDP) and corporate profits results in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet – fixed-wing piston aircraft – continues to shrink over the forecast period.

The FAA forecasts the fleet mix and hours flown for single-engine piston (SEP) aircraft; multi-engine piston (MEP) aircraft; turboprops; business jets; piston and turbine helicopters; and light sport, experimental, and other aircraft (e.g., gliders and balloons). The FAA forecasts active aircraft, not total aircraft. An active aircraft is one that is flown at least one hour during the year. From 2010 through 2013, the FAA undertook an effort to have all aircraft owners re-register their aircraft. This effort resulted in a 10.5 percent decrease in the number of active general aviation aircraft, mostly in the piston category. **Table 2A** shows the primary general aviation demand indicators, as forecast by the FAA.

TABLE 2A | FAA General Aviation Forecast

Demand Indicator	2024	2044	CAGR
General Aviation Fleet			
Total Fixed-Wing Piston	136,485	130,790	-0.2%
Total Fixed-Wing Turbine	27,905	41,580	2.0%
Total Helicopters	10,090	14,025	1.7%
Total Other (experimental, light sport, etc.)	35,625	42,580	0.9%
Total GA Fleet	*210,105*	*228,975*	*0.4%*
General Aviation Operations			
Local	15,900,404	17,570,920	0.5%
Itinerant	15,125,333	16,568,634	0.5%
Total General Aviation Operations	*31,025,737*	*34,139,554*	*0.5%*
CAGR = compound annual growth rate (2024-2044)			

Source: FAA Aerospace Forecast – FY 2024-2044

FAA forecasts of total operations – based on activity at control towers across the United States – are categorized as air carrier, air taxi/commuter, general aviation, and military. While the fleet size remains relatively level, the number of general aviation operations at towered airports is projected to increase from 31.0 million in 2024 to 34.1 million in 2044, with an average increase of 0.5 percent per year as growth in turbine, rotorcraft, and experimental hours offsets a decline in fixed-wing piston hours. This includes annual growth rates of 0.5 percent for both local and itinerant general aviation operations.

BUSINESS JET OPERATIONAL TRENDS

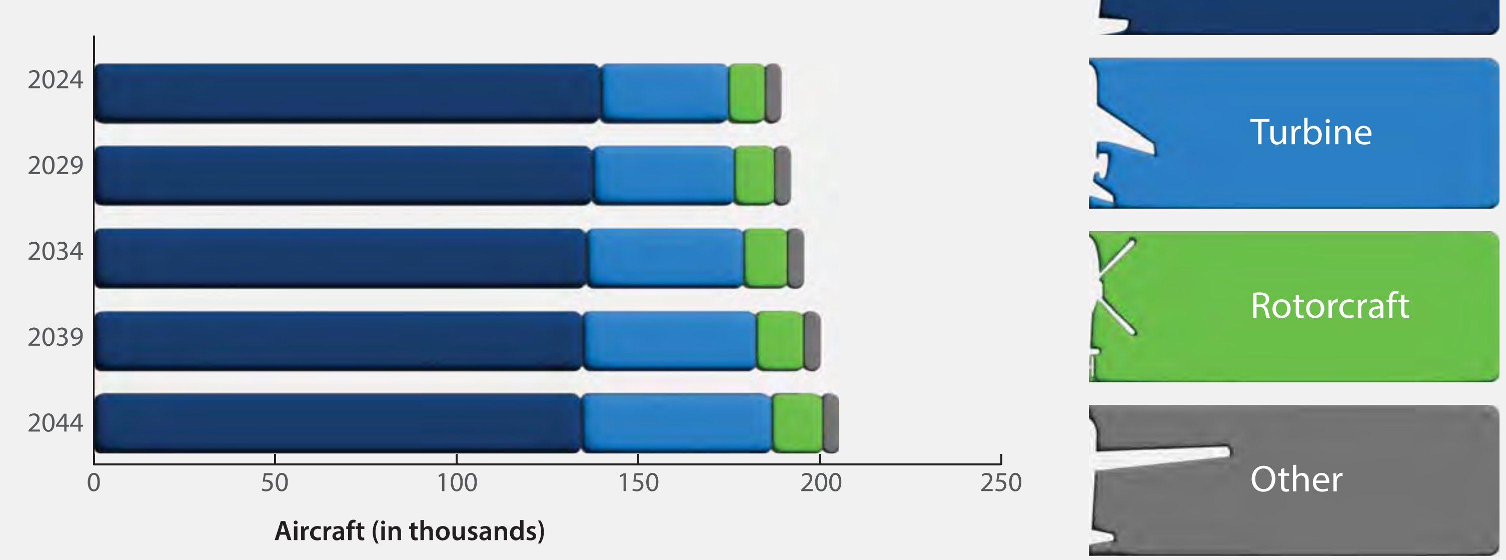
General aviation airports are often hubs of diverse activity, although they frequently serve predominantly piston-powered aircraft. These aircraft, including single-engine airplanes and light twin-engine aircraft, comprise most of the based aircraft and operations at DTO. Routine activities for these aircraft vary from local flights and flight training to recreational flying and short-haul travel. Piston-powered aircraft are generally more numerous and engaged in more frequent, shorter operations, which contributes to a busy, vibrant atmosphere at general aviation airports.

In contrast, business jets are less numerous and conduct fewer operations overall but are physically demanding in a different way. Business jets require more space for operations, due to their larger size and need for longer runways. Arrivals and departures by business jets can place greater demands on airport infrastructure, such as requiring more intensive ground handling, fueling, and maintenance services. The operational impact of business jets includes increased coordination and infrastructure support; their presence is prominently felt, even if they operate less frequently compared to their piston-powered counterparts. At reliever airports, such as DTO, business jets typically drive the critical aircraft discussion. For this reason, additional focus is placed on national business jet trends to help understand growth patterns and how they might impact future operations at DTO.

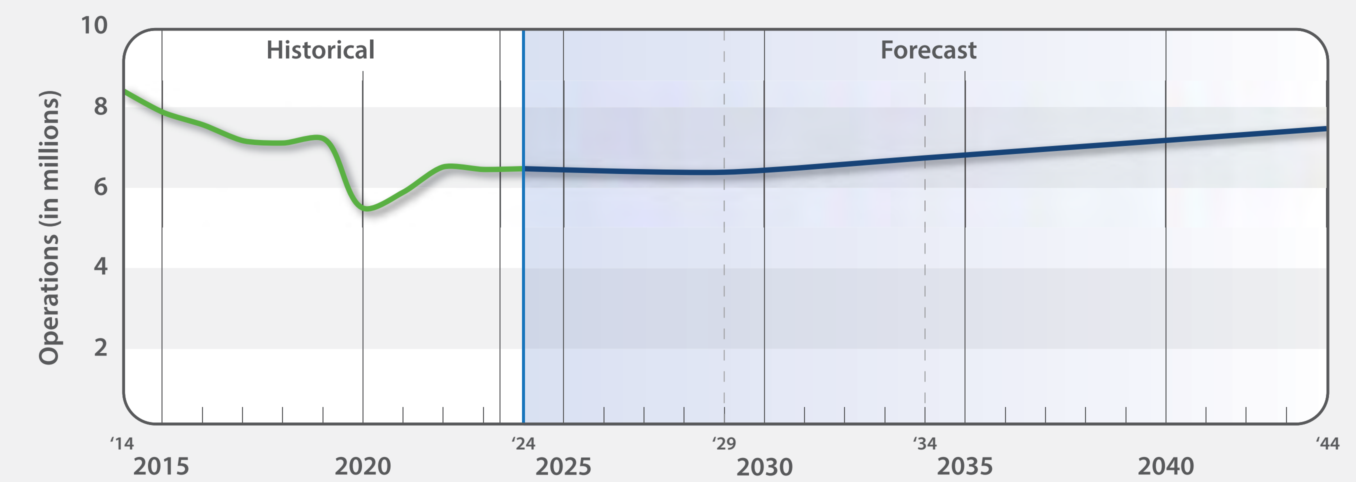
Since the early 2000s, business jet operational trends have evolved significantly, driven by advancements in technology, changing economic conditions, and shifts in travel preferences. Advances in aircraft technology have led to the development of business jets with greater range and performance capabilities. Newer models can cover longer distances non-stop, reducing the need for intermediate stops. Ultra-long-range business jets, such as the Gulfstream G700/G800, Bombardier Global 7500 and the Boeing Business Jet (BBJ) have ranges over 7,000 nautical miles (nm) are seeing growing demand from corporations and high-net-worth individuals who seek more flexibility and range. A strong focus has been made on improving fuel efficiency and reducing operating costs. Modern business jets are designed with more efficient engines and aerodynamic enhancements that lower fuel consumption and operational expenses. Some of the most fuel-efficient business jet models include the Embraer Phenom 300, Pilatus PC-24, Cessna Citation XLS, and Learjet 75.

The FAA's Traffic Flow Management System Count (TFMSC) database provides data on aircraft operations across the country. As shown in **Table 2B**, the top 15 business jets with the most operations in 2023 are led by two of the most efficient business jets, the Embraer Phenom 300 and the Cessna Citation Excel/XLS. It's interesting to note that of the top 15 business jets, ten have experienced declining growth rates over the past five years, reflecting a shift in operations to newer models.

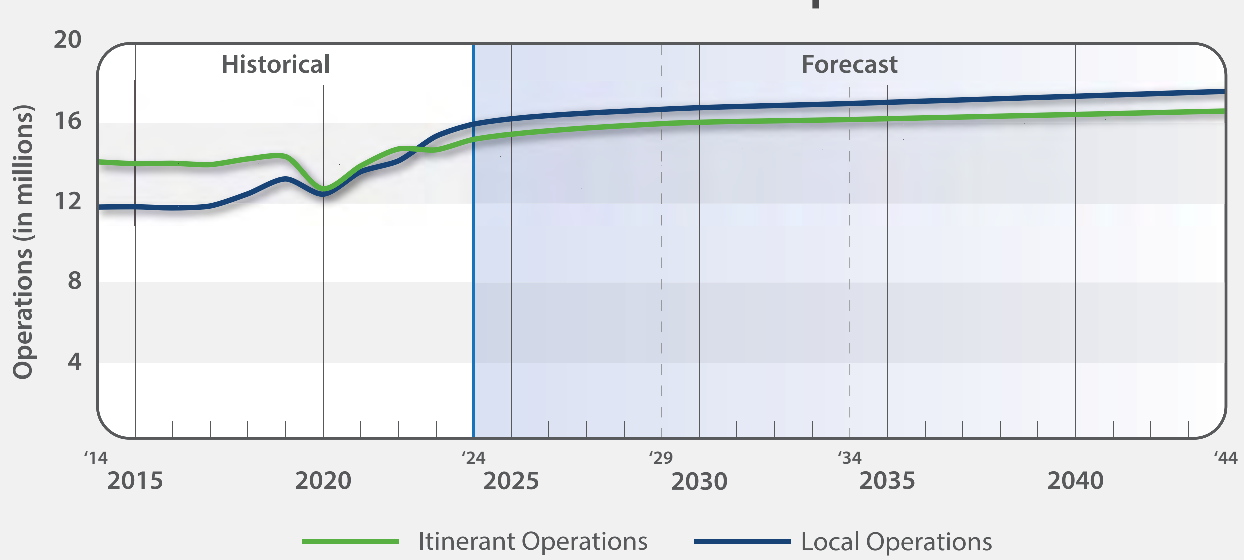
U.S. Active General Aviation Aircraft



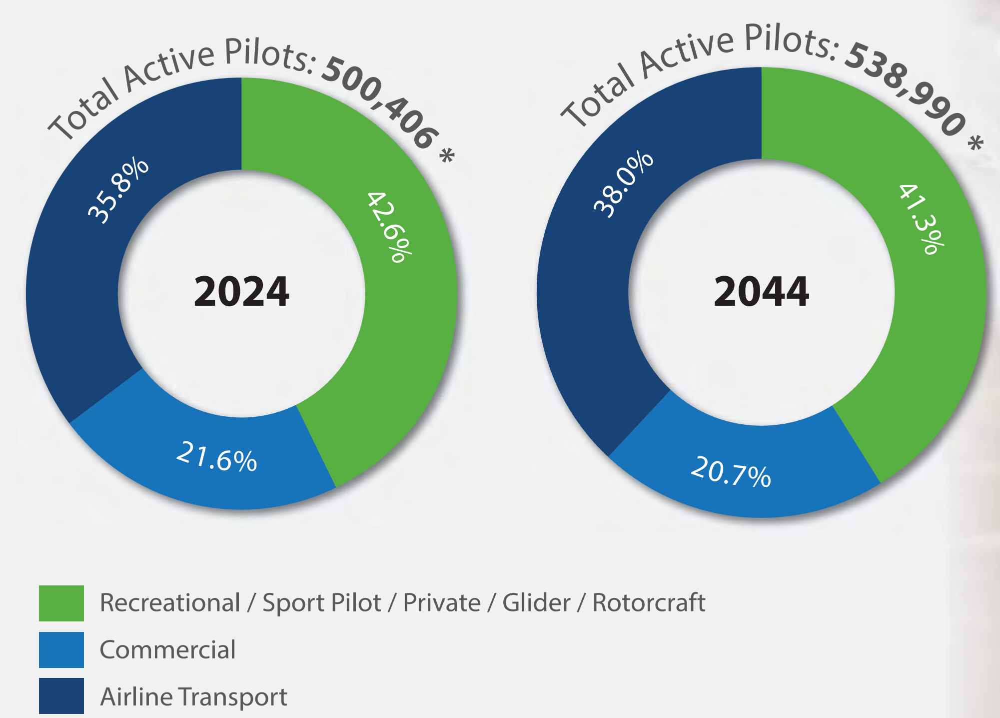
U.S. Air Taxi Operations



U.S. General Aviation Operations



Active Pilots By Certificate



*Excludes Student Pilot Certificates

Source: FAA Aerospace Forecasts FY2024-2044

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TABLE 2B | 2023 Top 15 Busiest Business Jets by Operations

Aircraft Type	OPERATIONS						2018-2023
	2018	2019	2020	2021	2022	2023	CAGR
E55P - Embraer Phenom 300	221,701	247,960	213,923	335,646	354,249	364,473	10.5%
C56X - Cessna Excel/XLS	355,740	340,406	242,977	357,612	380,367	348,189	-0.4%
C68A - Cessna Citation Latitude	97,497	150,649	133,150	229,559	252,954	280,900	23.6%
CL35 - Bombardier Challenger 350	123,317	143,688	140,716	217,882	235,031	247,682	15.0%
C25B - Cessna Citation CJ3	130,723	146,270	125,983	179,269	193,852	205,414	9.5%
BE40 - Raytheon/Beech Beechjet 400/T-1	250,126	239,224	209,219	244,373	234,904	200,351	-4.3%
H25B - BAe HS 125/700-800/Hawker 800	217,294	205,703	158,778	240,801	229,572	199,945	-1.7%
C560 - Cessna Citation V/Ultra/Encore	216,556	208,845	170,545	228,409	219,329	197,453	-1.8%
CL60 - Bombardier Challenger 600/601/604	194,437	185,781	131,174	193,995	202,902	191,198	-0.3%
GLF4 - Gulfstream IV/G400	181,856	177,559	133,027	202,549	196,146	175,076	-0.8%
CL30 - Bombardier (Canadair) Challenger 300	200,083	200,584	127,629	172,303	169,523	162,637	-4.1%
C525 - Cessna CitationJet/CJ1	165,117	156,999	124,413	166,026	166,923	152,938	-1.5%
F2TH - Dassault Falcon 2000	149,611	141,059	90,177	131,785	149,210	142,460	-1.0%
C680 - Cessna Citation Sovereign	150,583	148,348	101,731	151,397	158,480	137,455	-1.8%
GLF5 - Gulfstream V/G500	135,211	133,554	89,818	127,765	150,344	136,674	0.2%

CAGR = compound annual growth rate

Source: FAA TFMSC Database

Table 2C shows the business jets with the fastest operational growth rates over the past five years. These aircraft represent newer models, such as the Cessna Citation Longitude and Latitude (newest Cessna models), the Gulfstream G500 and Bombardier Global 7500 (ultra-long-range aircraft), and the Cirrus Vision SF50 (Vision Jet) and HondaJet (light business jets).

TABLE 2C | Top 15 Fastest Operational Growth Business Jets

Aircraft Type	OPERATIONS						2018-2023
	2018	2019	2020	2021	2022	2023	CAGR
C700 - Cessna Citation Longitude	2,332	2,204	8,484	29,044	51,928	69,941	97.4%
GA5C - G-7 Gulfstream G500	1,510	5,080	6,464	13,900	17,868	26,823	77.8%
GL7T - Bombardier Global 7500	1,166	1,356	3,351	8,808	15,338	20,687	77.7%
SF50 - Cirrus Vision SF50	13,460	25,240	36,700	62,547	82,853	98,641	48.9%
HDJT - Honda HA-420 HondaJet	17,228	24,899	27,295	48,402	67,416	61,344	28.9%
E545 - Embraer EMB-545 Legacy 450	28,530	39,244	39,788	62,344	71,203	82,852	23.8%
C68A - Cessna Citation Latitude	97,497	150,649	133,150	229,559	252,954	280,900	23.6%
C25M - Cessna Citation M2	18,586	25,696	25,778	38,670	49,915	52,380	23.0%
FA8X - Dassault Falcon 8X	2,906	3,572	2,503	4,146	7,052	7,028	19.3%
E550 - Embraer Legacy 500	19,573	26,790	20,039	30,973	36,636	42,614	16.8%
CL35 - Bombardier Challenger 350	123,317	143,688	140,716	217,882	235,031	247,682	15.0%
GLF6 - Gulfstream G650	43,657	52,603	37,724	55,534	73,457	79,797	12.8%
E55P - Embraer Phenom 300	221,701	247,960	213,923	335,646	354,249	364,473	10.5%
G280 - Gulfstream G280	49,906	64,222	42,360	66,010	79,495	79,726	9.8%
C25B - Cessna Citation CJ3	130,723	146,270	125,983	179,269	193,852	205,414	9.5%

CAGR = compound annual growth rate

Source: FAA TFMSC Database

Table 2D provides a five-year breakdown of business jet operations by aircraft reference code (ARC). These data show that the B-II and C-II categories accounted for over 66 percent of total business jet operations in 2023. The highest growth categories are A-I (small/efficient jet) and B-III (ultra-long-range jets). The A-I category has grown at a compound annual growth rate (CAGR) of 48.9 percent and is represented by a single aircraft: the Cirrus Vision SF50. The B-III category has a CAGR of 21.0 percent and is primarily comprised of the Dassault Falcon F7X and 8X and the Bombardier Global 7500.

TABLE 2D | National Business Jet Operations by ARC

Aircraft Reference Code (ARC) | Example Aircraft	OPERATIONS						2018-2023 CAGR
	2018	2019	2020	2021	2022	2023	
A-I | Cirrus Vision SF50	13,460	25,240	36,700	62,547	82,853	98,641	48.9%
B-I | Beechjet 400	783,248	751,782	619,231	788,859	805,071	719,046	-1.7%
C-I | Learjet 45	398,732	368,053	292,293	397,439	385,763	335,301	-3.4%
B-II | Phenom 300	1,598,020	1,653,404	1,298,810	1,926,275	2,018,435	1,970,766	4.3%
C-II | Challenger 300	1,439,252	1,429,196	1,054,897	1,560,040	1,634,500	1,554,406	1.6%
D-II | Gulfstream G400	181,856	177,559	133,027	202,549	196,146	175,076	-0.8%
B-III | Falcon F7X	37,790	46,527	39,367	64,736	87,139	97,955	21.0%
C-III | Global Express	161,970	178,013	128,218	195,516	234,013	249,602	9.0%
D-III | Gulfstream G500	135,211	133,554	89,818	127,765	150,344	136,674	0.2%
CAGR = compound annual growth rate							

Source: FAA TFMSC Database

RISKS TO THE FORECAST

While the FAA is confident its forecasts for aviation demand and activity can be reached, they are dependent on several factors, including the strength of the global economy, security (including the threat of international terrorism), and oil prices. Higher oil prices could lead to shifts in consumer spending away from aviation, dampening a recovery in air transport demand. The COVID-19 pandemic introduced a new risk, and although the industry has rebounded, the threat of future global health emergencies and potential economic fallout remains.

AIRPORT SERVICE AREA

The initial step in determining the aviation demand for an airport is to define its generalized service area for various segments of aviation. The service area is primarily defined by evaluating the locations of competing airports and their capabilities, services, and relative attraction and convenience. In determining the aviation demand for an airport, it is necessary to identify the role of the airport, as well as the specific areas of aviation demand the airport is intended to serve. DTO is classified as a reliever airport within the NPIAS, meaning that its main purposes are to relieve congestion at local commercial service airports, such as DFW and DAL, and to provide more general aviation access to the overall community.

The service area for an airport is a geographic region from which the airport can be expected to attract the largest share of its activity. The definition of the service area can be used to identify other factors, such as socioeconomic and demographic trends, that influence aviation demand at an airport. Aviation demand will also be impacted by the proximity and strength of aviation services offered at competing airports, as well as the local and regional surface transportation network.

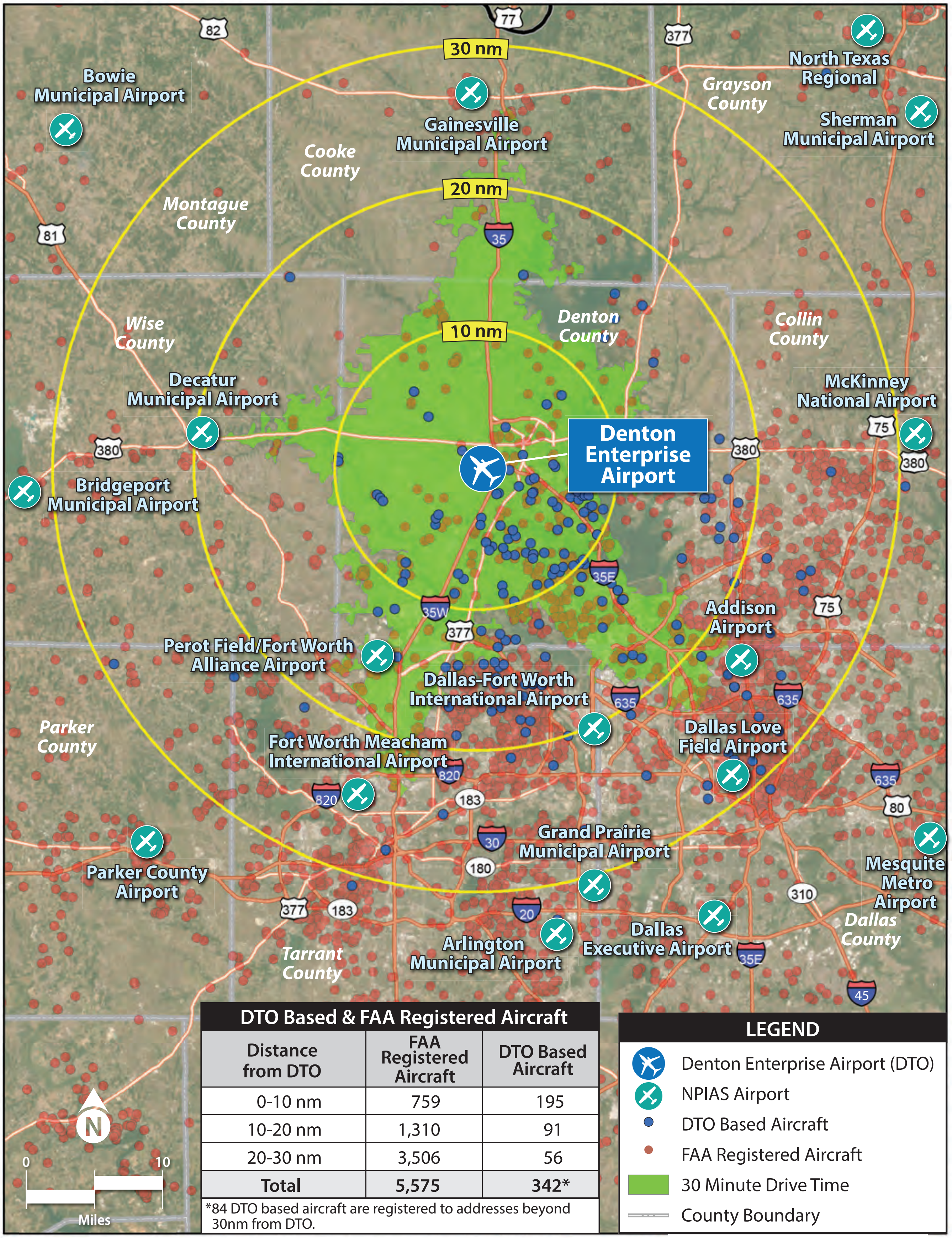
As in any business enterprise, the more attractive a facility is in terms of services and capabilities, the more competitive it will be in the market. If an airport's attractiveness increases in relation to nearby airports, so will the size of its service area. If its facilities and services are adequate and/or competitive, some level of aviation activity might be attracted to an airport from more distant locales.

As a rule, a general aviation airport's service area can extend for approximately 30 nautical miles (nm). As outlined in Chapter One, there are nine public-use airports with at least one paved runway within a 30-nm radius of DTO. Two of these airports are not included in the NPIAS and are therefore not eligible to receive federal grants through the *Airport Improvement Program*. Two other airports are classified as primary commercial service airports: DAL and DFW. Of the remaining five airports, only Fort Worth Alliance Airport (AFW), Addison Airport (ADS), and Fort Worth Meacham International Airport (FTW) offer runway lengths of over 7,000 feet.

When evaluating the GA service area, two primary demand segments must be considered: based aircraft and itinerant operations. An airport's ability to attract based aircraft is an important factor when defining the service area; proximity is a consideration for most aircraft owners. Aircraft owners typically choose to base at airports close to their homes or businesses. **Exhibit 2B** depicts a radius of 10, 20, and 30 nm from DTO, extending beyond Denton County and into neighboring Cooke, Grayson, Collin, Dallas, Parker, Wise, and Montague counties. Registered aircraft in the region and aircraft based at DTO are also shown on the exhibit, with large clusters of registered aircraft located in the Dallas-Fort Worth metroplex and near other regional airports, such as Decatur Municipal Airport (LUD) to the west, McKinney National Airport (TKI) to the east, and Gainesville Municipal Airport (GLE) to the north. In total, there are 5,575 registered aircraft within a 30-nm radius of DTO. The airport has 426 aircraft in its based aircraft inventory, 412 of which have been validated by the FAA. Of the aircraft in DTO's inventory, 83 percent are attributed to addresses within 30 nm of the airport and 47 percent within 10 nm of the airport. This map indicates that DTO's based aircraft service area extends the breadth of a 30-nm range, with a specific focus on the immediate surrounding area within Denton County.

The second demand segment to consider is itinerant operations. These are operations that are performed by aircraft that arrive from outside the airport area and land at DTO or depart from DTO for another airport. In most cases, pilots will use airports nearer their intended destinations; however, this is dependent on the airport's ability to accommodate aircraft operators in terms of the facility and services available. As a result, airports with better facilities and services are more likely to attract a larger portion of the region's itinerant operations.

When compared to other public-use airports in the region, DTO offers the typical array of general aviation services and amenities, including fueling services, aircraft maintenance and repairs, ground handling, passenger and crew services, flight planning and support, aircraft storage and tiedowns, aircraft cleaning, and administrative support. All of the reliever airports within the 30-nm radius of DTO (AFW, ADS, and FTW) have control towers and longer runways. Except ADS, each of these airports offers instrument approach minimums of ½-mile. From a location standpoint, DTO is the most convenient airport for visitors in and around Denton and the north/northwestern portions of the metroplex, whereas AFW and FTW are better situated to accommodate transient traffic in Fort Worth and Dallas, depending on the final destination.



DTO Based & FAA Registered Aircraft

Distance from DTO	FAA Registered Aircraft	DTO Based Aircraft
0-10 nm	759	195
10-20 nm	1,310	91
20-30 nm	3,506	56
Total	**5,575**	**342***

*84 DTO based aircraft are registered to addresses beyond 30nm from DTO.

Exhibit 2B
BASED AIRCRAFT SERVICE AREA

Based on the above discussion, DTO's primary service area for the purposes of this study includes the entirety of Denton County. Due to the airport's proximity to and influence from the Dallas-Fort Worth metroplex, the forecasting analysis will also consider the socioeconomic impacts of the broader metroplex on aviation activity at DTO.

SERVICE AREA SOCIOECONOMICS

The socioeconomic characteristics of an airport's service area can provide valuable information from which to derive an understanding of the dynamics of growth near an airport. This information is crucial in determining aviation demand level requirements, as most aviation demand is directly related to the socioeconomic conditions of the surrounding region. Statistical analysis of population, employment, income, and gross regional product (GRP) trends outlines the economic strength of a region and can help determine the ability of the area to sustain a strong economy in the future. Socioeconomic data utilized in the development of new based aircraft and operations forecasts for DTO include historical and projected population, employment, per capita personal income, and GRP data from Woods & Poole Economics, Inc. 10 years of historical data, projections through 2044 for the service area, and a comparison to the Dallas-Fort Worth metropolitan statistical area (DFW MSA) are summarized in **Table 2E**.

TABLE 2E | Socioeconomic Information

Year	POPULATION		EMPLOYMENT		PER CAPITA PERSONAL INCOME (2017 DOLLARS)		GROSS REGIONAL PRODUCT (MILLIONS OF 2017 DOLLARS)	
	Denton County	DFW MSA	Denton County	DFW MSA	Denton County	DFW MSA	Denton County	DFW MSA
Historical								
2014	750,659	6,879,061	343,043	4,464,858	$51,413	$51,620	$26,521	$430,114
2015	776,070	7,025,043	363,123	4,634,309	$53,371	$52,245	$28,319	$450,245
2016	804,342	7,175,705	376,890	4,794,803	$54,259	$52,356	$30,169	$464,687
2017	830,783	7,314,691	393,859	4,930,540	$55,127	$54,001	$32,263	$480,016
2018	853,505	7,429,882	416,086	5,085,293	$57,498	$56,008	$33,604	$501,500
2019	883,339	7,543,556	427,954	5,184,757	$59,743	$57,412	$35,762	$522,036
2020	914,398	7,666,418	439,264	5,170,447	$61,717	$58,945	$37,761	$516,239
2021	943,883	7,774,647	480,791	5,492,350	$65,328	$62,323	$40,887	$548,925
2022	977,760	7,947,439	511,765	5,845,179	$64,093	$60,718	$43,962	$581,798
2023	1,007,703	8,100,037	529,270	5,977,584	$65,335	$63,343	$47,115	$611,810
2024	1,030,322	8,215,046	544,797	6,106,951	$66,527	$64,674	$49,165	$631,695
Forecast								
2029	1,149,177	8,800,501	634,701	6,797,728	$73,201	$71,675	$61,048	$738,624
2034	1,277,079	9,397,522	737,969	7,506,003	$80,644	$79,103	$75,487	$854,998
2044	1,559,212	10,615,729	985,715	9,002,703	$97,702	$95,577	$113,669	$1,121,736
CAGRs								
2014-2024	3.2%	1.8%	4.7%	3.2%	2.6%	2.3%	6.4%	3.9%
2024-2044	2.1%	1.3%	3.0%	2.0%	1.9%	2.0%	4.3%	2.9%

CAGR = compound annual growth rate
Source: Woods & Poole Economics Inc. 2024

FORECASTING APPROACH

The development of aviation forecasts proceeds through analytical and judgmental processes. A series of mathematical relationships is tested to establish statistical logic and rationale for projected growth; however, the judgment of the forecast analyst – based on professional experience, knowledge of the aviation industry, and assessment of the local situation – is important in the final determination of the preferred forecast. The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include trend line/time-series projections, correlation/regression analysis, and market share analysis. The forecast analyst may elect to not use certain techniques, depending on the reasonableness of the forecasts produced using other techniques.

Trend line/time-series projections are probably the simplest and most familiar of the forecasting techniques. A basic trend line projection is produced by fitting growth curves to historical data and then extending them out into the future. 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 serves as a reliable benchmark for comparing other projections.

Correlation analysis provides a direct relationship measure between two separate sets of historical data. If there is a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

Regression analysis measures statistical relationships between dependent and independent variables, yielding a correlation coefficient. The correlation coefficient (Pearson's r) measures association between the changes in the dependent variable and the independent variable(s). If the r^2 value (coefficient determination) is greater than 0.95, it indicates good predictive reliability. A value less than 0.95 may be used, but with the understanding that the predictive reliability is lower.

Market share analysis involves a historical review of the airport activity as a percentage, or share, of a larger regional, state, or national aviation market. A historical market share trend is determined, providing an expected market share for the future. These shares are then multiplied by the forecasts of the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections but can provide a useful check on the validity of other forecasting techniques.

Forecasts will age and become less reliable the farther one is from the base year, particularly due to changing local and national conditions; nevertheless, the FAA requires that a 20-year forecast be developed for long-range airport planning. Facility and financial planning usually require at least a 10-year view because it often takes more than five years to complete a major facility development program; however, it is important to use forecasts that do not overestimate revenue-gathering capabilities or understate demand for facilities needed to meet public (user) needs.

A wide range of factors is known to influence the aviation industry and can have significant impacts on the extent and nature of aviation activity in both the local and national markets. Historically, the nature and trend of the national economy has had a direct impact on the level of aviation activity; nevertheless, trends emerge over time and provide the basis for airport planning.

Future facility requirements – such as general aviation hangars and terminals, ramp areas, and runways – are derived from projections of various aviation demand indicators. Using a broad spectrum of local, regional, and national socioeconomic and aviation information and analyzing the most current aviation trends, forecasts are presented for the following aviation demand indicators:

- Based Aircraft
- Based Aircraft Fleet Mix
- General Aviation Operations
- Air Taxi and Military Operations
- Operational Peaks

The following forecast analyses examine each of these aviation demand categories expected at DTO over the next 20 years. Each segment will be examined individually and collectively to provide an understanding of the overall aviation activity at the airport through 2044.

PREVIOUS FORECASTS

Consideration is given to any forecasts of aviation demand for the airport that have been completed recently. For DTO, recently prepared forecasts reviewed are those in the current FAA TAF, which was published in January 2024, and the most recent airport master plan, which was completed in 2015.

On an annual basis, the FAA publishes the TAF for each airport included in the NPIAS. The TAF is a generalized forecast of airport activity that is used by the FAA primarily for internal planning purposes. It is available to airports and consultants to use as a baseline projection and is an important point of comparison when developing local forecasts.

The 2015 *Denton Enterprise Airport Master Plan* is now nine years old and was prepared prior to the COVID-19 pandemic. Since that time, total operations and based aircraft have experienced growth, but at different rates than what was previously projected. **Table 2F** presents the 2024 TAF and 2015 master plan projections compared to actual data for DTO.

It is important to note that the TAF based aircraft count is higher than the current FAA-validated count from the based aircraft registry. The TAF reflects 474 based aircraft in 2024, while the registry reflects 412 FAA-validated based aircraft. The total operations count used in the TAF is more than 24,000 operations lower than the count reported by the DTO airport traffic control tower (ATCT); the tower reported 221,478 operations for the most recent 12-month period ending in July 2024. Once the forecasts presented in this chapter are approved by the FAA, the FAA could update the TAF to reflect the selected forecasts.

TABLE 2F | Previous Forecasts

Year	BASED AIRCRAFT			TOTAL OPERATIONS		
	FAA TAF	DTO MP 2015[A]	ACTUAL	FAA TAF	DTO MP 2015[a]	Actual
2012	291	375	N/A	156,131	169,000	157,986
2013	390	393	N/A	162,519	175,877	160,740
2014	390	413	N/A	155,998	183,034	158,210
2015	364	433	379	166,815	190,482	164,797
2016	458	454	364	141,696	198,233	136,656
2017	362	476	451	124,962	206,300	125,608
2018	295	482	362	141,688	209,103	147,777
2019	278	488	311	139,964	211,944	135,744
2020	345	494	288	138,506	214,823	136,630
2021	345	500	301	133,220	217,742	138,703
2022	452	506	398	166,077	220,700	173,758
2023	463	516	445	196,034	223,508	204,797
2024	474	525	412	197,360	226,351	221,478[b]
2025	487	535	–	198,705	229,231	–
2026	500	546	–	200,069	232,147	–
2027	513	556	–	201,453	235,100	–
2028	526	567	–	202,856	238,500	–
2029	540	577	–	204,279	241,950	–
2030	554	588	–	205,723	245,449	–
2031	568	600	–	207,187	248,999	–
2032	582	611	–	208,671	252,600	–
2033	597	623	–	210,177	256,253	–
2034	612	634	–	211,706	259,959	–
2035	627	647	–	213,255	263,719	–
2036	642	659	–	214,828	267,533	–
2037	657	671	–	216,422	271,403	–
2038	672	684	–	218,038	275,328	–
2039	688	697	–	219,679	279,310	–
2040	704	711	–	221,344	283,350	–
2041	720	724	–	223,031	287,448	–
2042	736	738	–	224,743	291,605	–
2043	752	752	–	226,481	295,822	–
2044	768	766	–	228,242	300,101	–

[a] The 2015 master plan utilized a base year of 2012 with projections for 2017, 2022, 2027, and 2032. All other years included in the table have been interpolated or extrapolated.
[b] 2024 operational data represent data from the most recent 12-month calendar period ending in July 2024.

Sources: FAA Terminal Area Forecast, January 2024; Denton Enterprise Airport Master Plan, October 2015; FAA Based Aircraft Inventory Program (data not available prior to 2014); FAA OPSNET

GENERAL AVIATION FORECASTS

General aviation encompasses all portions of civil aviation except commercial service and military operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity at DTO, certain elements of this activity must be forecast. These indicators of general aviation demand include based aircraft, aircraft fleet mix, and annual operations.

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft for the airport, other demand indicators can be projected. The process of developing forecasts of based aircraft begins with an analysis of aircraft ownership in the primary general aviation service area through a review of historical aircraft registrations. An initial forecast of registered aircraft is developed and will be used as one data point to arrive at a based aircraft forecast for the airport.

BASED AIRCRAFT FORECAST

Forecasts of based aircraft may directly influence needed facilities and applicable design standards. The needed facilities may include hangars, aprons, taxilanes, etc. The applicable design standards may include separation distances and object clearing surfaces. The sizes and types of based aircraft are also an important consideration; the addition of numerous small aircraft may have no effect on design standards, while the addition of a few larger business jets can have a substantial impact on applicable design standards.

Because of the numerous variables known to influence aviation demand, several separate forecasts of based aircraft are developed. Each forecast is examined for reasonableness and any outliers are discarded or given less weight. Collectively, the remaining forecasts will create a planning envelope. A single planning forecast is then selected for use in developing facility needs for the airport. The selected forecast of based aircraft can be one of the forecasts developed, based on the experience and judgement of the forecaster, or it can be a blend of the forecasts.

Based Aircraft Inventory

Documentation of the historical number of based aircraft at the airport has been somewhat intermittent. The FAA did not require airports to report based aircraft numbers until recently, with the establishment of a based aircraft inventory (www.basedaircraft.com) in which it is possible to cross-reference based aircraft claimed by one airport with other airports. The FAA now utilizes this based aircraft inventory as a baseline for determining how many and what types of aircraft are based at any individual airport. This database evolves daily as aircraft are added or removed. It is the responsibility of the sponsor (owner) of each airport to input based aircraft information into the FAA database.

Airport staff have undertaken a comprehensive physical count and submitted the count to the FAA for validation. The most recent validation of based aircraft at DTO occurred on July 24, 2024, and identified 412 validated based aircraft. Of the validated based aircraft, there are 306 single-engine piston aircraft, 58 multi-engine aircraft (turboprops and pistons), 34 business jets, and 14 helicopters.

Registered Aircraft Forecast

Aircraft ownership trends for the primary service area (Denton County) typically dictate based aircraft trends for an airport. As such, a forecast of registered aircraft for the primary service area is developed for use as an input for the subsequent based aircraft forecast.

Table 2G presents the history of registered aircraft in the service area from 2014 through 2024. These figures are derived from the FAA aircraft registration database, which categorizes registered aircraft by county based on the zip code of the registered aircraft. Although this information generally provides a correlation to based aircraft, it is not uncommon for some aircraft to be registered in one county but based at an airport outside the county, or vice versa.

TABLE 2G | Registered Aircraft Fleet Mix in Denton County, Texas

Year	SEP	MEP	TP	Jet	H	Other*	Electric	UAV	Total
2014	784	83	12	17	47	29	0	0	972
2015	807	86	13	22	51	24	0	2	1,005
2016	815	87	19	20	51	25	0	11	1,028
2017	822	87	16	23	61	22	1	12	1,044
2018	809	82	10	29	71	22	1	12	1,036
2019	834	79	17	36	84	27	1	8	1,086
2020	873	76	18	42	78	28	1	8	1,124
2021	882	71	16	36	85	31	1	7	1,129
2022	857	74	15	31	115	32	1	8	1,133
2023	1,080	74	15	39	133	30	1	6	1,378
2024	1,105	70	21	39	128	29	1	6	1,399
10-year CAGR	**3.5%**	**-1.7%**	**5.8%**	**8.7%**	**10.5%**	**0.0%**	**N/A**	**N/A**	**3.7%**

SEP = single-engine piston
MEP = multi-engine piston
TP = turboprop
H = helicopter
UAV = unmanned aerial vehicle
CAGR = compound annual growth rate
N/A = not applicable
*Other includes gliders, ultralights, experimental aircraft

Sources: FAA Aircraft Registry Database; FAA Census of U.S. Civil Aircraft

Over the 10-year period, aircraft registrations in the service area have shown strong growth increasing at a CAGR of 3.7 percent. The fleet mix breakout shows that single-piston aircraft account for 79 percent of registered aircraft in 2024, but the strongest growth has been in the more sophisticated aircraft categories (turboprops, jets, helicopters). UAVs (drones) were not included as a separate category until 2015, with two registered aircraft, and the number has fluctuated over nine years, ending with six aircraft registered in 2024.

TABLE 2H | Regression Analysis

Independent Variable	r^2
Timeseries	0.622
Population	0.679
Employment	0.722
Income	0.686
Gross Regional Product	0.759

Source: Coffman Associates analysis

Although there are no recently prepared forecasts for the service area counties regarding registered aircraft, one was prepared for this study using market share, population ratio, and historical growth rate/trendline projection methods. Several regression forecasts were also considered; these examined the correlation of registered aircraft with the service area population, employment, income, and GRP. **Table 2H** details the results of this analysis, which considered the correlation between registered aircraft (dependent variable) and several independent variables, as described above. None of the resulting regressions produced an r^2 value greater than 0.759, indicating poor correlation; therefore, the regressions have been excluded from consideration.

Trend Line/Historical Growth Rate Projection

Utilizing the last 10 years of registered aircraft data, a trend line projection was completed. This resulted in 2,076 registered aircraft by 2044 (2.0 percent CAGR). A five-year trend was also prepared to consider the most recent trend. The five-year trend line projection results in 2,706 registered aircraft by 2044 (3.4 percent CAGR).

Over the last ten years, the number of registered aircraft in the service area has a CAGR of 3.7 percent. By applying this CAGR to the current number of registered aircraft, a forecast emerges that results in 2,898 registered aircraft by 2044.

Market Share of Texas Based Aircraft

Consideration was also given to the ratio of service area registered aircraft compared to the total number of based aircraft, both historically and forecasted by the FAA to be in the State of Texas. This was done due to the expected growth in based aircraft numbers at the state level, as opposed to the general flatlining trend of national registrations.

The county's 1,399 registered aircraft count in 2024 represents approximately 10.59 percent of all based aircraft in Texas. If the county maintained this market share, it would result in 1,732 aircraft by 2044 (1.1 percent CAGR). Because the historical trend has shown market share growth for the county, an increasing market share projection was prepared that considered an increase in market share to 13.32 percent (increases by the 10-year market share change of 2.72 percent). This results in a total county aircraft count of 2,178 by 2044 (2.2 percent CAGR). **Table 2J** shows the market share of the service area compared to Texas totals.

TABLE 2J | Registered Aircraft Projections – Market Share of Texas Based Aircraft

Year	Registered Aircraft	Texas Based Aircraft	% of Total Texas Based Aircraft
2014	972	12,279	7.92%
2015	1,005	11,865	8.47%
2016	1,028	13,065	7.87%
2017	1,044	12,416	8.41%
2018	1,036	12,920	8.02%
2019	1,086	11,968	9.07%
2020	1,124	11,600	9.69%
2021	1,129	11,977	9.43%
2022	1,133	12,937	8.76%
2023	1,378	13,080	10.54%
2024	1,399	13,208	10.59%
Constant Market Share			
2029	1,473	13,902	10.59%
2034	1,552	14,648	10.59%
2044	1,732	16,353	10.59%
Increasing Market Share			
2029	1,567	13,902	11.27%
2034	1,751	14,648	11.95%
2044	2,178	16,353	13.32%

Sources: Texas TAF, January 2024; Coffman Associates analysis

Ratio of Registered Aircraft to Population

The number of registered aircraft in an area often fluctuates based on population trends. In 2024, the service area had 1.36 registered aircraft per 1,000 residents. Over the past 10 years, this ratio has shown small fluctuations and averaged 1.26 aircraft per 1,000 residents. Two projections have been prepared:

one based on maintaining the current ratio constant over the forecast period, and an increasing ratio projection that reflects the ratio increasing by the change from the historical maximum and minimum (0.21). Maintaining the constant ratio (1.36) through 2044 results in 2,117 registered aircraft (2.1 percent CAGR). The increasing ratio projection results in 2,443 registered aircraft by 2044 (2.8 percent CAGR).

Registered Aircraft Forecast Summary

Table 2K summarizes the seven registered aircraft forecasts for Denton County. Overall, registrations in the county have shown strong growth, particularly in the past two years. Denton County has outpaced the rest of the state and the Dallas-Fort Worth metropolitan area in socioeconomic growth, with projections indicating a slight moderation over the next 20 years but still leading economic growth in both the state and the area. The 10-year 3.7 percent CAGR of county aircraft registrations is well ahead of Texas based aircraft growth (2.0 percent CAGR) and national active general aviation aircraft growth (0.3 percent CAGR) over the same period. All trends suggest Denton County will continue to experience growth in registered aircraft but likely at a more moderate pace; therefore, the increasing market share projection, with a CAGR of 2.2 percent, is viewed as the most realistic scenario. The selected registered aircraft forecast results in 1,567 registered aircraft in 2029, 1,751 in 2034, and 2,178 in 2044.

TABLE 2K | Registered Aircraft Forecast Summary

Projection	2029	2034	2044	CAGR 2024-2044
5-Year Trend Line	1,707	2,040	2,706	3.4%
10-Year Growth Rate	1,678	2,014	2,898	3.7%
10-Year Trend Line	1,503	1,694	2,076	2.0%
Constant % of TX Based	1,473	1,552	1,732	1.1%
Increasing % of TX Based	**1,567**	**1,751**	**2,178**	**2.2%**
Constant AC/1000 Population	1,560	1,734	2,117	2.1%
Increasing AC/1000 Population	1,620	1,867	2,443	2.8%

Boldface indicates selected forecast.
AC = aircraft
CAGR = compound annual growth rate

Source: Coffman Associates analysis

Based Aircraft Market Share of Registered Aircraft Forecast

Utilizing the forecast of registered aircraft in Denton County, a market share forecast of based aircraft at DTO has been developed. In 2024, the 412 based aircraft at DTO represented 29.4 percent of the aircraft registered in the county. By maintaining this market share constant through the planning years, a forecast emerges that results in 641 based aircraft by 2044 (2.2 percent CAGR). An evaluation of historical based aircraft indicated that DTO's market share has fluctuated over time but has averaged 32.9 percent in the past 10 years; therefore, an increasing market share projection was prepared with the assumption that DTO's market share would return to its 10-year average, resulting in 717 based aircraft by 2044 (2.8 percent CAGR). **Table 2L** presents the two market share projections.

TABLE 2L | Based Aircraft Market Share of Registered Aircraft Forecast

Year	DTO Based Aircraft	Denton County Registered Aircraft	DTO Market Share %
2015	379	1,005	37.7%
2016	364	1,028	35.4%
2017	451	1,044	43.2%
2018	362	1,036	34.9%
2019	311	1,086	28.6%
2020	288	1,124	25.6%
2021	301	1,129	26.7%
2022	398	1,133	35.1%
2023	445	1,378	32.3%
2024	412	1,399	29.4%
CAGR	**0.8%**	**3.4%**	**–**
Constant Market Share			
2029	461	1,567	29.4%
2034	516	1,751	29.4%
2044	641	2,178	29.4%
CAGR	**2.2%**	**2.2%**	**–**
Increasing Market Share			
2029	475	1,567	30.3%
2034	546	1,751	31.2%
2044	717	2,178	32.9%
CAGR	**2.8%**	**2.2%**	**–**

Sources: basedaircraft.com; Coffman Associates analysis

Growth Rate Projections

According to the airport's validated based aircraft records, the based aircraft count has increased slightly in the last 10 years, with a 0.8 percent CAGR. Maintaining this CAGR over the forecast period results in 487 based aircraft by 2044.

Given that based aircraft within the state are projected to grow over the planning period, a growth rate projection utilizing the state's 20-year CAGR of 1.1 percent has also been considered. When the 20-year CAGR is applied to DTO based aircraft, a forecast emerges that yields 510 based aircraft by 2044.

Socioeconomic Growth Projections

Based aircraft growth is often related to population and economic activity of the service area. For this reason, based aircraft projections tied to projected growth in population, employment, income, and GRP for the service area were also prepared. CAGRs for these variables through 2044 are 2.1 percent for population; 3.0 percent for employment; 1.9 percent for income; and 4.3 percent for GRP. Applying these CAGRs results in 623 based aircraft for population, 745 for employment, 605 for income, and 953 for GRP by 2044.

Regression Analysis

Several forecasts were prepared utilizing historical based aircraft data and the regression model. Correlations were examined utilizing independent variables, including population, employment, income, GRP, and Texas based aircraft, as well as a time series regression. The regression that produced the best correlation was the regression with Texas based aircraft, which had an r^2 value of 0.436. The others had r^2 values below 0.1. As described previously, correlation values over 0.95 indicate good predictive reliability. The results from the Texas based aircraft regression are included for comparison purposes; this regression produced a projection of 613 based aircraft at DTO by 2044, with a CAGR of 2.0 percent.

Selected Based Aircraft Forecast

Selecting a based aircraft forecast is ultimately based on the judgment of the forecast analyst. A selected forecast should be reasonable and based on a sound methodology. The methodology presented in this analysis examined the history of aircraft ownership in the service area (Denton County). Utilizing the selected registered aircraft projection, a market share analysis was conducted based on maintaining a constant market share and an increasing market share over the forecast period. Additional projections considered the FAA TAF's projection for based aircraft growth in the state, maintaining DTO's 10-year growth rate, growth rates based on key socioeconomic indicators (population, employment, and GRP), and a regression examining the correlation with Texas based aircraft. These 10 projections are summarized in **Table 2L**.

TABLE 2L | Based Aircraft Forecast Summary

Projection	2024	2029	2034	2044	CAGR 2024-2044
DTO 2024 TAF	474	540	612	768	2.4%
DTO 2024 TAF Growth Rate	412	465	524	668	2.4%
Constant Market Share		461	516	641	2.2%
Increasing Market Share		**475**	**546**	**717**	**2.8%**
10-Year Growth Rate		430	448	487	0.8%
Texas TAF Growth Rate		435	458	510	1.1%
Service Area Population Growth Rate		457	507	623	2.1%
Service Area Employment Growth Rate		478	554	745	3.0%
Service Area GRP Growth Rate		454	499	605	1.9%
Regression with Texas Based Aircraft		459	506	613	2.0%

Boldface indicates selected forecast.
CAGR = compound annual growth rate

Sources: FAA TAF; basedaircraft.com; Coffman Associates analysis

Future aircraft basing at the airport will depend on several factors, including the state of the economy, fuel costs, available facilities, competing airports, and hangar development potential. Forecasts consider projections for a strong growing local economy, as well as reasonable development of airport facilities necessary to accommodate aviation demand. DTO will not experience significant based aircraft growth unless new hangar facilities are constructed. Competing airports will play a role in deciding demand; however, DTO should fare well in this competition, as it is served by a runway system capable of handling most general aviation aircraft, and there is additional demand for based aircraft hangars.

Consideration must also be given to the current and future aviation conditions at the airport. DTO is in a desirable location northwest of the DFW metropolitan area. The U.S. 288 loop extension planned for the west side of the airport will increase the development potential of the airport by making the west side more accessible. The airport also maintains an extensive hangar waiting list of 329 individuals, which is a strong indicator of existing demand.

The potential for available hangar space is not the only factor in future based aircraft levels. Economic projections for Denton County are expected to outpace those within the Dallas-Fort Worth metropolitan area, which is one of the fastest growing metropolitan areas in the country. These indicators suggest strong demand for aviation activity at DTO now and in the future. For these reasons, the increasing market share projection has been selected as the preferred forecast, with 475 based aircraft projected by 2029, 546 by 2034, and 717 by 2044 (2.8 percent CAGR). The selected forecast is reasonably optimistic and assumes DTO can increase its market share of registered aircraft in the county with expanded facilities, and that continued population and employment growth of the local area will drive demand for more based aircraft.

Exhibit 2C presents the 10 based aircraft forecasts that comprise the planning envelope.

BASED AIRCRAFT FLEET MIX FORECAST

It is important to understand the current and projected based aircraft fleet mix at an airport to ensure the proper planning of facilities. For example, the various separation requirements and obstacle clearing surfaces for a particular area will be based on whether the area is planned to be utilized by small piston aircraft or large business jets.

The current based aircraft fleet mix consists of 306 single-engine aircraft, 58 multi-engine aircraft (pistons and turboprops), 34 jets, and 14 helicopters. As a general aviation reliever airport with significant levels of both flight training and corporate aviation activities, DTO should continue to have a diverse fleet mix. The forecasted growth trends in the DTO based aircraft fleet mix take FAA projections of the national general aviation fleet mix into consideration. Growth is expected in all categories, with the most sophisticated aircraft, turboprops, jets, and helicopters leading in overall percentage growth. **Table 2M** presents the forecast fleet mix for based aircraft at DTO.

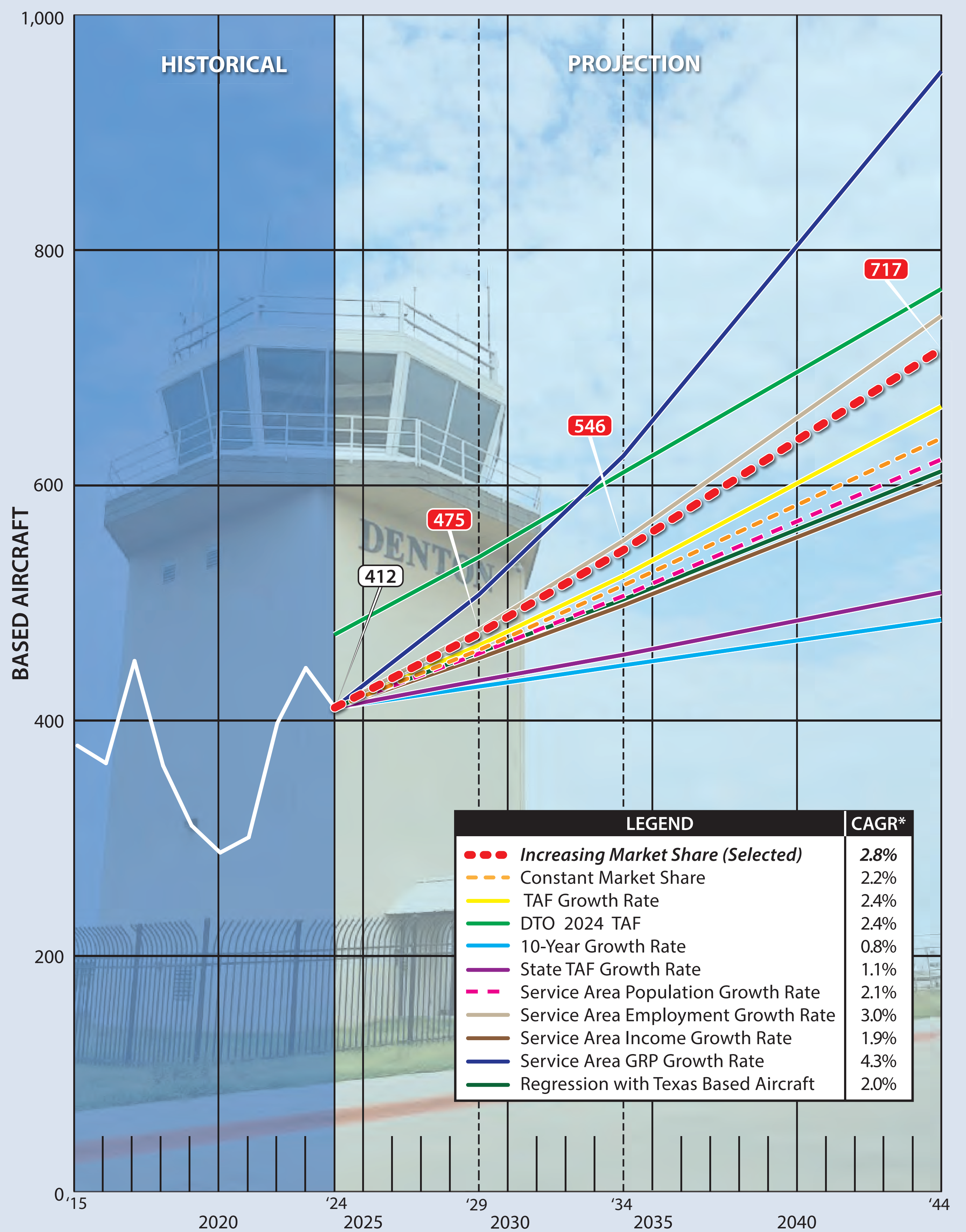
TABLE 2M | Based Aircraft Fleet Mix

Aircraft Type	2024	Percent	2029	Percent	2034	Percent	2044	Percent
Single-Engine	306	74.3%	351	73.9%	401	73.4%	520	72.5%
Multi-Engine	58	14.1%	68	14.3%	79	14.5%	105	14.6%
Jet	34	8.3%	40	8.4%	46	8.4%	65	9.1%
Helicopter	14	3.4%	16	3.4%	19	3.5%	25	3.5%
Other	0	0.0%	0	0.0%	1	0.2%	2	0.3%
Total	**412**	**100%**	**475**	**100%**	**546**	**100%**	**717**	**100%**

Sources: FAA Based Aircraft Registry; Coffman Associates analysis

OPERATIONS FORECAST

Operations at DTO are classified as either general aviation, air taxi, or military. General aviation operations include a wide range of activity, from recreational use and flight training to business and corporate uses. Air taxi operations are those conducted by aircraft operating under Federal Aviation Regulations (FAR) Part 135, otherwise known as for-hire or on-demand activity. Air taxi operations typically include commuter, air cargo, air ambulance, and many fractional ownership operations. Military operations include those operations conducted by the branches of the U.S. military. Air carrier is an additional category of operations conducted by large aircraft with 60 or more passenger seats. These flights are very infrequent at DTO; therefore, air carrier operations are not included as part of the operations forecast.



*Compound Annual Growth Rate

Sources: FAA TAF; basedaircraft.com; Coffman Associates analysis

It should be noted that the FAA's forecast of air taxi operations trends lower in the short term and returns to growth after 2028 due to ongoing changes to the scheduled airline aircraft fleet mix. Airlines are transitioning away from 50-seat regional jets that are counted under the air taxi category to larger jets with seating capacities of 60 seats or more that are counted under the air carrier category. This airline fleet mix transition should have no impact on unscheduled DTO air taxi operations.

Aircraft operations are further classified as local and itinerant. A local operation is a takeoff or landing performed by an aircraft operating within sight of an airport or executing simulated approaches or touch-and-go operations at an airport. Local operations are generally characterized by training activity. Itinerant operations are those performed by aircraft with specific origins or destinations away from an airport. Typically, itinerant operations increase with business and commercial use because business aircraft are primarily used to transport passengers from one location to another.

Several methods have been employed to develop a reasonable planning envelope of future potential aircraft operations. The following sections present several new operations forecasts. Counts from the DTO ATCT were utilized in this analysis. **Table 2N** shows the historical operations data for DTO since 2004.

TABLE 2N | Historical Operations Data

Calendar Year	ITINERANT					LOCAL			Total Operations
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	General Aviation	Military	Subtotal	
2004	0	566	22,175	14	22,755	34,855	2	34,857	57,612
2005	1	1,094	34,081	35	35,211	51,423	168	51,591	86,802
2006	199	849	30,853	22	31,923	56,901	8	56,909	88,832
2007	23	726	30,576	66	31,391	68,119	224	68,343	99,734
2008	7	1,130	40,041	117	41,295	85,373	2	85,375	126,670
2009	0	392	46,911	175	47,478	94,602	24	94,626	142,104
2010	0	685	49,236	256	50,177	91,911	24	91,935	142,112
2011	4	756	64,380	130	65,270	82,735	26	82,761	148,031
2012	39	1,103	65,446	202	66,790	91,164	32	91,196	157,986
2013	12	1,473	68,676	227	70,388	90,298	54	90,352	160,740
2014	38	1,919	70,351	178	72,486	85,708	16	85,724	158,210
2015	54	1,457	73,215	169	74,895	89,852	50	89,902	164,797
2016	5	1,665	61,514	189	63,373	73,279	4	73,283	136,656
2017	16	1,932	60,504	158	62,610	62,949	49	62,998	125,608
2018	35	1,440	61,535	50	63,060	84,703	14	84,717	147,777
2019	10	1,337	63,098	125	64,570	71,166	8	71,174	135,744
2020	15	963	64,154	31	65,163	71,463	4	71,467	136,630
2021	24	1,572	58,357	60	60,013	78,672	18	78,690	138,703
2022	17	2,574	71,679	50	74,320	99,426	12	99,438	173,758
2023	10	1,590	89,063	76	90,739	114,054	4	114,058	204,797
2024*	5	3,075	102,829	51	105,960	115,514	4	115,518	221,478
20yr CAGR	N/A	8.8%	8.0%	6.7%	8.0%	6.2%	3.5%	6.2%	7.0%
10yr CAGR	-18.4%	4.8%	3.9%	-11.7%	3.9%	3.0%	-12.9%	3.0%	3.4%

*2024 data represent a 12-month period ending July 2024

Source: FAA Operations and Performance Data (OPSNET)

Historical Growth Rate Projections

For the most recent 10-year period, DTO's ATCT indicates CAGRs of 3.9 percent for itinerant GA operations, 3.0 percent for local GA operations, and 4.8 percent for air taxi operations. Projections based on these historical growth rates have been applied to generate forecasts that result in 219,700 itinerant GA, 209,800 local GA, and 7,900 air taxi operations by 2044.

Market Share Projections

Market share analysis compares known historical and forecast data points to arrive at a trend for the unknown variable (DTO operations). The first forecast considers the current market share of GA (itinerant and local) and air taxi operations at the airport compared to the FAA's forecast for operations for the State of Texas.

For 2024, DTO accounts for 4.25 percent of Texas itinerant GA operations, 3.95 percent of local GA operations, and 0.67 percent of air taxi operations. By carrying these percentages forward through the planning horizon, a constant market share forecast emerges. **Table 2P** shows the results. The constant market share is considered a low range projection, as historical data indicate DTO's market share has grown for each operational category over the past 10 years.

TABLE 2P | Operations Market Share Projections

	GENERAL AVIATION ITINERANT			GENERAL AVIATION LOCAL			AIR TAXI		
Year	DTO	Texas	DTO Market %	DTO	Texas	DTO Market %	DTO	Texas	DTO Market %
2004	22,175	2,656,787	0.83%	34,855	2,781,281	1.25%	566	975,760	0.06%
2005	34,081	2,560,320	1.33%	51,423	2,621,264	1.96%	1,094	955,846	0.11%
2006	30,853	2,533,090	1.22%	56,901	2,725,495	2.09%	849	950,775	0.09%
2007	30,576	2,519,472	1.21%	68,119	2,778,925	2.45%	726	931,320	0.08%
2008	40,041	2,494,329	1.61%	85,373	2,677,230	3.19%	1,130	869,367	0.13%
2009	46,911	2,276,580	2.06%	94,602	2,536,875	3.73%	392	731,549	0.05%
2010	49,236	2,297,062	2.14%	91,911	2,416,054	3.80%	685	758,483	0.09%
2011	64,380	2,320,340	2.77%	82,735	2,325,402	3.56%	756	730,388	0.10%
2012	65,446	2,298,770	2.85%	91,164	2,351,608	3.88%	1,103	742,489	0.15%
2013	68,676	2,340,826	2.93%	90,298	2,332,819	3.87%	1,473	789,901	0.19%
2014	70,351	2,223,719	3.16%	85,708	2,374,079	3.61%	1,919	778,214	0.25%
2015	73,215	2,184,065	3.35%	89,852	2,499,125	3.60%	1,457	680,624	0.21%
2016	61,514	2,169,255	2.84%	73,279	2,713,896	2.70%	1,665	574,186	0.29%
2017	60,504	2,101,907	2.88%	62,949	2,670,762	2.36%	1,932	487,409	0.40%
2018	61,535	2,114,223	2.91%	84,703	2,659,478	3.18%	1,440	478,819	0.30%
2019	63,098	2,219,465	2.84%	71,166	2,603,526	2.73%	1,337	478,806	0.28%
2020	64,154	2,117,858	3.03%	71,463	2,571,668	2.78%	963	415,581	0.23%
2021	58,357	2,173,905	2.68%	78,672	2,572,044	3.06%	1,572	503,330	0.31%
2022	71,679	2,338,821	3.06%	99,426	2,710,202	3.67%	2,574	526,587	0.49%
2023	89,063	2,390,236	3.73%	114,054	2,861,285	3.99%	1,590	466,078	0.34%
2024*	102,829	2,421,991	4.25%	115,514	2,922,850	3.95%	3,075	457,101	0.67%
20yr CAGR	7.97%	-0.46%	–	6.17%	0.25%	–	8.83%	-3.72%	–
10yr CAGR	3.87%	0.86%	–	3.03%	2.10%	–	4.83%	-5.18%	–

Continues on next page

TABLE 2P | Operations Market Share Projections (continued)

	GENERAL AVIATION ITINERANT			GENERAL AVIATION LOCAL			AIR TAXI		
Year	DTO	Texas	DTO Market %	DTO	Texas	DTO Market %	DTO	Texas	DTO Market %
Constant Market Share – Low Range									
2029	107,600	2,533,465	4.25%	120,600	3,050,406	3.95%	2,800	415,322	0.67%
2034	109,900	2,588,499	4.25%	123,400	3,123,590	3.95%	2,900	433,102	0.67%
2044	115,100	2,710,927	4.25%	129,900	3,286,859	3.95%	3,200	471,778	0.67%
CAGR	0.57%	0.57%	–	0.59%	0.59%	–	0.16%	0.16%	–
Increasing Market Share – Mid Range									
2029	113,500	2,533,465	4.48%	122,100	3,050,406	4.00%	3,400	415,322	0.83%
2034	125,300	2,588,499	4.84%	128,000	3,123,590	4.10%	4,300	433,102	0.98%
2044	152,800	2,710,927	7.66%	165,000	3,286,859	5.02%	6,100	471,778	1.29%
CAGR	2.00%	0.57%	–	1.80%	0.59%	–	3.48%	0.16%	–
Increasing Market Share – High Range									
2029	125,700	2,533,465	4.96%	141,400	3,050,406	4.64%	3,900	415,322	0.94%
2034	153,700	2,588,499	5.94%	166,100	3,123,590	5.32%	5,200	433,102	1.21%
2044	229,700	2,710,927	8.47%	219,700	3,286,859	6.69%	8,300	471,778	1.75%
CAGR	4.10%	0.57%	–	3.27%	0.59%	–	5.09%	0.16%	–

*2024 data represent a 12-month period ending July 2024
CAGR = compound annual growth rate

Sources: Texas Operations – FAA TAF; Historical DTO Operations – DTO ATCT counts; DTO Projections – Coffman Associates analysis

To reflect historical trends, a mid-range increasing market share projection was prepared. The mid-range projection takes DTO's 2044 market share of itinerant GA operations to 7.66 percent, reflecting the total market share growth of the previous 20-year period (3.41 percent). DTO's 2044 market share of local GA operations is taken to 5.02 percent, and the 2044 market share of air taxi operations is taken to 1.29 percent; both reflect modest increases in market share. The results of these mid-range projections are also shown in **Table 2P**.

High-range increasing market share projections were also prepared. These consider the potential for market shares and CAGRs to exceed growth seen in the past 10-year period. The resulting projections take DTO's 2044 market shares to 8.47 percent (itinerant GA), 6.69 percent (local GA), and 1.75 percent (air taxi). The results of the high-range projections are shown in **Table 2P**.

Regression Analysis

Several forecasts were prepared utilizing historical operations data and the regression model. Independent variables examined included GA and air taxi operations in the State of Texas, as well as population, employment, income, GRP, and time-series regressions. The regression that produced the best correlation for each operational category was utilized to develop a projection. In the case of itinerant GA operations, the best correlation was the time-series regression, which resulted in an r^2 value of 0.730. For local GA operations, the best regression correlation was with employment, which resulted in an r^2 value of 0.450. The time-series regression had the best correlation for air taxi operations, which had an r^2 value of 0.551.

As described previously, correlation values over 0.95 indicate good predictive reliability. The values for each regression are well below the reliability mark but have been included in the forecast for comparison purposes.

General Aviation and Air Taxi Operations Forecast Summary

Table 2Q summarizes the projections prepared for itinerant and local GA operations and air taxi operations at DTO. The FAA's TAF projections for DTO are included for comparison purposes.

TABLE 2Q | Operations Forecast Summary

Projection	2024	2029	2034	2044	CAGR 2024-2044
Itinerant General Aviation					
10-Year Growth Rate	102,829	124,300	150,300	219,700	3.87%
Constant Market Share – Low Range		107,600	109,900	115,100	0.57%
Increasing Market Share – Mid Range		**113,500**	**125,300**	**152,800**	**2.00%**
Increasing Market Share – High Range		125,700	153,700	229,700	4.10%
Time-Series Regression (r^2 = 0.730)		99,100	112,600	139,600	1.54%
DTO 2024 TAF		91,466	98,532	114,343	0.53%
Local General Aviation					
10-Year Growth Rate	115,514	134,100	155,700	209,800	3.03%
Constant Market Share – Low Range		120,560	123,450	129,900	0.59%
Increasing Market Share – Mid Range		**122,100**	**128,000**	**165,000**	**1.80%**
Increasing Market Share – High Range		141,400	166,100	219,700	3.27%
Employment Regression (r^2 = 0.450)		119,100	136,600	178,400	2.20%
DTO 2024 TAF		111,046	111,407	112,132	-0.15%
Air Taxi					
10-Year Growth Rate	3,075	3,900	4,900	7,900	4.83%
Constant Market Share – Low Range		2,800	2,900	3,200	0.20%
Increasing Market Share – Mid Range		**3,400**	**4,300**	**6,100**	**3.48%**
Increasing Market Share – High Range		3,900	5,200	8,300	5.09%
Time-Series Regression (r^2 = 0.551)		2,500	2,900	3,700	0.93%
DTO 2024 TAF		1,678	1,678	1,678	-2.98%

Boldface indicates selected forecast.
CAGR = compound annual growth rate
Source: Coffman Associates analysis

Market trends indicate that GA and air taxi operations will continue to grow in the State of Texas. More people are traveling to Texas for business and recreation – many by air. Airlines are developing new programs to grow the next generation of pilots, which has led to the creation of new flight schools and flight training programs. Flight schools are expanding, and more students and aircraft are coming to DTO. Airport management is committed to developing new facilities and services to maintain DTO's position as the best choice for airport services in the region for all GA users, including the growing corporate/business aircraft market. Socioeconomic indicators suggest that DTO's service area will continue to thrive over the planning period, bringing new business opportunities and potential users and tenants. As discussed in the based aircraft section, there is strong demand for new based aircraft at DTO.

The construction of the parallel runway in 2019 has increased the airport's capacity, resulting in an operational spike over the past few years. It is expected that in the coming years, operations levels will mature and growth rates will further moderate through 2044. For these reasons, the mid-range increasing market share projections of itinerant and local GA operations have been selected. These forecasts carry forward DTO's historical trend of growing market share while moderating high historical growth rates when compared to state and national operational trends.

Air taxi operations have also experienced significant operational level increases in recent years, with a 4.83 percent CAGR over the past 10 years. Over the 12-month period ending July 2024, DTO exceeded 3,000 total air taxi operations for the first time. Between 2014 and 2023, DTO averaged only 1,600 air taxi operations. As with GA operations, it is expected that the operational growth rate will moderate over the next 20 years. For this reason, the mid-range increasing market share projection has been selected. This forecast shows air taxi operations almost doubling by 2044, reflecting the growing nature of Denton County and the wider Dallas-Fort Worth metropolitan area, which is likely to drive more air taxi operations.

Exhibit 2D graphically represents the operations projections that comprise the planning envelope.

Military Operations Forecast

Military aircraft can and do utilize civilian airports across the country. DTO occasionally experiences activity by military aircraft. Forecasts of military activity are inherently difficult to predict because of the national security nature of military operations and the fact that such missions can change without notice; thus, it is typical for the FAA to use a flatline forecast for military operations. For DTO, the FAA TAF projects itinerant operations to remain static at 81 over the forecast period. The FAA TAF projects no local military operations at DTO. These TAF estimates are also utilized for the master plan forecast.

Total Operations Forecast Summary

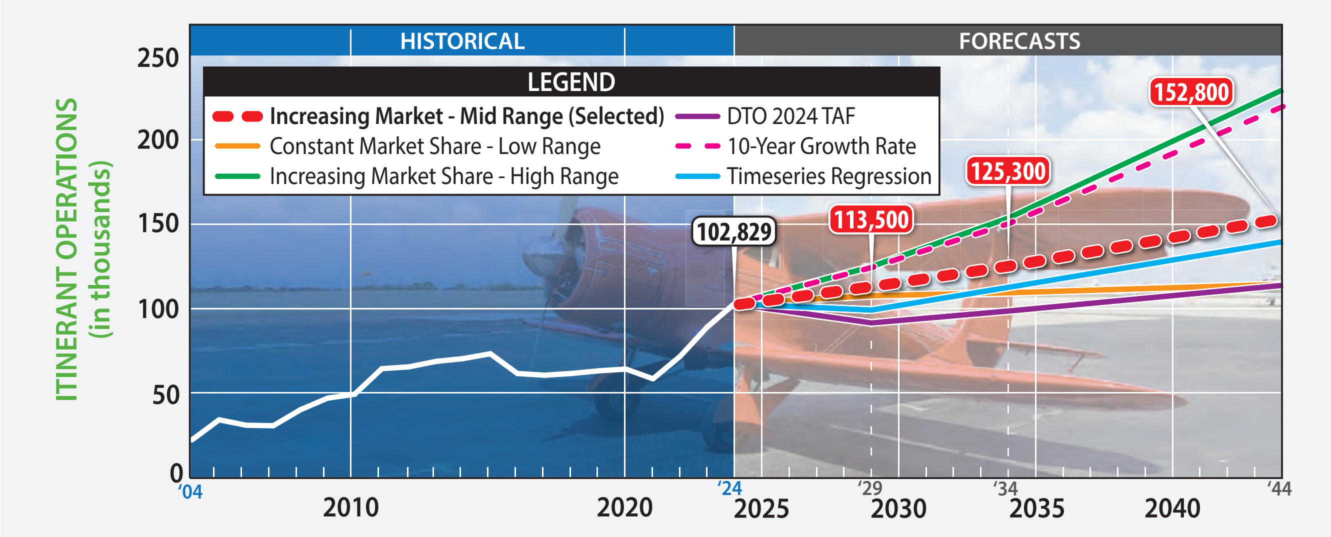
Table 2R presents the summary of the selected operations forecasts. The summary table details the culmination of each selected operations forecast. Air carrier operations are projected at the historical average over the past five years, which is 14 annual operations.

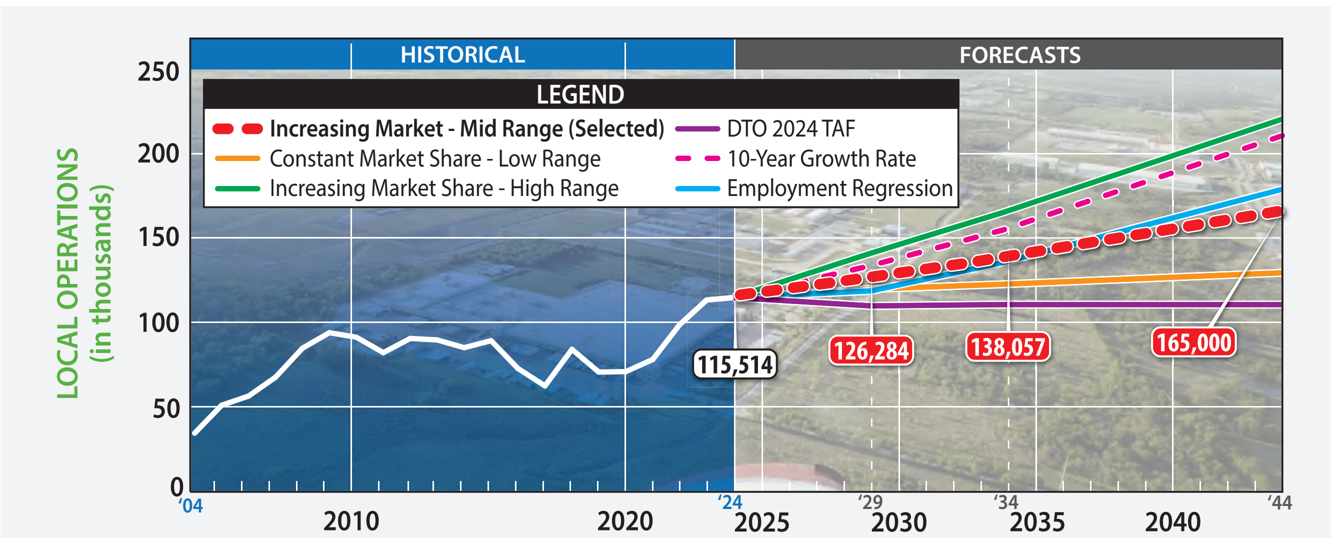
Over the planning horizon, total DTO operations are projected to grow from 221,487 in 2024 to 323,995 by 2044 at a CAGR of 1.92 percent.

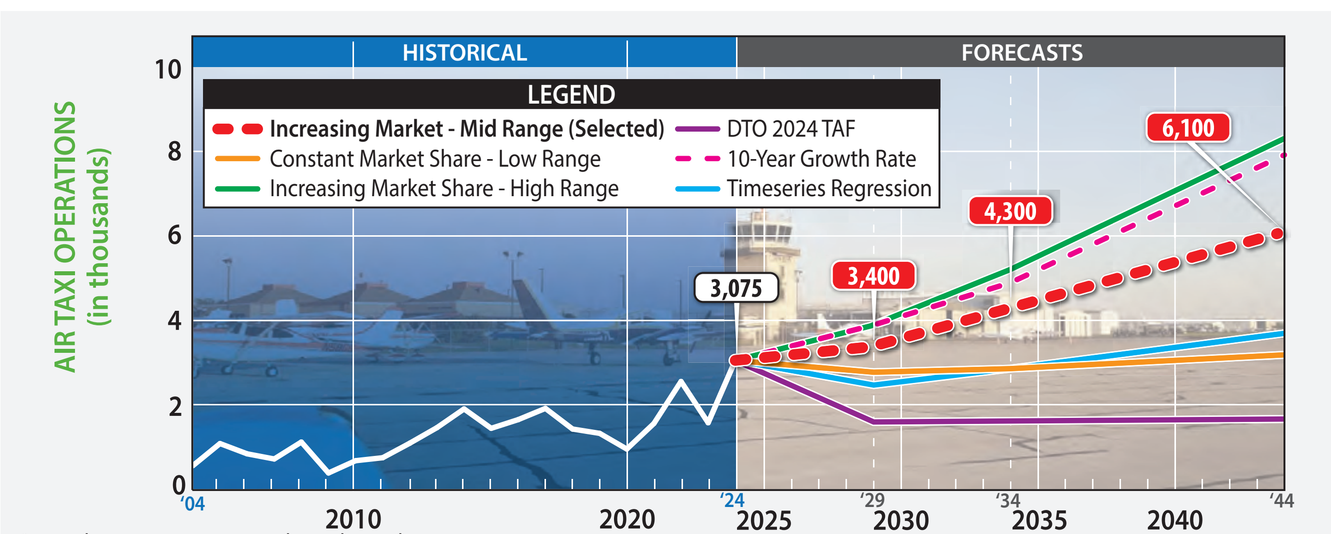
TABLE 2R | Total Operations Forecast Summary

Year	ITINERANT					LOCAL			Total Operations
	Air Carrier	Air Taxi	General Aviation	Military	Total	General Aviation	Military	Total	
2024*	14	3,075	102,829	51	105,969	115,514	4	115,518	221,487
2029	14	3,400	113,500	81	116,995	126,284	0	126,284	243,279
2034	14	4,300	125,300	81	129,695	138,057	0	138,057	267,752
2044	14	6,100	152,800	81	158,995	165,000	0	165,000	323,995
CAGR	**0.00%**	**3.48%**	**2.00%**	**2.34%**	**2.05%**	**1.80%**	**-100%**	**1.80%**	**1.92%**

*Data represent a 12-month period ending July 2024
CAGR = compound annual growth rate
Source: Coffman Associates analysis







*2024 data represent 12 months ending July 2024

Sources: Coffman Associates analysis

PEAKING CHARACTERISTICS

Peaking characteristics play an important role in determining airport capacity and facility requirements. The FAA's Traffic Flow Management System Counts (TFMSC) data collected by the tower have been examined to identify peaking periods. The peaking periods used to develop facility requirements are described below.

Peak Month | The peak month each year since 2020 (after the parallel runway was constructed) averaged 10.4 percent of total operations.

Design Day | The design day is calculated by dividing the peak month by the number of days of the month. The peak month typically occurs during a month with 31 days, so design day was calculated by dividing the peak month by 31.

Busy Day | The busy day is calculated by averaging the busiest day each week during the peak month. In this case, the busiest day each week of the month of June 2024 (peak month of the base year) represented approximately 18.0 percent of the week's total operations.

Design Hour | The design hour was calculated by identifying the average hourly operations during design days during the peak month. Calculations exclude overnight hours (between 11:00 p.m. and 6:00 a.m.), which would skew down the design hour. The design hour during design days of June 2024 represented 28.9 percent of design day operations.

Peak period projections based on the baseline calculations are included in **Table 2S**.

TABLE 2S | Peak Period Forecasts

	2024	2029	2034	2044
Annual Operations	221,487	243,279	267,752	323,995
Peak Month	22,043	25,226	27,763	33,595
Design Day	711	814	896	1,084
Busy Day	898	1,028	1,131	1,369
Design Hour	205	235	259	313

Source: Coffman Associates analysis

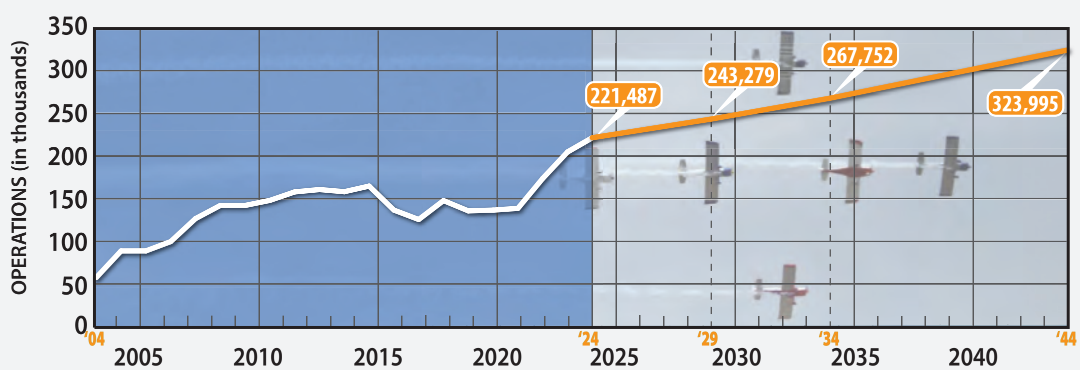
FORECAST SUMMARY

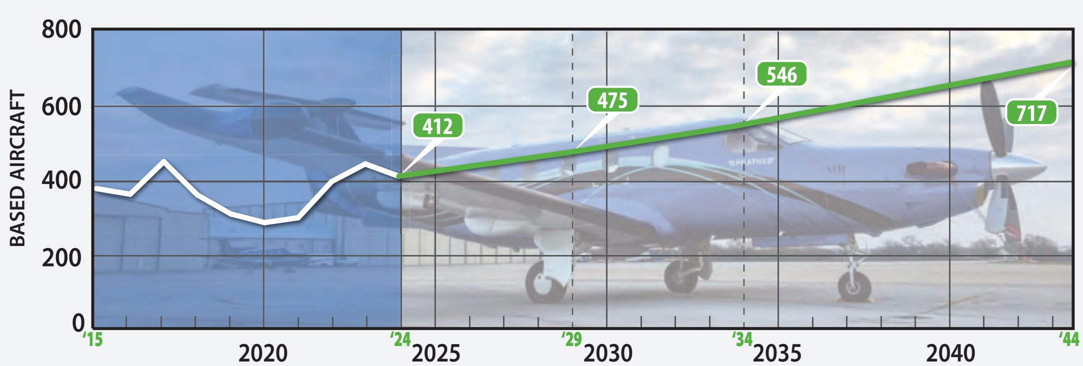
This chapter has outlined the various activity levels that might be reasonably anticipated over the planning period. **Exhibit 2E** presents a summary of the aviation forecasts prepared in this chapter. The base year for these forecasts is 2024, with a 20-year planning horizon to 2044. The primary aviation demand indicators are based aircraft and operations. The count of based aircraft is forecasted to increase from 412 in 2024 to 717 by 2044 (2.8 percent CAGR). Total operations at DTO are forecasted to increase from 221,487 in 2024 to 323,995 by 2044 (1.9 percent CAGR).

Projections of aviation demand will be influenced by unforeseen factors and events in the future; therefore, it is not reasonable to assume that future demand will follow the exact projection line, but over time, forecasts of aviation demand tend to fall within the planning envelope. The forecasts developed for this master planning effort are considered reasonable for planning purposes. The need

	Base Year	Forecast			
	2024	2029	2034	2044	CAGR
ANNUAL OPERATIONS					
Itinerant					
Air Carrier	14	14	14	14	0.0%
Air Taxi	3,075	3,400	4,300	6,100	3.5%
General Aviation	102,829	113,500	125,300	152,800	2.0%
Military	51	81	81	81	2.3%
Total Itinerant	***105,969***	***116,995***	***129,695***	***158,995***	***2.0%***
Local					
General Aviation	115,514	126,284	138,057	165,000	1.8%
Military	4	0	0	0	N/A
Total Local Subtotal	***115,518***	***126,284***	***138,057***	***165,000***	***1.8%***
TOTAL ANNUAL OPERATIONS	**221,487**	**243,279**	**267,752**	**323,995**	**1.9%**
OPERATIONAL PEAKING CHARACTERISTICS					
Peak Month	22,043	25,226	27,763	33,595	2.1%
Design Day	711	814	896	1,084	2.1%
Busy Day	898	1,028	1,131	1,369	2.1%
Design Hour	205	235	259	313	2.1%
BASED AIRCRAFT					
Single Engine Piston	306	351	401	520	2.7%
Multi-Engine Piston	58	68	79	105	3.0%
Jet	34	40	46	65	3.3%
Helicopter	14	16	19	25	2.9%
Glider/Other	0	0	1	2	N/A
TOTAL BASED AIRCRAFT	**412**	**475**	**546**	**717**	**2.8%**

N/A - Not Applicable *CAGR* - Compound annual growth rate





Sources: Coffman Associates analysis

for additional facilities will be based on these forecasts; however, if demand does not materialize as projected, implementation of facility construction can be slower. Likewise, if demand exceeds these forecasts, the airport may accelerate construction of new facilities.

FORECAST COMPARISON TO THE FAA TAF

Historically, forecasts have been submitted to the FAA to be evaluated and compared to the TAF. The FAA prefers that forecasts differ by less than 10 percent in the five-year period and less than 15 percent in the 10-year period. Where the forecasts differ, supporting documentation is necessary to justify the difference.

Table 2T presents a summary of the selected forecasts and a comparison to the FAA TAF for DTO. The master plan operations forecast is outside the TAF tolerance in the five- and 10-year periods, but only because the baseline count is 11.52 percent lower than the master plan baseline operations count, as established by tower counts. If the TAF baseline were adjusted to match tower data, the master plan forecasts would be well within TAF tolerances in the five- and 10-year periods.

TABLE 2T | Comparison of Master Plan Forecasts to FAA TAF

	2024	2029	2034	2044	CAGR
Total Operations					
Master Plan Forecast	221,487	243,279	267,752	323,995	1.92%
TAF	197,360	204,279	211,706	228,242	0.73%
% Difference from TAF	11.52%	17.43%	23.38%	34.68%	–
Adjusted FAA TAF	221,487	229,685	238,186	256,144	0.73%
% Difference from Adjusted TAF	0.00%	5.75%	11.69%	23.39%	–
Based Aircraft					
Master Plan Forecast	412	475	546	717	2.81%
TAF	474	540	612	768	2.44%
% Difference from TAF	14.00%	12.81%	11.40%	6.87%	–
Adjusted FAA TAF	412	465	524	668	2.44%
% Difference from Adjusted TAF	0.00%	2.16%	4.03%	7.14%	–

In terms of based aircraft, the TAF baseline count is 14 percent higher than the current FAA-validated count. Adjusting the TAF count to match the validated count results in the master plan forecast being within TAF tolerances in the five- and 10-year periods.

AIRCRAFT/AIRPORT/RUNWAY CLASSIFICATION

The FAA has established several aircraft classification systems that group aircraft types based on their performance (approach speed during landing operations) and design characteristics (wingspan and landing gear configuration). These classification systems are used to determine the appropriate airport design standards for specific airport elements, such as runways, taxiways, taxilanes, and aprons.

AIRCRAFT CLASSIFICATION

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily on the characteristics of the aircraft that are currently using, or are expected to use, an airport. The critical design aircraft is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or a group of aircraft with similar characteristics. The design aircraft is classified by three parameters: aircraft approach category (AAC), airplane design group (ADG), and taxiway design group (TDG). FAA AC 150/5300-13B, *Airport Design*, Change 1, describes the following airplane classification systems, the parameters of which are presented on **Exhibit 2F**.

Aircraft Approach Category (AAC) | The AAC is a grouping of aircraft based on a reference landing speed (V_{REF}), if specified, or – if V_{REF} is not specified – 1.3 times the stall speed (V_{SO}) at the maximum certified landing weight. V_{REF}, V_{SO}, and the maximum certified landing weight are those values as established for the aircraft by the certification authority of the country of registry (the FAA in the United States).

The AAC refers to the approach speed of an aircraft in landing configuration and is depicted by a letter (A through E). The higher the approach speed (operational characteristic), the more restrictive the applicable design standards will be. The AAC generally applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

Airplane Design Group (ADG) | The ADG is depicted by a Roman numeral (I through VI) and is a classification of aircraft that relates to aircraft wingspan or tail height (physical characteristics). When the aircraft wingspan and tail height fall in different groups, the higher (more restrictive) group is used. The ADG influences design standards for taxiway safety area (TSA), taxiway object free area (TOFA), taxilane object free area, apron wingtip clearance, and various separation distances.

Taxiway Design Group (TDG) | The TDG is a classification of airplanes based on certain undercarriage dimensions of the aircraft. Both outer-to-outer main gear width (MGW) and cockpit-to-main gear (CMG) distances are used in the classification of an aircraft. The TDG is depicted by an alphanumeric system (1A, 1B, 2, 3, 4, 5, 6, and 7). The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet design and dimensions, and (in some cases) the separation distance between parallel taxiways/taxilanes. Other taxiway elements – such as the taxiway safety area (TSA); taxiway object free area (TOFA); taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects; and taxiway/taxilane wingtip clearances – are determined solely based on the wingspan (ADG) of the design aircraft utilizing those surfaces. It is appropriate for taxiways to be planned and built to different TDG standards, based on expected use.

The reverse side of **Exhibit 2F** summarizes the classifications of the most common aircraft in operation today. Generally, recreational and business piston and turboprop aircraft will fall in AAC A and B, and ADG I and II. Business jets typically fall in AAC B and C, while larger commercial aircraft fall in AAC C and D.

AIRPORT AND RUNWAY CLASSIFICATIONS

Along with the previously defined aircraft classifications, airport and runway classifications are used to determine the appropriate FAA design standards to which the airfield facilities are to be designed and built.

Runway Design Code (RDC) | The RDC is a code that signifies the design standards to which the runway is to be built. The RDC is based on planned development and has no operational component.

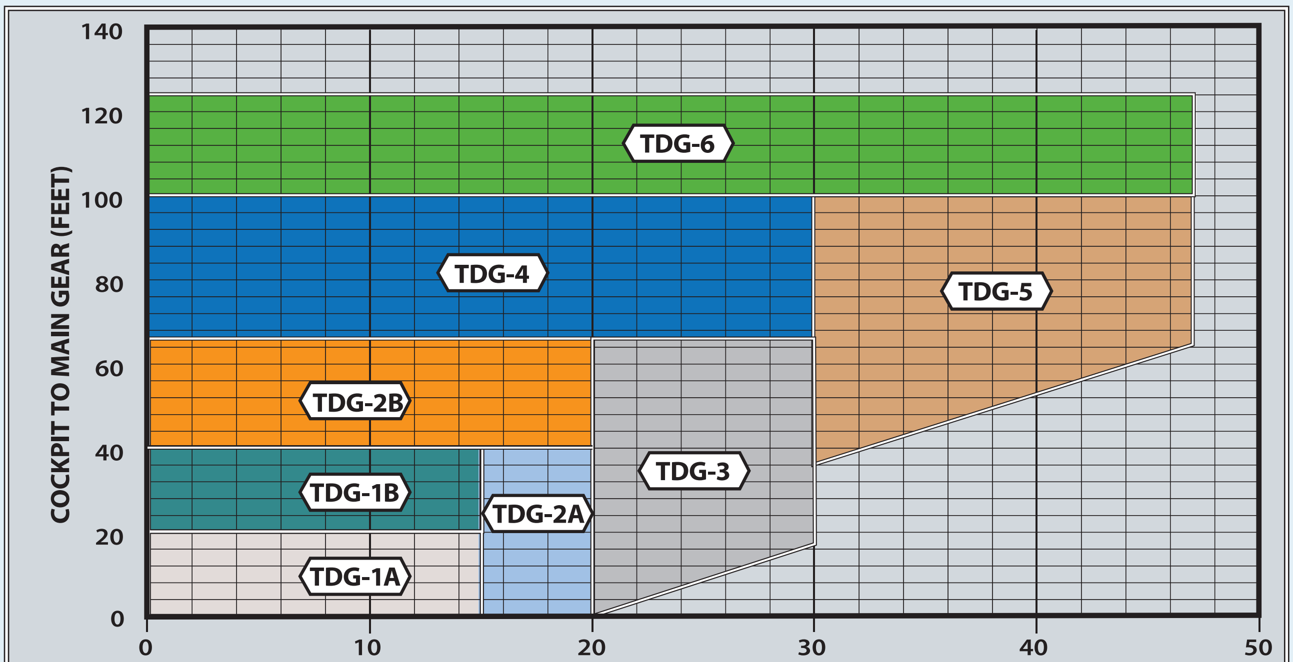
AIRCRAFT APPROACH CATEGORY (AAC)	
Category	**Approach Speed**
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

AIRPLANE DESIGN GROUP (ADG)		
Group #	**Tail Height (ft)**	**Wingspan (ft)**
I	<20	<49
II	20-<30	49-<79
III	30-<45	79-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS	
RVR* (ft)	**Flight Visibility Category (statute miles)**
VIS	3-mile or greater visibility minimums
5,000	Not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile
2,400	Lower than ¾-mile but not lower than ½-mile
1,600	Lower than ½-mile but not lower than ¼-mile
1,200	Lower than ¼-mile

***RVR**: Runway Visual Range

TAXIWAY DESIGN GROUP (TDG)



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

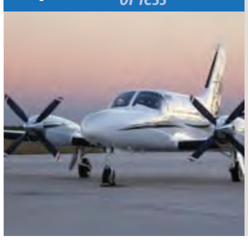
A-I

Aircraft	TDG
• Beech Bonanza	1A
• **Cessna 150**, 172	**1A**
• Piper Comanche, Seneca	1A

B-I

Aircraft	TDG
• Eclipse 500	1A
• Beech Baron 55/58	1A
• **Beech King Air 100**	**1A**
• Cessna 421	2A
• Cessna Citation M2 (525)	1A
• Cessna Citation 1(500)	1A
• Embraer Phenom 100	1A

A/B-II *12,500 lbs. or less*



Aircraft	TDG
• Beech Super King Air 200	2A
• Beech King Air 90	1A
• **Cessna 441 Conquest**	**1A**
• Cessna Citation CJ2	2A
• Pilatus PC-12	2

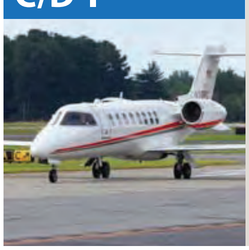
B-II *over 12,500 lbs.*

Aircraft	TDG
• Beech Super King Air 350	2A
• Cessna Citation CJ3(525B)	2A
• **Cessna Citation CJ4 (525C)**	**1B**
• Cessna Citation Latitude	1B
• Embraer Phenom 300	1B
• Falcon 20	1B
• Pilatus PC-24	2A

A/B-III

Aircraft	TDG
• Bombardier Dash 8	3
• **Bombardier Global 7500**	**2B**
• Falcon 7X, 8X	2A

C/D-I

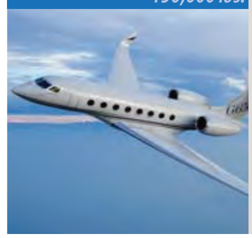


Aircraft	TDG
• **Lear** 35, 40, **45**, 55, 60XR	**1B**
• F-16	1A

C/D-II

Aircraft	TDG
• Challenger 600/604	1B
• Cessna Citation III, VI,VII, X	1B
• Embraer Legacy 135/140	2B
• **Gulfstream IV** (D-II)	**2A**
• Gulfstream G280	1B
• Lear 70, 75	1B
• Falcon 50, 900, 2000	2A
• Hawker 800XP, 4000	1B

C/D-III *less than 150,000 lbs.*



Aircraft	TDG
• Gulfstream V	2B
• **Gulfstream** 550, 600, **650**	**2B**
• Global 5000, 6000	2B

C/D-III *over 150,000 lbs.*

Aircraft	TDG
• **Airbus** A319, **A320**, A321	3
• Boeing 737-800, 900	3
• MD-83, 88	4

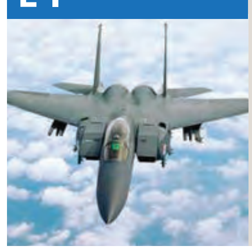
C/D-IV

Aircraft	TDG
• Airbus A300	5
• Boeing 757-200	4
• **Boeing 767**-300, 400	**5**
• MD-11	6

C/D-V

Aircraft	TDG
• Airbus A330-200, 300	5
• Airbus A340-500, 600	6
• Boeing 747-100 - 400	5
• Boeing 777-300	6
• **Boeing 787-8**, 9	**5**

E-I



Aircraft	TDG
• **F-15**	**1B**

Note: Aircraft pictured is identified in bold type.

The AAC, ADG, and runway visual range (RVR) are combined to form the RDC of a runway. The RDC provides the information needed to determine certain applicable design standards. The first component, depicted by a letter, is the AAC and relates to aircraft approach speeds (operational characteristic). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristic), whichever is more restrictive. The third component relates to the available instrument approach visibility minimums, expressed by RVR values in feet of 1,200 (⅛-mile); 1,600 (¼-mile); 2,400 (½-mile); 4,000 (¾-mile); and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. For a runway designed for visual approaches only, "VIS" is used in place of a numerical value for the RVR.

Approach Reference Code (APRC) | The APRC is a code that signifies the current operational capabilities of a runway and associated parallel taxiway regarding landing operations. Like the RDC, the APRC has the same three components: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under meteorological conditions in which no special operating procedures are necessary, as opposed to the RDC, which is based on planned development with no operational component. The APRC for a runway is established based on the minimum runway-to-taxiway centerline separation.

Departure Reference Code (DPRC) | The DPRC is a code that signifies the current operational capabilities of a runway and associated parallel taxiway regarding takeoff operations. The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under meteorological conditions with no special operating conditions. The DPRC is like the APRC but is composed of only the AAC and ADG. A runway may have more than one DPRC, depending on the parallel taxiway separation distance.

Airport Reference Code (ARC) | The ARC is an airport designation that signifies the airport's highest runway design code (RDC) minus the third component (visibility) of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at an airport. The current airport layout plan (ALP) for DTO identifies the ARC for Runway 18L-36R as D-II, with the Gulfstream G450 as the critical design aircraft. The parallel runway was originally planned to meet C-II standards with the Cessna Citation X as the design aircraft; however, the runway was built to B-II standards.

CRITICAL AIRCRAFT

The selection of appropriate FAA design standards for the development and location of airport facilities is primarily based on the characteristics of the aircraft that are currently using, or are expected to use, the airport. The critical design aircraft is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or a group of aircraft with similar characteristics defined by the three parameters: AAC, ADG, and TDG.

The first consideration is the safe operation of aircraft likely to use an airport. Any operation of an aircraft that exceeds the design criteria of an airport may result in a decreased safety margin; however, it is not a usual practice to base the airport design on an aircraft that uses the airport infrequently.

The design aircraft is defined as the most demanding aircraft type, or grouping of aircraft with similar characteristics, that makes regular use of the airport, which is defined as 500 annual operations (excluding touch-and-go operations). Planning for future aircraft use is important because the design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure short-term development does not preclude the reasonable long-range potential needs of the airport.

According to FAA AC 150/5300-13B, *Airport Design*, Change 1: "airport designs based only on existing aircraft can severely limit the ability to expand the airport to meet future requirements for larger, more demanding aircraft. Airport designs that are based on large aircraft never likely to be served by the airport are not economical." Selection of the current and future critical design aircraft must be realistic in nature and supported by current data and realistic projections.

AIRPORT DESIGN AIRCRAFT

There are three elements for classifying the airport design aircraft: the AAC, ADG, and TDG. The AAC and ADG are examined first, followed by the TDG.

The FAA's TFMSC database includes documentation of commercial (air carrier and air taxi), general aviation, and military aircraft traffic. Due to factors such as incomplete flight plans, limited radar coverage, and VFR operations, TFMSC data do not account for all aircraft activity at an airport by a given aircraft type; however, the TFMSC provides an accurate reflection of IFR activity. Operators of high-performance aircraft, such as turboprops and jets, tend to file flight plans at a high rate. According to TFMSC data for DTO, operations conducted by aircraft with an AAC/ADG of C-II have consistently exceeded 500 annual operations over the previous five years. As such, **the historical operational activity indicates DTO's existing ARC is C-II**. The C-II aircraft that operate most frequently at DTO are the Bombardier Challenger 600, Dassault Falcon 50, and Saab 340. The Challenger 600 conducts the most operations among this group, so it has been identified as the current critical aircraft.

To determine DTO's future ARC, annual operations by ARC were forecast through 2044 using a growth rate forecast based on industry growth trends within each ARC category. Historical and forecast operations by ARC are depicted in **Table 2U**. Operations levels within the higher B-III/C-III/D-III categories are anticipated to increase over the planning period, consistent with industry trends. The individual ADG III categories are not anticipated to exceed 500 annual operations alone, but collectively, ADG III operations are forecast to total 1,128 by 2044. As a national reliever airport, DTO needs to be planned to accommodate all general aviation aircraft, including ultra long-range business jets, such as the Gulfstream G550/G650/G700/G800, Bombardier Global 7500, and Boeing Business Jet (BBJ); therefore, DTO's future critical aircraft is within the C/D-III category and is identified as the Gulfstream G550/G650.

TABLE 2U | Historical and Forecast Operations by Airport Reference Code

Year	B-I	B-II	B-III	C-I	C-II	C-III	D-II	D-III
Historical								
2019	1,097	3,702	6	324	876	14	17	4
2020	643	3,693	5	250	763	30	4	4
2021	970	3,558	16	476	977	40	23	22
2022	1,095	4,419	25	425	1,003	41	12	14
2023	889	2,994	42	354	1,290	66	36	6
2024*	882	2,901	52	191	1,116	71	26	2
CAGR	-4.3%	-4.8%	54.0%	-10.0%	5.0%	38.4%	8.9%	-12.9%
Forecast								
2029	810	3,581	84	161	1,424	109	42	7
2034	743	4,420	135	135	1,818	168	67	28
2044	626	6,733	350	96	2,961	398	175	380
CAGR	-1.7%	4.3%	10.0%	-3.4%	5.0%	9.0%	10.0%	30.0%

*2024 data represent a 12-month period ending July 2024
A-I and A-II are not shown, as smaller/slower aircraft are unlikely to impact critical design aircraft.
C-IV through C-V and D-I and D-IV and above are not shown due to minimal activity at DTO.
Sources: FAA TFMSC; Coffman Associates analysis

TAXIWAY DESIGN GROUP (TDG)

The TFMSC also provides a breakdown of aircraft operations by TDG. According to DTO operations data, presented in **Table 2V**, the highest TDG that exceeds the threshold of 500 annual operations in 2024 is TDG 3 – represented by the Embraer 120 and Swearingen Merlin 4 turboprop aircraft, which are used primarily for air cargo operations. Business jets fall primarily within the 1B, 2, 2A, and 2B categories. These TDG categories should continue to experience growth; however, based on these TFMSC data, TDG 3 is considered the existing and ultimate critical design TDG for taxiway planning purposes.

TABLE 2V | DTO Operations by Taxiway Design Group

Year	1A	1B	2	2A	2B	3
2019	5,290	1,834	95	1,892	20	356
2020	5,462	1,565	141	1,278	49	342
2021	3,943	2,259	65	1,795	74	726
2022	4,287	2,166	117	2,331	58	1,358
2023	4,911	1,653	183	2,106	51	869
2024*	7,399	1,469	292	1,797	37	734

*Data represent a 12-month period ending July 2024
Source: TFMSC

RUNWAY DESIGN CODE

The RDC relates to specific FAA design standards that should be met in relation to a runway. The RDC takes the AAC, ADG, and RVR into consideration. In most cases, the critical design aircraft will also be the RDC for the primary runway.

The current runway design at DTO for primary Runway 18L-36R should meet the standards for the overall airport design aircraft, which has been identified as the Bombardier Challenger 600 – a C-II aircraft. The runway has an instrument landing system (ILS) precision approach with visibility minimums as low as ½-mile. The RVR value assigned to a runway with ½-mile minimums is 2400; therefore, **the applicable**

existing RDC for Runway 18L-36R is C-II-2400. The ultimate critical aircraft was identified as a grouping of ultra-long range business jets, including the Gulfstream G550 (ARC D-III) and G650 (ARC C-III); therefore, **the ultimate RDC for Runway 18L-36R is C/D-III-2400**.

Parallel Runway 18R-36L currently meets ARC B-II design standards and has published instrument approaches with visibility minimums down to ¾-mile. ARC B-II aircraft with the most frequent operations at DTO are the Beechcraft King Air series of turboprops, which are identified as the existing critical aircraft for the parallel runway. As a secondary runway, the parallel runway is intended to serve mid-size and smaller aircraft; therefore, **the existing and ultimate RDC for Runway 18R-36L is B-II-4000**.

CRITICAL AIRCRAFT SUMMARY

Table 2W summarizes the current and future runway classifications.

TABLE 2W | Airport and Runway Classifications

	Runway 18L-36R		Runway 18R-36L
	Existing	Ultimate	Existing/Ultimate
Airport Reference Code (ARC)	C-II	C/D-III	B-II
Critical Aircraft (Typ.)	Bombardier Challenger 600	Gulfstream G550/G650	Beechcraft King Air 90/200/300/350
Runway Design Code (RDC)	C-II-2400	C/D-III-2400	B-II-4000
Taxiway Design Group (TDG)	3	3	2A

Source: FAA AC 150/5300-13B, Airport Design, Change 1

POTENTIAL COMMERCIAL PASSENGER SERVICE ENPLANEMENTS

BACKGROUND

The Dallas-Fort Worth metroplex has grown to become the fourth largest metropolitan area in the United States, behind New York, Los Angeles, and Chicago. The Dallas-Fort Worth metropolitan area has an estimated population of 8,481,512 in 2024, according to the North Central Texas Council of Governments (NCTCOG), and is the fastest growing metropolitan area in the country.

Dallas Fort Worth International Airport (DFW) and Dallas Love Field (DAL) currently serve as the primary commercial airports for the region. DFW is one of the busiest airports in the world and handled over 73.3 million passengers (enplaned and deplaned) in 2023. DAL serves as a vital hub, particularly for Southwest Airlines, and handled almost 17.6 million passengers in 2023. Despite their capacity, both airports are experiencing increasing pressure due to rising passenger volumes; recent forecasts suggest DFW alone could exceed 100 million annual passengers in the coming years.

DFW is currently undergoing a $9.0 billion expansion and modernization program in its efforts to increase its capacity to accommodate over 100 million passengers. This involves an overhaul of Terminals A and C, with the addition of nine new gates, that is expected to be completed by 2030. A sixth terminal (Terminal F), which will add 15 new gates, is also under development, with scheduled completion by 2026.

DAL is constrained by federal law to 20 gates, 18 of which are controlled by Southwest Airlines. Southwest Airlines is barred from operating at DFW until 2025, and the airline has indicated that it is considering expanding operations at a second airport in North Texas. A master plan for DAL is currently ongoing and draft forecasts for the airport show enplanement levels exceeding 11 million by 2028.

The need for a third commercial service airport in the Dallas-Fort Worth metroplex is becoming increasingly critical. A market analysis study conducted for McKinney National Airport (TKI) in June 2022 identified that DFW and DAL are forecast to reach 72.1 million enplanements by 2040; however, the two airports will reach maximum capacity by 2038, at 64.5 million total enplanements. The existing airports face challenges such as congestion, longer wait times, and operational constraints, which can hinder both business travel and tourism. Additionally, the region's continued population growth, coupled with the expansion of various economic sectors, necessitates a more diversified air travel infrastructure.

A third airport would not only alleviate pressure on DFW and DAL but would also enhance connectivity and competition among airlines, potentially lowering fares and increasing flight options for passengers. Such an airport could be strategically located to serve underserved areas of the metroplex and improve access for residents in the growing suburban regions. Furthermore, it would bolster the states of the Dallas-Fort Worth metroplex as a leading global transportation hub, enhancing the region's appeal to businesses and travelers alike.

McKinney National Airport has a head start on all other airports in the area. Despite voters rejecting plans for $200 million in public funding for a new terminal building, the City of McKinney City Council is moving forward with the design of a passenger terminal to attract commercial service activity. If TKI is successful, it is unlikely that the market will support a fourth commercial service airport in the metroplex for the foreseeable future; however, if TKI is unsuccessful, the opportunity may be available to fill that role. The purpose of this discussion is to evaluate the current commercial passenger service market in the Dallas-Fort Worth metroplex and identify potential demand for these services at DTO. At present, DTO is a general aviation reliever airport with "on-demand" passenger service offered via a variety of CFR Part 135 operators utilizing all manner of business aircraft (turboprops and jets).

COMMERCIAL AIRLINE INDUSTRY

The commercial airline industry in the United States has been subject to ups and downs that are primarily related to the economy, but those changes are often volatile. For more than two decades after deregulation, commercial airlines were capital-intensive as they competed for market share, which left the airline industry cash-poor. While profits were evident in good economic times, the economic cycle (and the price of oil) would inevitably turn and airlines would suffer significant losses, sometimes resulting in bankruptcies or mergers.

The aftermath of the events of September 11, 2001 (9/11), prompted a new round of airline restructuring and consolidation as changes to airline business models began to take shape; however, the Great Recession that began in 2007 and carried into 2009 brought about perhaps the most deliberate change in how U.S. airlines manage their operations and finances. The commercial airlines' focus fully shifted from increasing market share to boosting returns on invested capital. The airlines worked to minimize losses by lowering operating costs, focusing on profitable routes and removing older and less fuel-efficient aircraft from their fleets. A key to this shift was capacity discipline, which became an industry buzz phrase. This discipline, combined with some airlines charging separately for certain services, resulted in 11 consecutive years of profits for the U.S. airline industry, extending through 2019.

The outbreak of the COVID-19 global pandemic brought an immediate end to the years of prosperity. While restrictions related to the pandemic nearly halted traffic overnight, airlines began to face a new reality. Because their business models emphasized capacity discipline, they were able to slash costs. With the balance sheets and credit ratings built up over the past decade, they were able to raise capital through borrowing and restructuring fleets.

These modifications will affect the airline industry for years. Airlines became smaller due to retiring aircraft and reducing the workforce through the encouragement of voluntary retirements/separations. The fleet is now younger and more fuel-efficient, but the higher levels of debt are likely to limit capital investment spending, thus restraining growth.

Domestic leisure traffic led to recovery; pent-up consumer demand due to travel restrictions was experienced, as predicted. Routes shifted somewhat to serve domestic vacation destinations, while business and international travel lagged. By the summer of 2022, leisure demand exceeded pre-pandemic levels, and business travel stood at about 70-80 percent of pre-pandemic demand by the end of 2022.

Over the long term, the airlines' business models developed during the past decade are expected to aid the recovery, demonstrating that the U.S. airline industry has left behind its capital-intensive/cyclical tendencies for the discipline that can better generate returns on capital and sustain profits. According to the report, "There is confidence that the U.S. airline industry as a whole has finally transformed from a capital intensive, highly cyclical industry to an industry that can generate solid returns on capital and sustained profits." The *2024-2044 FAA Aerospace Forecast* for U.S. domestic passengers projects an average growth of 2.4 percent annually over the next 20 years.

POTENTIAL SCHEDULED COMMERCIAL SERVICE

The likelihood of any traditional mainline legacy carrier (American Airlines, Delta Air Lines, United Airlines, and Southwest Airlines) moving into DTO is unlikely. These airlines are strong anchors at DFW and DAL and historical trends suggest that moving to an outlying, tertiary market is unlikely. These carriers (excluding Southwest) tend to favor the trappings of larger hub airports, as they depend on the ability to link their passengers via the "hub-and-spoke" system. Moreover, the opportunity to attract regularly scheduled commuter airline "feeder" service is equally dubious. The haul to DAL or DFW would not be equitable for these airlines, as most now utilize regional jet aircraft. Extremely short hauls to DAL and DFW could not be profitable, as these airlines already capture the same passengers via surface transportation modes.

Tertiary commercial service airports (which DTO would be if scheduled passenger service were implemented) tend to be built around origination and destination (O&D) passenger models. Hub and smaller regionalized commercial service airports served by the legacy carriers, including American Airlines, tend to build their networks around the hub-and-spoke system. As such, DTO's greatest opportunity is, and will likely continue to be, non-traditional and/or low-cost passenger airline options that currently have limited or no operations at DAL and/or DFW. Low-cost airlines, like Allegiant Airlines, utilize irregular schedules, unlike the daily departure schedules utilized by the legacy carriers. For example, Allegiant Airlines, which does not currently serve the metroplex, could serve a market departing Tuesday and returning on Saturday. Other low-cost options, like Frontier Airlines and Spirit Airlines (both of which operate out of DFW), may offer daily departures but very limited schedule options.

There are many non-traditional or low-cost carrier options, including Allegiant Airlines, Spirit Airlines, Frontier Airlines, Sun Country Airlines, Avelo Airlines, and Breeze Airways. The most likely option for DTO, based on market opportunities, could be Allegiant Airlines, which currently has the most proximate service out of Austin, Oklahoma City, Shreveport, San Antonio, and Houston (Hobby). Allegiant Airlines has been operating since 1998 and utilizes a fleet comprised of primarily Airbus A319 and A320 aircraft. Avelo Airlines (currently serving Houston [Hobby] and Brownsville/South Padre) could be a potential carrier for DTO, as it does not currently have a foothold in the metroplex. Avelo Airlines started operating in April 2021 and utilizes a fleet of Boeing 737 aircraft. Frontier Airlines, Spirit Airlines, and Alaska Airlines could also be options, but these airlines currently operate limited flights out of DFW and/or DAL.

It should be noted that these low-cost carriers tend to generate a demand of specific users, most commonly leisure travelers who desire low airfares. These users are willing to sacrifice certain features, such as schedule frequency and traditional perks associated with airline reward programs, in favor of low fares. Business travelers tend not to use these airlines, as they are less reliable and offer fewer connections. Generally, local passenger demand for these airlines is limited when compared to demand for a legacy carrier.

Given that there is no historical commercial passenger operating data for DTO, operational and enplanement forecasting is a function of the type(s) of aircraft in use, operational frequency, and load factors. In the following sections, the potential for passenger enplanements, commercial operations, and potential commercial service operators at DTO will be presented. **These forecasts are simply being conducted to offer long-term potential and will be considered separately from the planning forecasts presented earlier in this chapter. The primary purpose of this analysis is to provide the City of Denton with important facility planning information, should there be interest in starting commercial service at DTO.**

POTENTIAL PASSENGER ENPLANEMENTS

Tertiary Airport Methodology

Perhaps the most apt methodology for air service considerations for DTO is to evaluate other tertiary airports, or smaller commercial service airports near large metropolitan areas that are already served by one or more large hub airports. The following tertiary airports were considered:

- Orlando Sanford International Airport – Florida (26 miles northeast of Orlando)
- Westchester County Airport – New York (39 miles north of New York City)
- Phoenix-Mesa Gateway Airport – Arizona (36 miles southeast of Phoenix)
- Bellingham International Airport – Washington (94 miles north of Seattle and 52 miles south of Vancouver)
- Chicago Rockford International Airport – Illinois (85 miles northwest of Chicago)
- Stockton Metro Airport – California (80 miles east of San Francisco)
- Portsmouth International Airport at Pease – New Hampshire (58 miles north of Boston)

Table 2Y presents historical enplanement data for each of these airports.

TABLE 2Y | Secondary/Tertiary Commercial Passenger Airport Enplanements

Name	2003	2008	2013	2018	2023
Orlando Sanford – FL	619,894	927,188	971,522	1,504,888	1,446,884
Westchester County – NY	426,864	904,482	764,002	789,283	1,156,719
Phoenix-Mesa – AZ	218	190,281	725,048	778,972	964,132
Bellingham International – WA	66,437	277,281	596,142	368,186	311,234
Chicago Rockford – IL	16,982	110,151	109,384	106,710	120,494
Stockton Metro – CA	13,700	36,935	71,757	98,908	67,688
Portsmouth International – NH	27,096	49,962	22,540	92,836	57,448

Source: FAA Airport Enplanement Data

Orlando Sanford International Airport has the most successful enplanement model of all the airports examined. This airport is basically utilized as a hub by Allegiant Airlines for all Orlando flights, as well as for international charter airlines. There is no regularly scheduled service by legacy carriers or commuter airlines. Similarly, Phoenix-Mesa Gateway Airport has experienced strong passenger growth since Allegiant Airlines began operating in the early 2000s. Orlando, Florida, ranks at or near the top of most visited U.S. cities; as such, it is unlikely Allegiant Airlines or similar carriers could generate similar passenger demand at DTO.

Chicago Rockford International Airport is likely more comparable, as it has successfully transitioned from a general aviation airport to a primary commercial service airport. The airport offers several domestic destinations via Allegiant Airlines, as well as irregular international charter operations. As noted in the table, its airport enplanements reached a high of 120,494 in 2023. Chicago Rockford International Airport is farther from its core service area (85 miles northwest of Chicago, Illinois) compared to DTO, which is 42 miles northwest of Dallas and 34 miles north of Fort Worth.

Westchester County Airport and Bellingham International Airport are secondary/tertiary airports; however, both are also served by traditional carrier options, as well as ultra-low-cost/non-traditional carriers. As such, they offer a glimpse at enplanement levels for such markets. Portsmouth International Airport at Pease is a tertiary airport served by Allegiant Airlines and Breeze Airways.

As presented in the table, tertiary airports can generate a range of enplanements, from tens of thousands to over one million passenger enplanements. The upper end of the envelope is represented primarily by O&D markets.

Travel Propensity Factor Methodology

Due to a lack of passenger service history, it is challenging to develop a reasonable forecast of future passenger enplanements. Traditional trend line and regression analyses do not generate a reasonable forecast, as there is no history to examine. The method employed here is to examine comparable markets throughout the State of Texas with similar city populations and other similar characteristics, such as proximity to a regional and larger hub airport and regional airport enplanement levels. The relationship between a service area's population and enplanements is the travel propensity factor (TPF). TPF is calculated by dividing an airport's passenger enplanement count by the population of the service area.

The TPF is predominantly impacted by the proximity of an airport to other regional airports with higher levels of service, or "hub" airports. Regional airports with higher TPF ratios tend to be located farther from hub airports in relatively isolated areas. Such an airport generally has a service area that extends into adjacent, well-populated regions or has an air service advantage that attracts more passengers who might otherwise choose to drive to a more distant hub airport. Generally, the higher the TPF, the more likely air travelers are to utilize the local airport for commercial service.

Table 2Z presents eight Texas markets with limited commercial service options. Each is within a manageable driving distance to a larger hub airport but is the only commercial service option for the regional community. The table presents a comparison of the 2019 (prior to the COVID-19 pandemic) and 2023 TPFs at each small Texas market airport. The distance to the closest commercial service or hub airport is also considered. Generally, the farther a community is from a larger commercial service/hub airport, the higher the TPF will be.

In 2019, the average TPF of the airports serving the eight selected cities was 0.494. By 2023, the average TPF had decreased to 0.406, with only two of the eight cities (Longview and Beaumont/Port Arthur) increasing in TPF. This is indicative of the regional airport market, which has experienced reduced capacity (flight frequencies and nonstop destinations) in the aftermath of the COVID-19 pandemic.

TABLE 2Z | Small Texas Markets and Travel Propensity Factor

Texas Small Markets	2019			2023			Miles to Nearest Hub
	Population	Enp.	TPF	Population	Enp.	TPF	
Abilene Regional (ABI) – Abilene, TX	124,351	81,813	0.658	131,676	79,831	0.606	150 – Lubbock (LBB)
Easterwood Field (CLL) – College Station, TX	119,336	83,832	0.702	123,498	60,072	0.486	70 – Houston (IAH)
Waco Regional (ACT) – Waco, TX	137,223	62,907	0.458	145,192	51,867	0.357	90 – Dallas (DAL)
San Angelo Regional/Mathis Field (SJT) – San Angelo, TX	99,609	66,390	0.667	99,565	51,865	0.521	110 – Midland (MAF)
Tyler Pounds Regional (TYR) – Tyler, TX	105,174	59,807	0.569	110,734	50,155	0.453	95 – Dallas (DAL)
East Texas Regional (GGG) – Longview, TX	81,559	27,160	0.333	83,591	32,613	0.390	125 – Dallas (DAL)
Jack Brooks Regional (BPT) – Beaumont/Port Arthur, TX	171,884	29,068	0.169	168,064	32,150	0.191	70 – Houston (IAH)
Sheppard AFB/Wichita Falls Municipal (SPS) – Wichita Falls, TX	102,023	40,418	0.396	102,774	25,075	0.244	110 – Dallas/Ft Worth (DFW)

Enp. = passenger enplanements
TPF = travel propensity factor

Sources: Enplanements – FAA Passenger Boarding Data; Population – Texas Demographic Center, Texas Population Estimates Program

TPF has also been considered for the tertiary airports, as shown in **Table 2AA**. In 2023, Orlando had the highest TPF (0.513), which reflects the airport's high number of tourist travelers. The average tertiary airport TPF is 0.131.

TABLE 2AA | Tertiary Airports and Travel Propensity Factor

Airport	Market	2023		
		Market MSA Population	Enplanements	TPF
Orlando Sanford – FL	Orlando	2,817,933	1,446,884	0.513
Westchester County – NY	New York	11,864,322	1,156,719	0.097
Phoenix-Mesa – AZ	Phoenix	5,070,110	964,132	0.190
Bellingham International – WA	Seattle/Vancouver	4,044,837	311,234	0.077
Chicago/Rockford – IL	Chicago	9,262,825	120,494	0.013
Stockton Metro – CA	San Francisco	4,566,961	67,688	0.015
Portsmouth International – NH	Boston	4,919,179	57,448	0.012

TPF = travel propensity factor

Sources: Enplanements – FAA Passenger Boarding Data; Population – U.S. Census Bureau Estimates

Table 2BB presents three different potential enplanement forecast approaches based on the TPF comparison analysis. The low range for small Texas markets, low-range tertiary airport TPFs, and average tertiary airport TPFs are applied to the population forecast of the DFW MSA. The first projection applies the lowest 2023 TPF from the small Texas markets (0.191), which results in an enplanement projection of over 2.0 million by 2044. The second projection applies the low TPF of the tertiary airports (0.012), which results in an enplanement projection of 124,000 by 2044. The third projection applies the average tertiary airport TPF (0.131), which results in an enplanement projection of almost 1.4 million by 2044.

TABLE 2BB | Travel Propensity Projections

Year	DTO Enplanements	DFW MSA Population	Travel Propensity Factor
Low Small Market Airport TPF			
2029	1,683,500	8,800,501	0.191
2034	1,797,700	9,397,522	0.191
2044	2,030,700	10,615,729	0.191
Low Tertiary Airport TPF			
2029	102,800	8,800,501	0.012
2034	109,700	9,397,522	0.012
2044	124,000	10,615,729	0.012
Average Tertiary Airport TPF			
2029	1,153,600	8,800,501	0.131
2034	1,231,800	9,397,522	0.131
2044	1,391,500	10,615,729	0.131

DFW MSA = Dallas-Fort Worth Metropolitan Statistical Area

Sources: Population Projections – Woods & Poole Economics Inc. 2024; US Regional Carrier Domestic Enplanements – FAA Aerospace Forecasts 2024-2044

Potential Flight Scenario Methodology

Another methodology for forecasting potential enplanements and commercial operations is to consider potential flight schedules and aircraft fleets of the on-demand and scheduled charter operators. The potential enplanement and operations estimates are based on a potential flight schedule, as well as a limited set of factors – primarily population and distance to a hub airport. Factors that may positively affect enplanement levels include the reliability of the airline, frequency of the schedule, convenience, and advertising budget, as well as an unlimited number of community factors, such as industry, businesses, places of higher education, and recreational attractions.

The purpose is to identify multiple scenarios of potential enplanement and operational figures that can be refined later, if necessary. One additional factor to consider is the willingness of a passenger to drive a longer distance to a hub airport.

Table 2CC presents three different potential commercial passenger enplanement and operations scenarios based on potential operator types: passenger membership model carriers, regional jet operators, and irregularly scheduled carriers, such as Allegiant Airlines. The first scenario is strictly based on passenger membership models, such as Surf Air and similar operators. This scenario uses the eight-seat Pilatus PC-12 single-engine turboprop, at an estimated 80 percent boarding load factor (BLF). Weekly schedules considered 12, 24, and 48 weekly departures, which correlate to two, four, and eight departures daily, Monday through Friday, and one day (or halved each day) on the weekend. Under these scenarios, DTO could experience an estimated annual enplanement level ranging between 3,700 and 15,000 enplanements and an annual commercial aircraft operations level between 1,248 and 4,992.

TABLE 2CC | Enplanements and Operations Based on Potential Flight Schedules

Aircraft Type	ARC	Seats	BLF %	Occupied Seats	Departure Frequency	Total Enplanements	Total Operations
Passenger Membership Model Scenarios							
Pilatus PC-12	A-II	8	80%	6	12x Weekly	3,700	1,248
Pilatus PC-12	A-II	8	80%	6	24x Weekly	7,500	2,496
Pilatus PC-12	A-II	8	80%	6	48x Weekly	15,000	4,992
Regional Carrier Scenarios							
CRJ200	D-II	50	80%	40	6x Weekly	12,500	624
CRJ200	D-II	50	80%	40	12x Weekly	25,000	1,248
CRJ200	D-II	50	80%	40	24x Weekly	49,900	2,496
CRJ700	C-II	70	80%	56	6x Weekly	17,500	624
CRJ700	C-II	70	80%	56	12x Weekly	34,900	1,248
ERJ E175	C-III	76	80%	61	6x Weekly	19,000	624
ERJ E175	C-III	76	80%	61	12x Weekly	38,100	1,248
Irregularly Scheduled Charter Operator Scenarios							
A320	C-III	177	90%	159	2x Weekly	16,500	208
A320	C-III	177	90%	159	4x Weekly	33,100	416
A320	C-III	177	90%	159	8x Weekly	66,100	832
A320	C-III	177	90%	159	12x Weekly	99,200	1,248
A320	C-III	177	90%	159	16x Weekly	132,300	1,664
A320	C-III	177	90%	159	24x Weekly	198,400	2,496

Source: Coffman Associates analysis

The second set of scenarios assumed a regional carrier, such as SkyWest Airlines, which operates under contracts with Delta Air Lines, United Airlines, and American Airlines. The analysis offered three different aircraft models: the CRJ200 with 50 passenger seats, the CRJ700 with 70 passenger seats, and the Embraer E175 with 76 passenger seats. The daily departures considered were lower than the passenger membership scenarios, as the aircraft have higher seating capacities. Based on the analysis, the potential enplanements ranged from a low of 12,500 to a high of 49,900. Annual aircraft operations ranged from a low of 624 to a high of 2,496.

Finally, the third scenario assumed an irregularly scheduled airline, such as Allegiant Airlines. This model utilized the 177-seat Airbus A320 aircraft. As shown, the analysis considered a range of weekly departures, from two to 24. Based on the factors presented, the enplanement range was between 16,500 to 198,400. Annual operations ranged from 208 to 2,496.

Potential Enplanements Summary

The Dallas-Fort Worth metroplex is growing rapidly and capacity constraints at DFW and DAL will eventually necessitate a third commercial service airport to support growing air traveler demand. McKinney National Airport (TKI) has a head start, with plans to construct a passenger terminal building in the coming years; however, a 2023 ballot measure to fund a $200 million TKI expansion, including the construction of a 144,000-square-foot terminal, was defeated by voters. The McKinney City Council has continued to move forward with the design of the terminal while seeking new funding options. If TKI fails in its attempt to attract commercial service activity, other airports – such as Fort Worth Alliance Airport (AFW), which already serves significant commercial air cargo operations; Fort Worth Meacham International Airport (FTW), which has previously had commercial airline service; or DTO – may seek to fill the role. If TKI is successful, the market would not support a fourth commercial service airport, especially two located in the northern suburbs.

The analysis in this section presents various enplanement scenarios for DTO, as well as comparisons to enplanements in other similar markets. Due to the lack of recent historical context for commercial service activity, it is difficult to predict which of these scenarios is more likely to occur, and there is no guarantee that DTO will be able to develop and maintain consistent commercial service activity at all. For this reason, the enplanement projections are separate from the overall operations and based aircraft forecasts that will be submitted to TxDOT for review and approval. The purpose of preparing enplanement projections is to provide the City of Denton with the ability to begin preliminary planning for facilities and services to accommodate commercial activities, should the city decide to pursue commercial passenger operators at DTO in the future.

The enplanement projection scenarios resulted in a wide range of possibilities for DTO, from fewer than 10,000 annual enplanements to more than one million enplanements annually. The actual enplanement potential for DTO is somewhere in between these high and low figures. The TKI market analysis study identified a potential 2025 market range of between 178,000 and 888,000 annual enplanements, growing to a range of 273,000 to 1,367,000 annual enplanements by 2040. These ranges are similar to what was identified by the tertiary airport methodology. If DTO were to establish commercial service ahead of its competition, its enplanement levels would likely fall within a similar range. **Again, this enplanement scenario is not intended to serve as a forecast of activity. This information will be presented to airport staff, the planning advisory committee (PAC), and the public. Ultimately, any plan to move forward with identifying potential facility needs to accommodate commercial passenger activities at DTO will be based on feedback and guidance of the airport stakeholders.**

SUMMARY

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period, as well as the critical aircraft for the airport. Based aircraft are forecast to grow from 412 in 2024 to 717 by 2044. Operations are forecast to grow from 221,487 in 2024 to 323,995 by 2044. The projected growth is driven by the FAA's positive outlook for general aviation activity for the State of Texas and nationwide, as well as a positive outlook for socioeconomic growth (population, employment, and income/GRP) in Denton County and the broader Dallas-Fort Worth metroplex. Recent growth trends specific to DTO also factor into the projected growth.

The critical design aircraft for the airport was determined by examining the FAA TFMSC database of flight plans. The current critical design aircraft is represented by the Challenger 600, a twin-engine business jet typically utilized for business operations or air charters. The ultimate design aircraft is projected to fall within the C/D-III design category and is represented by ultra-long-range jets, such as the Gulfstream G550/G650.

Projections of aviation demand will be influenced by unforeseen factors and events in the future; therefore, it is not reasonable to assume future demand will follow the exact projection line, but forecasts of aviation demand tend to fall within the planning envelope over time. The forecasts developed for this master planning effort are considered reasonable for planning purposes. The need for additional facilities will be based on these forecasts; however, implementation of facility construction can be slower than planned if demand does not materialize as projected. Likewise, facility construction can be accelerated if demand exceeds these forecasts.

The next step in the planning process is to assess the capabilities of the existing facilities to determine what upgrades may be necessary to meet future demands. The range of forecasts developed here will be taken forward in the next chapter as planning horizon levels, which will serve as milestones or activity benchmarks in evaluating facility requirements.

Chapter Three

Facility Requirements

Chapter Three

Facility Requirements

Proper airport planning requires the translation of forecasted aviation demand into the specific types and quantities of facilities that can adequately serve the identified demand. This chapter analyzes the existing capacities of Denton Enterprise Airport (DTO) facilities. The existing capacities will then be compared to the forecasted activity levels prepared in Chapter Two to determine the adequacy of existing facilities and identify whether deficiencies currently exist or may be expected to materialize in the future. The chapter presents the following elements:

- Planning Horizon Activity Levels
- Airfield Capacity
- Airport Physical Planning Criteria
- Airside and Landside Facility Requirements

The objective of this effort is to identify (in general terms) the adequacy of existing airport facilities, outline what new facilities may be needed, and determine when these may be needed to accommodate forecasted demands. Once these facility requirements are established, alternatives for providing the facilities will be evaluated to determine the most practical, cost-effective, and efficient means for implementation.

The facility requirements for DTO were evaluated using guidance contained in several Federal Aviation Administration (FAA) publications, including the following:

- Advisory Circular (AC) 150/5300-13B, *Airport Design*
- AC 150/5060-5, *Airport Capacity and Delay*
- AC 150/5325-4B, *Runway Length Requirements for Airport Design*
- Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*
- FAA Order 5090.5, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS) and the Airports Capital Improvement Plan (ACIP)*

DEMAND-BASED PLANNING HORIZONS

An updated set of aviation demand forecasts for DTO has been established and was detailed in Chapter Two. These activity forecasts include annual aircraft operations, based aircraft, aircraft fleet mix, and peaking characteristics. With this information, specific components of the airfield and landside system can be evaluated to determine their capacity to accommodate future demand.

Cost-effective, efficient, and orderly development of an airport should rely more on actual demand at an airport than on a time-based forecast figure. In order to develop a master plan that is demand-based, rather than time-based, a series of planning horizon milestones has been established that takes into consideration the reasonable range of aviation demand projections. The planning horizons are the short term (years 1-5), the intermediate term (years 6-10), and the long term (years 11-20).

It is important to consider that the actual activity at the airport may be higher or lower than what the annualized forecast portrays. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts or changes in the area's aviation demand by allowing airport management the flexibility to make decisions and develop facilities based on need generated by actual demand levels. The demand-based schedule provides flexibility in development, as development schedules can be slowed or expedited according to demand at any given time over the planning period. The resultant plan provides airport officials with a financially responsible and needs-based program. **Table 3A** presents the short-, intermediate-, and long-term planning horizon milestones for each aircraft activity level forecasted in Chapter Two.

TABLE 3A | Aviation Demand Planning Horizons

	Base Year (2024)	Short Term (1-5 Years)	Intermediate Term (6-10 Years)	Long Term (11-20 Years)
BASED AIRCRAFT				
Single-Engine	306	351	401	520
Multi-Engine	58	68	79	105
Jet	34	40	46	65
Helicopter	14	16	19	25
Other	0	0	1	2
TOTAL BASED AIRCRAFT:	**412**	**475**	**546**	**717**
ANNUAL OPERATIONS				
Itinerant				
Air Carrier	14	14	14	14
Air Taxi	3,075	3,400	4,300	6,100
General Aviation	102,829	113,500	125,300	152,800
Military	51	81	81	81
Total Itinerant Operations:	**105,969**	**116,995**	**129,695**	**158,995**
Local				
General Aviation	115,514	126,284	138,057	165,000
Military	4	0	0	0
Total Local Operations:	**115,518**	**126,284**	**138,057**	**165,000**
TOTAL OPERATIONS:	**221,487**	**243,279**	**267,752**	**323,995**

Source: Coffman Associates analysis

AIRFIELD CAPACITY

An airport's airfield capacity is expressed in terms of its annual service volume (ASV). ASV is a reasonable estimate of the maximum level of aircraft operations that can be accommodated in a year without incurring significant delay factors. As aircraft operations near or surpass the ASV, delay factors increase exponentially. The airport's ASV was examined utilizing FAA AC 150/5060-5, *Airport Capacity and Delay*.

FACTORS AFFECTING ANNUAL SERVICE VOLUME

This analysis takes into account specific factors about the airfield in order to calculate the airport's ASV. These various factors are depicted in **Exhibit 3A**. The following describes the input factors as they relate to DTO, including airfield layout, weather conditions, aircraft mix, and operations.

- **Runway Configuration |** The existing airfield configuration consists of parallel runways. Primary Runway 18L-36R is 7,002 feet long and 150 feet wide. Secondary Runway 18R-36L is 5,003 feet long and 75 feet wide. The runways are separated by 840 feet, which means they can be used simultaneously during visual flight rules (VFR) weather conditions. Each runway end is equipped with instrument approach capabilities with visibility minimums down to ¾-mile and Runway 18L is equipped with ½-mile visibility minimums.

- **Runway Use |** Runway use in capacity conditions is controlled by wind and/or airspace conditions. For DTO, the direction of takeoffs and landings is typically determined by the speed and direction of the wind or as directed by the airport traffic controller. It is generally safest for aircraft to take off and land into the wind, avoiding crosswind (wind blowing perpendicular to the travel of the aircraft) or tailwind components during these operations. Runway usage data sourced from the FAA's *IFP, Operations, and Airspace Analytics (IOAA) Tool* are summarized in **Table 3B**. The runway usage data show that most arrivals and departures utilize the primary runway (18L-36R).

TABLE 3B | Runway Usage Data

	Runway				Unknown
	18L	36R	18R	36L	
Departures	64.4%	34.8%	0.5%	0.3%	0.1%
Arrivals	62.9%	33.6%	2.3%	0.9%	0.2%

Source: FAA, IFP, Operations, and Airspace Analytics (IOAA) Tool

- **Exit Taxiways |** Exit taxiways have a significant impact on airfield capacity because the number and locations of exits directly determine the occupancy time of an aircraft on the runway. The airfield capacity analysis gives credit to taxiway exits located within the prescribed range from a runway's threshold. This range is based on the mix index of the aircraft that use the runways. Based on mix, only exit taxiways between 2,000 feet and 4,000 feet from the landing threshold count in the exit rating at DTO. The exits must be at least 750 feet apart to count as separate exit taxiways. Utilizing these criteria, Runway 18L-36R is credited with one exit taxiway in each direction and Runway 18R-36L has none.

AIRFIELD LAYOUT

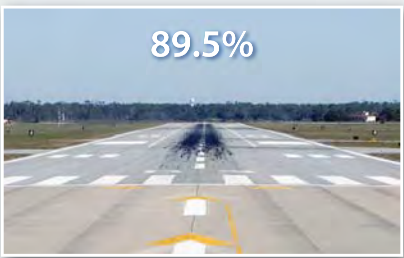
Runway Configuration

Runway Use

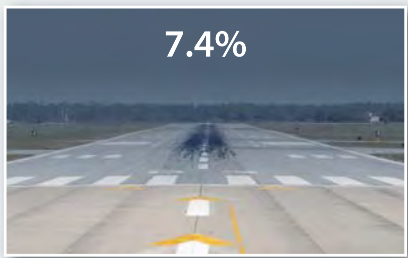
Number of Exits

WEATHER CONDITIONS

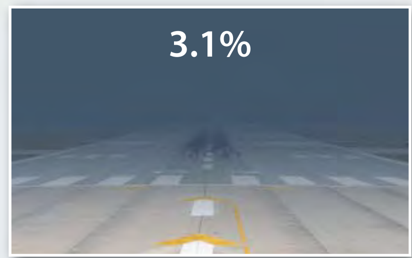
VMC (VFR)
Visual Meteorological Conditions



IMC (IFR)
Instrument Meteorological Conditions

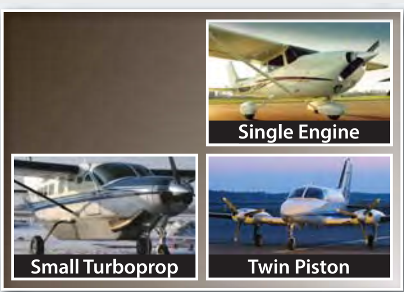


PVC
Poor Visibility Conditions



AIRCRAFT MIX

Category A & B Aircraft

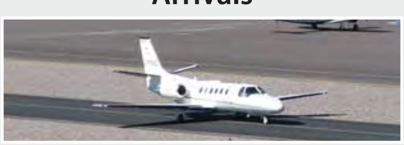


Category C Aircraft

Category D Aircraft

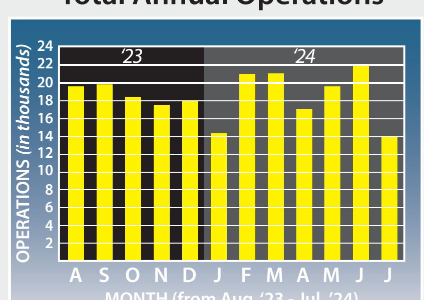
OPERATIONS

Arrivals



Departures

Total Annual Operations



Touch-and-Go Operations

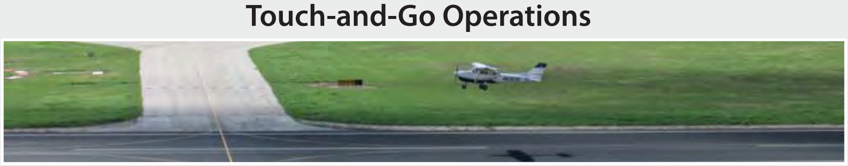


Exhibit 3A
AIRFIELD CAPACITY FACTORS

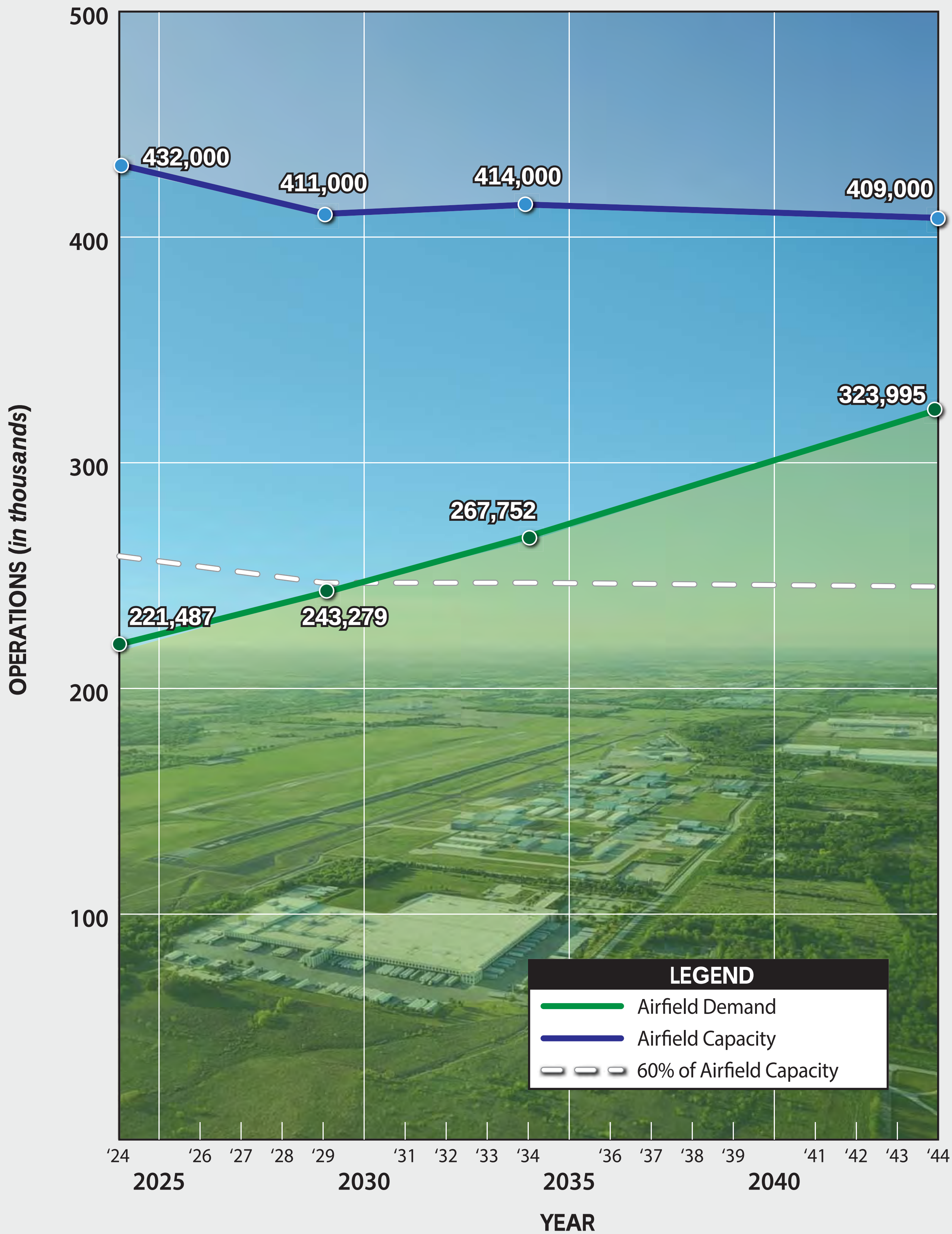


Exhibit 3A (continued)
AIRFIELD DEMAND VS. CAPACITY

- **Weather Conditions |** Weather conditions can have a significant impact on airfield capacity. Airport capacity is usually highest in clear weather when flight visibility is at its best. Airfield capacity is diminished as weather conditions deteriorate and cloud ceilings and visibility are reduced. As weather conditions deteriorate, the spacing of aircraft must increase to provide allowable margins of safety and air traffic vectoring. The increased distance between aircraft reduces the number of aircraft that can operate at the airport during any given period, thus reducing overall airfield capacity.

  According to local meteorological data, the airport operates under visual meteorological conditions (VMC) approximately 89.5 percent of the time. VMC exist whenever the cloud ceiling is greater than 1,000 feet above ground level (AGL) and visibility is greater than three statute miles. Instrument meteorological conditions (IMC) are defined when cloud ceilings are between 500 and 1,000 feet AGL or visibility is between one and three miles. Poor visibility conditions (PVC) apply for cloud ceilings below 500 feet and visibility minimums below one mile. **Table 3C** summarizes the weather conditions experienced at the airport over a 10-year period of time.

TABLE 3C | Weather Conditions

Condition	Cloud Ceiling	Visibility	Percent of Total
VMC	≥ 1,000' AGL	> 3 statute miles	89.5%
IMC	≥ 500' AGL to < 1,000' AGL	1-3 statute miles	7.4%
PVC	< 500' AGL	< 1 statute mile	3.1%

VMC = visual meteorological conditions
IMC = instrument meteorological conditions
PVC = poor visibility conditions
AGL = above ground level

Source: Denton Municipal Airport, TX US Station: 72258903991, 2014-2023

- **Aircraft Mix |** The aircraft mix for the capacity analysis is defined in terms of four aircraft classifications. Classes A and B consist of small- and medium-sized propeller aircraft and some jet aircraft, all of which weigh 12,500 pounds or less. These aircraft are primarily associated with general aviation activity but include some air taxi, air cargo, and commuter aircraft. Class C consists of aircraft that weigh between 12,500 pounds and 300,000 pounds. These aircraft include most business jets and some turboprop aircraft that utilize the airport on a regular basis. Class D consists of aircraft that weigh more than 300,000 pounds.

  Most operations at DTO are by aircraft in Classes A, B, and C. According to the FAA's Traffic Flow Management System Counts (TFMSC) data for 2024, there were approximately 4,266 total operations by Class C aircraft at DTO, which represents approximately 1.9 percent of all operations. Class D aircraft do not operate at DTO; therefore, remaining operations are within Classes A and B, which represent 98.1 percent of total operations. It is anticipated that operations by Class C aircraft will represent approximately 3.4 percent of total operations by 2044.

- **Percent Arrivals |** The percentage of arrivals as they relate to total operations of the airport is important in determining airfield capacity. Under most circumstances, the lower the percentage of arrivals, the higher the hourly capacity will be. The aircraft arrival/departure percentage split at general aviation airports is typically 50/50, which is the case at DTO.

- **Touch-and-Go Activity |** A touch-and-go operation involves an aircraft making a landing and then an immediate takeoff without coming to a full stop or exiting the runway. As previously discussed in Chapter Two, these operations are normally associated with general aviation training activity and are classified as local operations. A high percentage of touch-and-go traffic normally results in a higher operational capacity because one landing and takeoff occurs within a shorter period than individual operations. Touch-and-go operations at DTO accounted for 52 percent of total annual operations in 2024. This percentage is anticipated to drop slightly to 51 percent, as itinerant operations are expected to grow at a slightly faster pace over the planning period.

- **Peak Period Operations |** Average daily operations and average peak hour operations during the peak month are utilized for the airfield capacity analysis and are based on operational data collected from the airport traffic control tower, which is operational from 6:00 a.m. to 10:00 p.m. daily. Operations activity is important in the calculation of an airport's ASV, as peak demand levels occur sporadically. The peak periods used in the capacity analysis are representative of normal operational activity and can be exceeded at various times throughout the year. The forecasts for this master plan identified current average daily operations at 735 operations and current peak hour operations at 129 operations. By the long term, average daily operations are projected to grow to 1,120 and peak hour operations are projected to increase to 197. This results in an annual operations to average daily demand ratios of 301 in 2024 and 289 by 2044. The ratio of average daily operations to peak hour operations is 5.7 through the planning period.

CALCULATION OF ANNUAL SERVICE VOLUME

The preceding information was used in conjunction with the airfield capacity methodology developed by the FAA to determine airfield capacity for DTO.

Hourly Runway Capacity

The first step in determining ASV involves the computation of the hourly capacity of the runway configuration. The percentage use of the runway, the amount of touch-and-go activity, and the number and locations of runway exits are the important factors in determining hourly capacity.

As the operational mix of aircraft at the airport changes to include a higher percentage of Class C aircraft that weigh over 12,500 pounds, the hourly capacity of the system slightly declines. This is a result of the additional spacing and time required by larger aircraft in the traffic pattern and on the runway.

The current and future weighted hourly capacities are presented in **Table 3D**. Weighted hourly capacity is the measure of the maximum number of aircraft operations that can be accommodated on the airfield in a typical hour. It is a composite of estimated hourly capacities for different airfield operating configurations adjusted to reflect the percentage of time in an average year that the airfield operates under each specific configuration. The current weighted hourly capacity on the airfield is 252 operations; the capacity is expected to decline slightly to 249 operations by the long-term horizon.

TABLE 3D | Airfield Capacity Summary

	Base Year (2024)	Short Term (1-5 Years)	Intermediate Term (6-10 Years)	Long Term (11-20 Years)
Operational Demand				
Annual	221,487	243,279	267,752	323,995
Capacity				
Annual Service Volume	432,000	411,000	414,000	409,000
Percent Capacity	51.3%	59.2%	64.7%	79.2%
Weighted Hourly Capacity	252	250	250	249

Sources: FAA AC 150/5060-5, Airport Capacity and Delay; Coffman Associates analysis

Annual Service Volume

The ASV is determined by the following equation:

Annual Service Volume = C x D x H
C = weighted hourly capacity
D = ratio of annual demand to the average daily demand during the peak month
H = ratio of average daily demand to the design hour demand during the peak month

The current ASV for the airfield has been estimated at 432,000 operations. **The increasing percentage of larger Class C aircraft over the planning period will contribute to a decline in ASV**, lowering it to a level of approximately 409,000 operations by the end of the planning period. With 2024 operations (12 months ending July 2024) at 221,487, the airport is currently at 51.3 percent of its ASV. Long-range annual operations are forecasted to reach 323,995, which would equate to 79.2 percent of the airport's ASV.

Table 3D and the reverse side of **Exhibit 3A** summarize and compare the airport's ASV and projected annual operations over the short-, intermediate-, and long-range planning horizons.

AIRCRAFT DELAY

The effect the anticipated ratio of demand to capacity will have on users of DTO can be measured in terms of delay. As the number of annual aircraft operations approaches the airfield's capacity, increasing operational delays begin to occur. Delays to arriving and departing aircraft occur in all weather conditions. Arriving aircraft delays result in aircraft holding outside the airport traffic pattern area. Departing aircraft delays result in aircraft holding at the runway end until they can safely take off.

Aircraft delay can vary depending on different operational activities at an airport. At airports where large air carrier aircraft dominate, delay can be greater, given the amount of time these aircraft require in the traffic pattern and on approach to land. For airports that accommodate primarily general aviation aircraft, such as DTO, experienced delay is typically lower because these aircraft are more maneuverable and require less time in the airport traffic pattern.

Table 3E summarizes the potential aircraft delay for DTO. Estimates of delay provide insight into the impacts steady increases in aircraft operations have on the airfield and signify the airport's ability to accommodate projected annual aircraft operations. The delay per operation represents an average delay per aircraft. It should be noted that delays of five to 10 times the average could be experienced by individual aircraft during peak periods. As an airport's percent capacity increases toward the ASV, delay increases exponentially. Furthermore, complexities in the airspace system that surrounds an airport can also factor into additional delay experienced at the facility.

TABLE 3E | Airfield Delay Summary

	Base Year (2024)	Short Term (1-5 years)	Intermediate Term (6-10 years)	Long Term (11-20 years)
Percent Capacity	51.3%	59.2%	64.7%	79.2%
Delay				
Per Operation (Seconds)	23	30	36	54
Total Annual (Hours)	1,415	2,027	2,678	4,860

Sources: FAA AC 150/5060-5, Airport Capacity and Delay; Coffman Associates analysis

Current annual delay is estimated at 23 seconds per aircraft operation, or 1,415 total annual hours. Analysis of delay factors for the long-term planning horizon indicates that annual delays can be expected to reach 54 seconds per aircraft operation, or 4,860 annual hours.

CAPACITY ANALYSIS CONCLUSION

FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*, indicates that improvements for airfield capacity purposes should be considered when operations reach 60 to 75 percent of the ASV. This is an approximate level to begin the detailed planning of capacity improvements. When 80 percent of the ASV is reached, capacity improvement projects should become higher-priority capital improvements. According to this analysis, operations levels at DTO will reach approximately 79 percent by the long-term planning period. As such, capacity enhancements at DTO should be considered. The projected activity levels for DTO do not warrant consideration of additional runways; however, other capacity enhancements, such as adding exit taxiways to both runways, can enhance airfield capacity. For instance, adding two to three additional exits increases operational capacity by eight to nine percent. These types of capacity enhancements will be considered in the alternatives analysis.

AIRSIDE FACILITY REQUIREMENTS

Airside facilities include those facilities related to the arrival, departure, and ground movement of aircraft. Airside facility requirements are based primarily on the runway design code (RDC) for each runway. Analysis in Chapter Two identified the existing RDCs as C-II-2400 for Runway 18L-36R and B-II-4000 for Runway 18R-36L. Ultimately, Runway 18L-36R is planned to meet RDC C/D-III-2400 design standards, while Runway 18R-36L will remain at B-II-4000 design standards.

RUNWAYS

Runway conditions, such as orientation, length, width, and pavement strength, were analyzed at DTO. From this information, requirements for runway improvements were determined for the airport.

Runway Orientation

According to FAA Order 5100.38D, *Airport Improvement Handbook*, only one runway at any NPIAS airport is eligible for ongoing maintenance and rehabilitation funding unless the FAA Airports District Office (ADO) has made a specific determination that a crosswind or secondary runway is justified. A runway that is not a primary runway, crosswind runway, or secondary runway is an *additional* runway, which is not eligible for FAA funding. It is not unusual for a two-runway airport to have a primary runway and an additional runway, and no crosswind or secondary runway. **Table 3F** presents the eligibility requirements for runway types.

TABLE 3F | Runway Eligibility

The following runway type...	Must meet all of the following criteria...	And is...
Primary Runway	1. A single runway at an airport is eligible for development consistent with FAA design and engineering standards.	Eligible
Crosswind Runway	1. The wind coverage on the primary runway is less than 95%.	Eligible if justified
Secondary Runway	1. There is more than one runway at the airport. 2. The non-primary runway is not a crosswind runway. 3. Either of the following: a. The primary runway is operating at 60% or more of its annual capacity. b. The FAA has made a specific determination that the runway is required.	Eligible if justified
Additional Runway	1. There is more than one runway at the airport. 2. The non-primary runway is not a crosswind runway. 3. The non-primary runway is not a secondary runway.	Ineligible

Source: FAA Order 5100.38D, AIP Handbook

FAA AC 150/5300-13B, *Airport Design*, recommends that a crosswind runway should be made available when the primary runway orientation provides less than 95 percent wind coverage for any aircraft forecasted to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (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 A-III, B-III, and C-I through D-II; and 20 knots (23 mph) for ARC C-III through D-IV.

As noted in the inventory chapter (see **Exhibit 1D**), wind data obtained on-site show the orientation of the parallel runways provides 96 percent or greater coverage for all applicable crosswind components; thus, the current runway orientation at DTO provides adequate wind coverage for all-weather conditions and a crosswind runway is not warranted.

For DTO to qualify for maintenance of a parallel runway, the airfield must operate at 60 percent or greater of its ASV. As previously stated, DTO is projected to exceed 60 percent of its ASV in the short- to intermediate-term period. Furthermore, DTO justified the construction of its parallel runway due to historical operations levels consistently exceeding 60 percent of a single runway ASV;[1] therefore, DTO meets the threshold for maintaining a secondary (parallel) runway, which is eligible for FAA funding.

[1] A single runway configuration has an estimated ASV of approximately 230,000 annual operations.

Runway Designations

A runway's designation is based on its magnetic headings, which are determined by the magnetic declination for the area. The magnetic declination near DTO is 2° 51' E ± 0° 6' W per year.[2] Both runways at DTO have true headings of 181°/361°. Adjusting for the magnetic declination, the current magnetic heading of both runways is 178°/358°, which would typically result in designations of 18R-36L and 18L-36R; therefore, no runway designation changes are recommended.

Runway Length

There are three methodologies for determining runway length requirements, which are based on the maximum takeoff weight (MTOW) of the critical aircraft or the airplane group for each runway. The airplane group consists of multiple aircraft with similar design characteristics. The three weight classifications are those airplanes with a MTOW of 12,500 pounds or less, those that weigh over 12,500 pounds but less than 60,000 pounds, and those that weigh 60,000 pounds or more. **Table 3G** shows these classifications and the appropriate methodology to use in runway length determination.

TABLE 3G | Airplane Weight Classification for Runway Length Requirements

Airplane Weight Category (MTOW)		Design Approach	Methodology
12,500 pounds or less	Approach speeds of less than 30 knots	Family grouping of small airplanes	Chapter 2: para. 203
	Approach speeds of at least 30 knots but less than 50 knots	Family grouping of small airplanes	Chapter 2: para. 204
	Approach speeds of 50 knots or more with fewer than 10 passenger seats	Family grouping of small airplanes	Chapter 2: para. 205, Figure 2-1
	Approach speeds of 50 knots or more with 10 or more passenger seats	Family grouping of small airplanes	Chapter 2: para. 205, Figure 2-2
Over 12,500 pounds but less than 60,000 pounds		Family grouping of large airplanes	Chapter 3: Figures 3-1 or 3-2 and Tables 3-1 or 3-2
60,000 pounds or more, or regional jets		Individual large airplanes	Chapter 4: *Airplane Performance Manuals*

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

The determination of runway length requirements for the airport is based on five primary factors:

- Mean maximum temperature of the hottest month
- Airport elevation
- Runway gradient
- Critical aircraft type expected to use the runway
- Stage length of the longest non-stop destination (specific to larger aircraft)

The mean maximum daily temperature of the hottest month for DTO is 95.7 degrees Fahrenheit (°F), which occurs in July. The airport elevation is 642.7 feet mean sea level (MSL). The primary runway (18R-36L) has a gradient of 0.18 percent.

[2] National Oceanic and Atmospheric Administration (NOAA)

Small General Aviation Aircraft (≤12,500 pounds)

Most operations occurring at DTO are conducted using smaller general aviation (GA) aircraft that weigh less than 12,500 pounds. Following guidance from AC 150/5325-4B, to accommodate 95 percent of these small aircraft with fewer than 10 passenger seats, a runway length of 3,400 feet is recommended. For 100 percent of these small aircraft, a runway length of 4,000 feet is recommended. For small aircraft with 10 or more passenger seats, 4,400 feet of runway length is recommended.

Small and Mid-Size Turbine Aircraft (12,500–60,000 pounds)

Turbine operations comprise a smaller percentage of DTO operations, but this category of activity is projected to experience strong growth over the planning period. Runway length requirements for this classification of aircraft also utilize charts from AC 150/5325-4B and take into consideration the runway gradient and landing length requirements for contaminated (wet) runways. Business jets tend to need greater runway length when landing on wet surfaces because of their increased approach speeds. AC 150/5325-4B stipulates that runway length determination for business jets should consider a grouping of airplanes with similar operating characteristics. The AC provides two separate family groupings of airplanes, each of which is based on its representative percentage of aircraft in the national fleet. The first grouping is those business jets that comprise 75 percent of the national fleet, and the second group is those that comprise 100 percent of the national fleet. **Table 3H** shows example aircraft for both groups.

TABLE 3H | Aircraft Categories for Runway Length Determination

0-75 Percent of the National Fleet	MTOW (pounds)	75-100 Percent of the National Fleet	MTOW (pounds)
Challenger 300	38,850	Lear 55	21,500
Lear 40/45	20,500	Lear 60	23,500
Cessna 550 Citation II	14,100	Hawker 800XP	28,000
Cessna 560XL Excel	20,000	Hawker 1000	31,000
Cessna 650 VII	22,000	Cessna 650 III/IV	22,000
Cessna 680 Sovereign	30,775	Cessna 750X	35,700
Beechjet 400	15,800	Challenger 604	47,600
Falcon 50	18,500	Falcon 2000	42,800
MTOW = maximum takeoff weight			

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

The following is the five-step process for determining the recommended runway length for aircraft with MTOWs between 12,500 pounds and 60,000 pounds.

Step #1: Identify the critical airplane or airplane group.

This runway length analysis assumes the critical aircraft is a mid-sized business jet that weighs less than 60,000 pounds MTOW. There are more than 500 annual operations by these types of aircraft at DTO. In this case, the appropriate runway length methodology is to examine the general runway length tables from Chapter 3 of AC 150/5325-4B for aircraft that weigh between 12,500 pounds and 60,000 pounds.

Step #2: Identify the airplanes or airplane group that will require the longest runway length at MTOW.

Business jets typically require the longest runway lengths; therefore, the runway length curves in Chapter 3 of AC 150/5325-4B will be examined for future conditions.

Step #3: Determine which of the three methods described in the AC will be used for establishing the runway length.

In consideration of the growing number of business jets, it is necessary to select the specific methodology to use for the business jets. Chapter 3 of the AC groups business jets that weigh over 12,500 pounds but less than 60,000 pounds into the following two categories:

- 75 percent of the fleet
- 100 percent of the fleet

The AC states that airplanes in the 75 percent of the fleet category generally need 5,000 feet or less of runway at MSL and standard day temperature (59°F), while those in the 100 percent of the fleet category need more than 5,000 feet of runway under the same conditions.

The AC indicates that the airport designer must determine which category to use for runway length determination. DTO experiences significant levels of business jet activity from the full range of the business jet fleet.

Two runway length curves are presented in the AC under the 75-100 percent category:

- 60 percent useful load
- 90 percent useful load

The useful load is the difference between the maximum allowable structural weight and the operating empty weight (OEW). The useful load consists of passengers, cargo, and usable fuel. The determination of which useful load category to use will have a significant impact on the recommended runway length; however, it is inherently difficult to determine because of the variable needs of each aircraft operator. For shorter flights, pilots may take on less fuel; however, pilots may choose to ferry fuel so that they do not have to refuel frequently. Because of the variability in aircraft weights and haul lengths, the 60 percent useful load category is typically considered the default, unless there are specific known operations that would suggest using the 90 percent useful load category. For DTO, there are occasional long-haul operations that would suggest consideration of the 90 percent useful load classification. TFMSC data document city pairs by departing aircraft. An examination of the destinations shows there were 99 departures from DTO in 2024 to destination airports that are 1,000 miles or more away. Most flights departing DTO are short-haul flights to destinations less than 1,000 miles away, but due to the occasional long-haul flight, both the 60 and 90 percent useful load categories are included when calculating runway length requirements for business jets that weigh between 12,500 and 60,000 pounds.

Step #4: Select the recommended runway length from the appropriate methodology.

The next step is to examine the performance charts. These charts require the following inputs:

- The mean maximum daily temperature of the hottest month: July at 95.7°F
- The airport elevation: 642.7 feet above MSL

Step #5: Apply any necessary adjustments to the obtained runway length.

The raw runway lengths calculated in Step #4 are based on no wind, a dry runway surface, and zero effective runway gradient; therefore, the following criteria are applied:

- Wet runway surface (applies to landing operations only)
- 0.18 percent effective runway gradient, 12.3 feet of elevation difference for Runway 18R-36L (applies to takeoff operations only)

To account for a wet/contaminated surface, the runway length obtained from the load performance chart used in Step #4 is increased by 15 percent, or up to 5,000 feet, for the 60 percent category and 7,000 feet for the 90 percent category (whichever is less).

The runway length obtained from Step #4 is also increased at the rate of 10 feet for each foot of elevation difference between the high and low points of the runway centerline. At DTO, this equates to an additional 123 feet of runway length.

Table 3J presents the results of the runway length analysis for business jets that weigh between 12,500 and 60,000 pounds, developed following the guidance outlined in the steps above. This analysis shows the existing length of primary Runway 18L-36R (7,002 feet) exceeds the recommended length for 100 percent of the business jet fleet at 90 percent useful load.

TABLE 3J | Runway Length Requirements – Aircraft Between 12,500 and 60,000 Pounds

Airport Elevation	642.7' feet above mean sea level			
Average High Monthly Temp.	95.7°F (July)			
Runway Gradient	0.18% Runway 18R-36L (12.3')			
Fleet Mix Category	**Raw Runway Length from FAA AC**	**Runway Length with Gradient Adjustment**	**Wet Surface Landing Length for Jets (+15%)[1]**	**Final Runway Length[2]**
75% of fleet at 60% useful load	4,842'	4,965'	5,500'	5,500'
100% of fleet at 60% useful load	5,880'	6,003'	5,500'	6,000'
75% of fleet at 90% useful load	7,146'	7,269'	7,000'	7,300'
100% of fleet at 90% useful load	9,375'	9,498'	7,000'	9,500'

[1]Max 5,500' for 60% useful load and max 7,000' for 90% useful load in wet conditions
[2]Longest runway need rounded up to nearest hundred

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

Supplemental Analysis Undertaken for Typical Business Jets Operating with Local Conditions

Another method to determine runway length requirements for aircraft at DTO is to examine aircraft flight planning manuals under conditions specific to the airport. **Table 3K** provides a detailed runway length analysis for several of the most common airplane design group (ADG) C and D turbine aircraft in the national fleet. These data were obtained from UltraNav software, which computes operational parameters for specific aircraft based on flight manual data. The analysis includes the MTOW allowable and the percent useful load from 60 percent to 100 percent.

TABLE 3K | Supplemental Business Aircraft Takeoff Length Requirements

		TAKEOFF LENGTH REQUIREMENTS (feet)				
		Useful Load				
Aircraft	MTOW	60%	70%	80%	90%	100%
Challenger 300	38,850	4,554	4,988	5,437	5,909	6,400
Challenger 601	**45,100**	**5,130**	**5,710**	**6,360**	**7,090**	**7,900**
Citation III	21,500	4,596	5,060	5,562	C/L	C/L
Citation X	35,700	4,728	5,151	5,651	6,194	6,768
Falcon 2000	35,800	4,890	5,349	5,836	6,349	7,228
Falcon 50EX	41,000	4,507	4,984	5,488	6,020	6,510
Falcon 900EX	49,200	4,330	4,880	5,540	6,210	6,820
Global Express	98,000	4,831	5,409	6,017	6,653	7,323
Gulfstream G280	39,600	4,325	4,775	5,283	5,829	6,434
Gulfstream G450	74,600	4,587	5,048	5,568	6,119	6,711
Gulfstream G550	**91,000**	**4,717**	**5,400**	**6,092**	**6,844**	**7,630**
Gulfstream G650	**99,600**	**4,991**	**5,491**	**6,064**	**6,720**	**7,479**
Hawker 1000	31,000	5,460	6,100	6,740	C/L	C/L
Hawker 4000	39,500	4,371	4,746	5,147	5,586	6,151
Lear 60	23,500	5,275	5,819	6,379	6,931	7,628

Red figures are greater than 7,002 feet (length of the primary runway at DTO).
Critical aircraft is in **bold**.
Runway length calculation assumptions: 642.7' MSL field elevation; 95.7°F ambient temperature; 0.18% runway grade
C/L = climb limited: aircraft cannot maintain required climb gradient
MTOW = maximum takeoff weight
Source: UltraNav software

The analysis shows that each jet examined can operate at DTO during the hottest periods of the summer at useful loads up to 80 percent and all but three jets can operate at 90 percent useful loads. One of the three jets that are limited at 90 percent useful load is the Challenger 601 (a variant of the Challenger 600 critical aircraft). The Gulfstream G550 and G650, which are ultimate critical aircraft, can operate at 90 percent useful loads.

Table 3L presents the runway length required for landing under three operational categories: Title 14 Code of Federal Regulations (CFR) Part 91, CFR Part 135, and CFR Part 91k. CFR Part 91 operations are those conducted by individuals or companies that own their aircraft and are operating privately. CFR Part 135 applies to all for-hire charter operations, including most fractional ownership operations. CFR Part 91k includes operations in fractional ownership that utilize their own aircraft under the direction of pilots specifically assigned to said aircraft. Part 91k and Part 135 rules regarding landing operations require an operator to land at the destination airport within 60 percent of the effective runway length. An additional rule allows an operator to land within 80 percent of the effective runway length if the operator has an approved destination airport analysis in the airport's program operating manual. The landing length analysis conducted accounts for both scenarios.

The landing length analysis shows that all jets examined are capable of landing at DTO during dry runway conditions. During wet runway conditions, the three critical aircraft, when landing at maximum landing weight and during the hottest period of the year, can land at DTO in all but the 60 percent rule condition.

TABLE 3L | Supplemental Business Aircraft Landing Length Requirements

		LANDING LENGTH REQUIREMENTS (feet)					
		Dry Runway Condition			Wet Runway Condition		
Aircraft	MLW	Part 91	80% Rule	60% Rule	Part 91	80% Rule	60% Rule
Challenger 300	33,750	2,638	3,298	4,397	5,057	6,321	8,428
Challenger 601	**36,000**	**3,370**	**4,213**	**5,617**	**4,044**	**5,055**	**6,740**
Citation III	19,000	3,794	4,743	6,323	5,443	6,804	9,072
Citation X	31,800	3,901	4,876	6,502	5,568	6,960	9,280
Falcon 2000	33,000	3,165	3,956	5,275	3,640	4,550	6,067
Falcon 50EX	35,715	2,965	3,706	4,942	3,410	4,263	5,683
Falcon 900EX	44,500	3,716	4,645	6,193	4,274	5,343	7,123
Global Express	78,600	2,702	3,378	4,503	3,107	3,884	5,178
Gulfstream G280	32,700	3,019	3,774	5,032	3,472	4,340	5,787
Gulfstream G450	66,000	3,302	4,128	5,503	5,671	7,089	9,452
Gulfstream G550	**75,300**	**2,809**	**3,511**	**4,682**	**5,101**	**6,376**	**8,502**
Gulfstream G650	**83,500**	**3,782**	**4,728**	**6,303**	**4,996**	**6,245**	**8,327**
Hawker 1000	25,000	2,915	3,644	4,858	3,982	4,978	6,637
Hawker 4000	33,500	3,272	4,090	5,453	3,763	4,704	6,272
Lear 60	19,500	3,659	4,574	6,098	4,930	6,163	8,217

Red figures are greater than 7,002 feet (length of the primary runway at DTO).
Critical aircraft is in **bold**.
Runway length calculation assumptions: 642.7' MSL field elevation; 95.7°F ambient temperature; 0.18% runway grade
MLW = maximum landing weight

Source: UltraNav software

Runway Length Summary

Many factors are considered when determining appropriate runway length for safe and efficient operations of aircraft at DTO. The airport should strive to accommodate business jets and turboprop aircraft to the greatest extent possible as demand dictates. Runway 18L-36R is currently 7,002 feet long, which exceeds the FAA's recommended length for runways accommodating 100 percent of the business jet fleet that weigh between 12,500 and 60,000 pounds when operating at 60 percent useful load (the recommended length is 6,000 feet). The existing length is 300 feet shy of meeting the FAA-recommended length of 7,300 feet for accommodating 75 percent of the business jet fleet at 90 percent useful load and 2,500 feet shy of meeting the recommended length for 100 percent of the fleet at 90 percent useful load.

The supplemental runway length analysis shows that the available length accommodates takeoff by the existing and ultimate critical aircraft up to 80 percent useful loads and landing in almost all conditions. The exception for landing is limitations on the Gulfstream G550/G650 (ultimate critical aircraft) when landing on a wet runway configuration under the Part 139/91k 60 percent rule, which requires a length of between 8,300 and 8,500 feet.

The previous master plan for DTO maintained Runway 18L-36R at its current length of 7,002 feet. The runway length analysis confirms the existing length is sufficient to accommodate the existing and future critical aircraft during most operational conditions; however, additional length is needed to cover all conditions. Extending Runway 18L-36R comes with significant challenges; Hickory Creek, located approximately 670 feet south of the runway, and Dry Fork Hickory Creek, located approximately 630 feet north of the runway, would need to be rerouted and filled/graded to support an extension in either direction. These would be significant undertakings in terms of fill alone; Hickory Creek is approximately

35 feet below the elevation of the runway platform. The creek to the north has less extreme elevation differences from the runway platform but is still approximately 15 to 20 feet lower in elevation. **Due to the existing constraints and the fact that the existing runway length is adequate in most operational conditions for the existing and future critical aircraft, it is recommended that Runway 18L-36R remain at its current length of 7,002 feet.**

Runway 18R-36L is planned to accommodate smaller aircraft operating at the airport within aircraft approach category (AAC) A and B and ADG I and II. The runway length analysis showed that the existing length of 5,003 feet exceeds the FAA-recommended length to accommodate all small general aviation aircraft with 10 or more passenger seats, which is 4,400 feet. Because the B-II category includes some small and mid-sized business jets, it is prudent to plan Runway 18R-36L to satisfy, at a minimum, the FAA-recommended length to accommodate 75 percent of the business jet fleet at 60 percent useful load, which is 5,500 feet. Unlike Runway 18L-36R, the secondary runway at DTO is less constrained by surrounding creeks, and the smaller safety areas associated with the B-II design make it a better candidate for an extension; **therefore, the alternatives chapter will consider extension options for Runway 18R-36 to a minimum length of 5,500 feet.**

Runway Width

For Runway 18L-36R, existing RDC C-II-2400 and ultimate RDC C/D-III-2400 design criteria stipulate a runway width of 100 feet. At 150 feet wide, the existing Runway 18L-36R width exceeds the design standard. Design standards only stipulate a width requirement of 150 feet if the design aircraft has a MTOW greater than 150,000 pounds. The existing critical aircraft, the Challenger 600, has a MTOW of 45,100 pounds and the ultimate critical aircraft, the Gulfstream G550/G650, have MTOWs of less than 100,000 pounds; therefore, the existing and ultimate justified width for Runway 18L-36R is 100 feet. This justification applies to FAA funding for future maintenance (major rehabilitation/reconstruction). In the event the FAA will only support maintaining 100 feet of runway width, the airport sponsor can choose to reduce the runway width or fund the maintenance of the additional 50 feet.

For Runway 18R-36L, RDC B-II-4000 standards stipulate a runway width of 75 feet. At 75 feet wide, Runway 18R-36L meets the existing/ultimate design standard. No runway width changes are planned for the secondary runway.

Runway Shoulders

Runway shoulders provide resistance to soil erosion, decrease the likelihood of engine ingestion of foreign objects, and accommodate the passage of maintenance and emergency equipment, as well as the occasional passage of aircraft deviating from the runway. Like design standards for runway width, runway shoulder width is determined by the RDC. Paved shoulders are required for ADG IV and higher runways and are recommended for ADG III runways. Turf, aggregate-turf, soil cement, or lime or bituminous stabilized soil are recommended adjacent to runways accommodating ADG I and ADG II aircraft.

Neither runway at DTO currently has paved shoulders. The ADG III shoulder width design standard is 20 feet and the ADG II shoulder width design standard is 10 feet. The alternatives will consider adding paved shoulders to both runways.

Blast Pads

Blast pads are paved surfaces adjacent to the ends of runways that provide erosion protection from jet blast and propeller wash. According to the FAA, blast pads must always be paved, must extend across the full width of the runway plus the shoulders, and must be able to support the occasional passage of the most demanding aircraft, as well as maintenance and emergency response vehicles. Blast pad dimensions are detailed in FAA AC 150/5300-13B and are determined by the RDC of the critical design aircraft ARC. Under ultimate C/D-III design standards, blast pads are not a design requirement; however, the construction of blast pads could be considered if the airport experiences significant erosion issues due to increasing jet traffic. Recommended blast pad dimensions for Runway 18L-36R are 140 feet wide and 200 feet long. Blast pad dimensions for B-II design standards that apply to Runway 18R-36L are 95 feet wide and 150 feet long.

Pavement Strength

An important feature of airfield pavement is its ability to withstand repeated use by aircraft. For Runway 18L-36R, the pavement should be designed to handle the heaviest business jets that routinely operate at DTO, including the ultimate critical aircraft, the Gulfstream G650, which has a MTOW of 99,600 pounds on dual wheel main landing gear. Secondary Runway 18R-36L should have adequate pavement strength to accommodate routine operations by smaller aircraft, including its future critical aircraft, the King Air 350, which has a MTOW of 16,500 pounds on dual wheel main landing gear.

As shown in **Table 3M**, the existing pavement strengths are adequate to accommodate the designated future critical aircraft for each runway. No additional strength is recommended for either runway.

TABLE 3M | Pavement Strength Requirements

Runway	Single Wheel Loading (SWL) Rating	Dual Wheel Loading (DWL) Rating	Future Critical Aircraft MTOW	Additional Strength Needed?
Runway 18L-36R	70,000 pounds	100,000 pounds	99,600 pounds DWL (Gulfstream G650)	No
Runway 18R-36L	30,000 pounds	50,000 pounds	16,500 DWL (King Air 350)	No

Source: Coffman Associates analysis

It should be noted that strength ratings do not preclude aircraft that weigh more than the published strength rating from using the runway. All federally obligated airports must remain open to the public, and it is typically up to the pilot of an aircraft to determine if a runway can safely support their aircraft. An airport sponsor cannot restrict an aircraft from using the runway simply because its weight exceeds the published strength rating. On the other hand, the airport sponsor has an obligation to properly maintain the runway and protect the useful life of the runway (typically 20 years).

The strength rating of a runway can change over time. Regular usage by heavier aircraft can decrease the strength rating, while periodic runway resurfacing can increase the strength rating.

SAFETY AREA DESIGN STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions. These include the runway safety area (RSA), runway object free area (ROFA), runway obstacle free zone (ROFZ), and runway protection zone (RPZ).

The entire RSA, ROFA, and ROFZ must be under the direct ownership of the airport sponsor to ensure these areas remain free of obstacles and can be readily accessed by maintenance and emergency personnel. RPZs should also be under airport ownership. An alternative to outright ownership of the RPZ is the purchase of avigation easements (acquiring control of designated airspace within the RPZ) or having sufficient land use control measures in place that ensure the RPZ remains free of incompatible development. The various existing airport safety areas and their dimensions are presented on **Exhibit 3B**.

Runway Safety Area

The RSA is defined in FAA AC 150/5300-13B, *Airport Design*, as a "surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of undershoot, overshoot, or excursion from the runway." The RSA is centered on the runway and dimensioned in accordance with the approach speed of the critical design aircraft using the runway. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating the design aircraft and fire and rescue vehicles, and free of obstacles not fixed by navigational purpose, such as runway edge lights or approach lights.

For existing C-II-2400 and ultimate C/D-III-2400 design standards on Runway 18L-36R, the FAA calls for the RSA to be 500 feet wide and extend 1,000 feet beyond the runway ends and 600 feet prior to the landing threshold. Hickory Creek to the south of the runway and Dry Fork Hickory Creek north of the runway restrict the ability to meet the full 1,000 feet of RSA beyond the runway ends. As a result, the airport has applied declared distances, which limit the use of some runway pavement for landing and takeoff operations so the runway can meet RSA standards.

Declared distances are used to define the effective runway length for landing and takeoff when a standard RSA or ROFA cannot be achieved or an RPZ needs to be relocated.

The four declared distances include the following:

- Takeoff run available (TORA) – the runway length declared available and suitable for the ground run of an aircraft taking off (factors in the positioning of the departure RPZ)
- Takeoff distance available (TODA) – the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA; the full length of the TODA may need to be reduced because of obstacles in the departure area
- Accelerate-stop distance available (ASDA) – the runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff (factors in the length of RSA/ROFA beyond the runway end)
- Landing distance available (LDA) – the runway length declared available and suitable for landing an aircraft (factors in the length of RSA/ROFA beyond the runway end and the positioning of the approach RPZ)

Due to the waterway limitations off the north and south ends of Runway 18L-36R, DTO has applied an ASDA and LDA of 6,502 feet to Runway 18L. As a result, the RSA extends for 500 feet beyond the south end of the runway, as opposed to the standard 1,000 feet. The Runway 36R threshold is displaced by 100 feet, which, when added to the 500 feet of RSA beyond the south end of the runway pavement, provides the full 600 feet of RSA prior to the landing threshold. For Runway 36R, the ASDA is reduced to 6,602 feet and the LDA is reduced to 6,502 feet, resulting in the RSA extending 600 feet beyond the north end of the runway. The TORA and TODA declared distances for Runway 18L-36R are the full pavement length of 7,002 feet.

The alternatives chapter will explore options to mitigate the impact of the waterways on the Runway 18L-36R RSA so the full runway length can be utilized for all takeoff and landing conditions.

For Runway 18R-36L, B-II-4000, design standards stipulate an RSA that is 150 feet wide and extends 300 feet beyond the runway end. There are no known incompatibilities within the Runway 18R-36L RSA, and all declared distances for the secondary runway are the full pavement length of 5,003 feet.

Runway Object Free Area

The ROFA is "a two-dimensional ground area, surrounding runways, taxiways, and taxilanes, which is clear of objects except for objects whose location is fixed by function (i.e., airfield lighting)." The ROFA does not have to be graded and level like the RSA; instead, the primary requirement for the ROFA is that no object in the ROFA penetrates the lateral elevation of the RSA. The ROFA is centered on the runway and extends out in accordance with the critical design aircraft utilizing the runway.

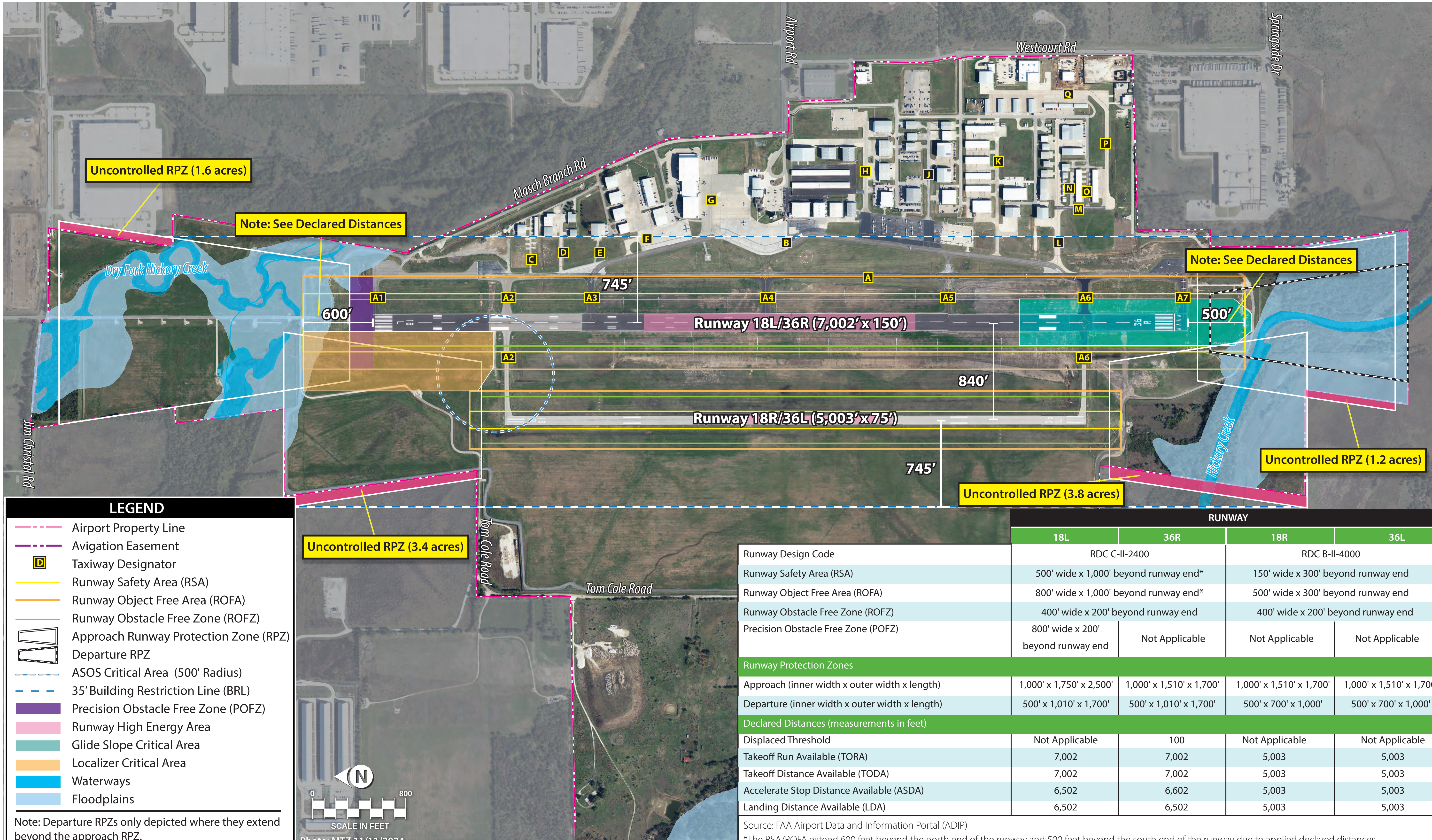
For C-II-2400 and C/D-III-2400 design standards on Runway 18L-36R, the FAA calls for the ROFA to be 800 feet wide and extend 1,000 feet beyond each runway end. At DTO, the ROFA, like the RSA, extends only 500 feet beyond the south end of the runway and 600 feet beyond the north end of the runway. This is due to the presence of waterways and the application of declared distances to mitigate the waterways. The alternatives will consider mitigation measures that could eliminate the need for declared distances on Runway 18L-36R.

For Runway 18R-36L, B-II-4000 ROFA design standards stipulate the ROFA to be 500 feet wide and extend 300 feet beyond the runway end. There are no known incompatibilities within the Runway 18R-36L ROFA.

Runway Obstacle Free Zone

The ROFZ is an imaginary surface that precludes object penetrations, including taxiing and parked aircraft. The only allowance for ROFZ obstructions is navigational aids mounted on frangible bases that are fixed in their locations by function, such as airfield signs. The ROFZ is established to ensure the safety of aircraft operations. If the ROFZ is obstructed, the airport's approaches could be removed or approach minimums could be increased.

For all runways serving aircraft over 12,500 pounds, the ROFZ is 400 feet wide, centered on the runway, and extends 200 feet beyond the runway ends. This standard applies to both runways at DTO. Under current evaluation with available data, there are no ROFZ obstructions at the airport.



	RUNWAY			
	18L	36R	18R	36L
Runway Design Code	RDC C-II-2400		RDC B-II-4000	
Runway Safety Area (RSA)	500' wide x 1,000' beyond runway end*		150' wide x 300' beyond runway end	
Runway Object Free Area (ROFA)	800' wide x 1,000' beyond runway end*		500' wide x 300' beyond runway end	
Runway Obstacle Free Zone (ROFZ)	400' wide x 200' beyond runway end		400' wide x 200' beyond runway end	
Precision Obstacle Free Zone (POFZ)	800' wide x 200' beyond runway end	Not Applicable	Not Applicable	Not Applicable
Runway Protection Zones				
Approach (inner width x outer width x length)	1,000' x 1,750' x 2,500'	1,000' x 1,510' x 1,700'	1,000' x 1,510' x 1,700'	1,000' x 1,510' x 1,700'
Departure (inner width x outer width x length)	500' x 1,010' x 1,700'	500' x 1,010' x 1,700'	500' x 700' x 1,000'	500' x 700' x 1,000'
Declared Distances (measurements in feet)				
Displaced Threshold	Not Applicable	100	Not Applicable	Not Applicable
Takeoff Run Available (TORA)	7,002	7,002	5,003	5,003
Takeoff Distance Available (TODA)	7,002	7,002	5,003	5,003
Accelerate Stop Distance Available (ASDA)	6,502	6,602	5,003	5,003
Landing Distance Available (LDA)	6,502	6,502	5,003	5,003

Source: FAA Airport Data and Information Portal (ADIP)

*The RSA/ROFA extend 600 feet beyond the north end of the runway and 500 feet beyond the south end of the runway due to applied declared distances.

Exhibit 3B
EXISTING SAFETY AREAS

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A precision obstacle free zone (POFZ) is further defined for runway ends with ½-mile visibility precision approaches, such as the instrument landing system (ILS) approach to Runway 18L. The POFZ is 800 feet wide, centered on the runway, and extends from the runway's threshold for 200 feet. The POFZ is in effect when the following conditions are met:

- The runway supports a vertically guided approach.
- The reported ceiling is below 250 feet or visibility is less than ¾-mile.
- An aircraft is on final approach within two miles of the runway threshold.

When the POFZ is in effect, a wing of an aircraft holding on a taxiway may penetrate the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ. POFZ standards currently apply to Runway 18L, as it is equipped with vertically guided approaches with instrument approach minimums below ¾-mile.

Runway Protection Zone

An RPZ is a trapezoidal area centered on the extended runway centerline beginning 200 feet from the end of the runway. This safety area is established to protect the end of the runway from airspace penetrations and incompatible land uses. The RPZ dimensions are based on the established RDC and the approach visibility minimums serving the runway. While the RPZ is intended to be clear of incompatible objects or land uses, some land uses are permitted with conditions and other land uses are prohibited. According to AC 150/5300-13B, Change 1, the following land uses are permissible within the RPZ:

- Farming that meets the minimum buffer requirements
- Irrigation channels, as long as they do not attract birds
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator
- Underground facilities, as long as they meet other design criteria, such as RSA requirements, as applicable
- Unstaffed navigational aids (NAVAIDs) and facilities, such as those required for airport facilities that are fixed by function regarding the RPZ
- Aboveground fuel tanks associated with backup generators for unstaffed NAVAIDS

In September 2022, the FAA published AC 150/5190-4B, *Airport Land Use Compatibility Planning*, which states that airport owner control over RPZs is preferred. Airport owner control over RPZs may be achieved through the following methods:

- Ownership of the RPZ property in fee simple
- Possessing sufficient interest in the RPZ property through easements, deed restrictions, etc.
- Possessing sufficient land use control authority to regulate land use in the jurisdiction that contains the RPZ
- Possessing and exercising the power of eminent domain over the property
- Possessing and exercising permitting authority over proponents of development within the RPZ (e.g., where the sponsor is a state)

AC 150/5190-4B further states that "control is preferably exercised through acquisition of sufficient property interest and includes clearing RPZ areas (and keeping them clear) of objects and activities that would impact the safety of people and property on the ground." The FAA recognizes that land ownership, environmental, geographical, and other considerations can complicate land use compatibility within RPZs; regardless, airport sponsors must comply with FAA grant assurances, including (but not limited to) Grant Assurance 21, *Compatible Land Use*. Sponsors are expected to take appropriate measures to "protect against, remove, or mitigate land uses that introduce incompatible development within RPZs."

For a proposed project that would shift an RPZ into an area with existing incompatible land uses, such as a runway extension or the construction of a new runway, the sponsor is expected to have or secure sufficient control of the RPZ, ideally through fee simple ownership. Where existing incompatible land uses are present, the FAA expects sponsors to "seek all possible opportunities to eliminate, reduce, or mitigate existing incompatible land uses" through acquisition, land exchanges, right-of-first refusal to purchase, agreement with property owners on land uses, easements, or other such measures. These efforts should be revisited during master plan or ALP updates, and periodically thereafter, and should be documented to demonstrate compliance with FAA grant assurances. If a new or proposed incompatible land use impacts an RPZ, the FAA expects the airport to take the above actions to control the property within the RPZ and adopt a strong public stance opposing the incompatible land use.

For a new incompatible land use that results from a sponsor-proposed action (e.g., an airfield project like a runway extension, a change in the critical aircraft that increases the RPZ dimension, or lower minimums that increase the RPZ dimension), the airport sponsor is expected to conduct an alternatives evaluation. The intent of the alternatives evaluation is to "proactively identify a full range of alternatives and prepare a sufficient evaluation to be able to draw a conclusion about what is 'appropriate and reasonable'." For incompatible development off-airport, the sponsor should coordinate with the FAA ADO as soon as the sponsor learns of the development, and the alternatives evaluation should be conducted within 30 days of the sponsor's first awareness of the development within the RPZ. The following items are typically necessary in an alternatives evaluation:

- Sponsor's statement of the purpose and need of the proposed action (airport project, land use change, or development)
- Identification of any other interested parties and proponents
- Identification of any federal, state, and/or local transportation agencies involved
- Analysis of sponsor control of the land within the RPZ
- Summary of all alternatives considered, including the following:
    - Alternatives that preclude introducing the incompatible land use within the RPZ (e.g., zoning action, purchase, and design alternatives, such as implementation of declared distances or displaced thresholds, runway shift or shortening, raising minimums, etc.)
    - Alternatives that minimize the impact of the land use in the RPZ (e.g., rerouting a new roadway through less of the RPZ, etc.)

  - Alternatives that mitigate risk to people and property on the ground (e.g., tunnelling, depressing, and/or protecting a roadway through the RPZ, implementing operational measures to mitigate any risks, etc.)

- Narrative discussion and exhibits or figures depicting the alternative
- Rough order of magnitude cost estimates associated with each alternative, regardless of potential funding sources
- Practicability assessment based on the feasibility of the alternative in terms of constructability, cost, operational impacts, and other factors

Once the alternatives evaluation has been submitted to the ADO, the FAA will determine whether the sponsor has made an adequate effort to pursue and consider appropriate and reasonable alternatives.

The FAA will not approve or disapprove the airport sponsor's preferred alternative; rather, the FAA will evaluate whether an acceptable level of alternatives analysis has been completed before the sponsor makes the decision to allow or disallow the proposed land use within the RPZ.

In summary, the RPZ guidance published in September 2022 shifts the responsibility of protecting the RPZ to the airport sponsor. The airport sponsor is expected to take action to control the RPZ or demonstrate that appropriate actions have been taken. The decision to permit or disallow existing or new incompatible land uses within an RPZ is ultimately up to the airport sponsor, with the understanding that the sponsor still has grant assurance obligations, and the FAA retains the authority to review and approve or disapprove portions of the ALP that would adversely impact the safety of people and property within the RPZ.

RPZs have been further designated as approach and departure RPZs. The approach RPZ is a function of the AAC and approach visibility minimums associated with the approach runway end. The departure RPZ is a function of the AAC and departure procedures associated with the runway. For a particular runway end, the more stringent RPZ requirements (usually associated with the approach RPZ) will govern the property interests and clearing requirements the airport sponsor should pursue.

The locations and dimensions of each RPZ for both runways are depicted on **Exhibit 3B**. Because Runway 36R has a 100-foot displacement, the departure RPZ extends 100 feet farther from the end of the runway than the approach RPZ, but both are fully contained within airport property. Only a small portion of each runway RPZ extends beyond airport property. The uncontrolled RPZ areas, which total approximately 10.0 acres, are largely undeveloped; however, an access road that intersects with Jim Christal Road and serves a new warehouse adjacent to the airport has been constructed within the 18L RPZ.

The alternatives analysis will consider options to mitigate RPZ incompatibilities and allow the airport to establish full control over the RPZs.

RUNWAY SEPARATION STANDARDS

There are several other standards related to separation distances from runways. Each of these is designed to enhance the safety of the airfield.

Runway/Taxiway Separation

The design standard for the separation between runways and parallel taxiways is a function of the critical design aircraft and the instrument approach visibility minimums. The separation standard for Runway 18L-36R, which is equipped with ½-mile instrument approach visibility minimums, is 400 feet from the runway centerline to the parallel taxiway centerline. Parallel Taxiway A is 400 feet east of the Runway 18L-36R centerline, meeting the FAA design standard.

Runway 18R-36L does not have a full-length parallel taxiway. The design standard for a B-II-4000 runway is 240 feet of separation between the runway and taxiway centerlines. The alternatives in the next chapter may consider options for adding a parallel taxiway to Runway 18R-36L and meeting the minimum separation standard.

Holding Position Separation

Holding position markings are placed on taxiways leading to runways. When instructed, pilots are to stop short of the holding position marking line. For C-II-2400 design standards, which are applied in the existing condition for Runway 18L-36R, holding position markings should be situated 250 feet from the runway centerline. The existing condition meets the design standard. Under C/D-III-2400 design standards, which are applicable in the ultimate condition for Runway 18L-36R, the 250-foot separation standard is increased by one foot for every 100 feet of elevation of the airport above sea level. DTO is situated at 642.7 feet MSL, so the holding position marking separation standard is increased by six feet to 256 feet.

B-II-4000 design standards call for holding position markings to be situated 200 feet from the runway centerline. Existing markings associated with Runway 18R-36L are located at a separation distance of 260 feet, exceeding the design standard.

Aircraft Parking Area Separation

According to FAA AC 150/5300-13B, Change 1, aircraft parking positions should be located to ensure aircraft components (wings, tail, and fuselage) do not:

1. Conflict with the object free areas for the adjacent runway or taxiways:
   a. Runway object free area (ROFA)
   b. Taxiway object free area (TOFA)
   c. Taxilane object free area (TLOFA)

or

2. Violate any of the following aeronautical surfaces and areas:
   a. Runway approach or departure surface
   b. Runway visibility zone (RVZ) (not applicable at DTO)
   c. Runway obstacle free zone (ROFZ)
   d. Navigational aid equipment critical areas

There are no existing conflicts between the aircraft parking areas at DTO and the safety areas or aeronautical surfaces listed above. The main aircraft parking aprons along Taxiway B include a dashed edge marking situated 65 feet from the Taxiway B centerline to designate the edge of the taxiway object free area (TOFA); however, the ADG II TOFA design standard, which is applicable to Taxiway B, was reduced in the latest version of the *Airport Design* AC from 131 feet to 124 feet. As such, the Taxiway B painted TOFA edge marking can be relocated to a separation distance of 62 feet from the taxiway centerline. In the ultimate ADG III standard condition, which dictates a TOFA width of 171 feet, the TOFA edge marking on the apron should be relocated to 85.5 feet from the Taxiway B centerline.

TAXIWAYS

The design standards associated with taxiways are determined by the taxiway design group (TDG) or airplane design group (ADG) of the airport's critical aircraft. As previously determined, ADG II standards apply to both runways in the existing condition. ADG III standards apply to Runway 18L-36R in the ultimate condition, while Runway 18R-36L should continue to meet ADG II standards. **Table 3N** presents the various taxiway design standards related to ADG I, II, and III. The table also shows the taxiway design standards related to TDG. The TDG standards are based on the main gear width (MGW) and cockpit to main gear (CMG) distance of the critical aircraft expected to use those taxiways. Different taxiway and taxilane pavements can and should be planned to the most appropriate TDG design standards, based on usage. Taxiway and taxilane object free areas are depicted on **Exhibit 3C** with existing conditions shown on the front side and ultimate conditions shown on the reverse side. There are no identified obstructions to the existing taxiway/taxilane object free areas.

TABLE 3N | Taxiway Dimensions and Standards

STANDARDS BASED ON WINGSPAN	ADG I	ADG II	ADG III
Taxiway and Taxilane Protection			
Taxiway Safety Area Width (TSA)	49'	79'	118'
Taxiway Object Free Area Width (TOFA)	89'	124'	171'
Taxilane Object Free Area Width (TLOFA)	79'	110'	158'
Taxiway and Taxilane Separation			
Taxiway Centerline to Parallel Taxiway Centerline	70'	101.5'	144.5'
Taxiway Centerline to Fixed or Moveable Object	44.5'	62'	85.5'
Taxilane Centerline to Parallel Taxilane Centerline	64'	94.5'	138'
Taxilane Centerline to Fixed or Moveable Object	39.5'	55'	79'
Wingtip Clearance			
Taxiway Wingtip Clearance	20'	22.5'	26.5'
Taxilane Wingtip Clearance	15'	15.5'	20'
STANDARDS BASED ON TDG	**TDG 1A/B**	**TDG 2A/B**	**TDG 3**
Taxiway Width Standard	25'	35'	50'
Taxiway Edge Safety Margin	5'	7.5'	10'
Taxiway Shoulder Width	10'	15'	20'

All dimensions are in feet.
ADG = airplane design group
TDG = taxiway design group

Source: FAA AC 150/5300-13B, Airport Design, Change 1

The current design standard for all taxiways east of Runway 18L-36R is TDG 3, which dictates a width of 50 feet. All taxiways east of Runway 18L-36R are at least 50 feet wide, meeting TDG 3 standards. Taxiways west of Runway 18L-36R, which provide access to parallel Runway 18R-36L, should meet TDG 2A standards, which dictate a width of 35 feet. The two applicable taxiways are 35 feet wide, meeting the design standard.

Taxiway and Taxilane Design Considerations

FAA AC 150/5300-13B, *Airport Design*, Change 1, provides guidance on recommended taxiway and taxilane layouts to enhance safety by avoiding runway incursions. A runway incursion is defined as “any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft.” The following is a list of the FAA’s taxiway design guidelines and the basic rationale behind each recommendation included in the current AC, as well as previous FAA safety and design recommendations.

1. *Taxiing Method*: Taxiways are designed for cockpit-over-centerline taxiing with pavement that is wide enough to allow a certain amount of wander. On turns, sufficient pavement should be provided to maintain the edge safety margin from the landing gear. When constructing new taxiways, existing intersections should be upgraded to eliminate judgmental oversteering, which is when a pilot must intentionally steer the cockpit outside the marked centerline to ensure the aircraft remains on the taxiway pavement.

2. *Curve Design*: Taxiways should be designed so the nose gear steering angle is no more than 50 degrees, which is the generally accepted value to prevent excessive tire scrubbing.

3. *Three-Path Concept*: To maintain pilot situational awareness, taxiway intersections should provide a pilot with a maximum of three choices of travel. Ideally, these are right, left, and a continuation straight ahead.

4. *Channelized Taxiing*: To support visibility of airfield signage, taxiway intersections should be designed to meet standard taxiway width and fillet geometry.

5. *Designated Hot Spots and Runway Incursion Mitigation (RIM) Locations*: A hot spot is a location on the airfield with elevated risk of collisions or runway incursions. Mitigation measures should be prioritized for areas the FAA designates as hot spots or RIM locations. **DTO does not have any FAA-designated taxiway hot spots or RIM locations.**

6. *Intersection Angles*: Turns should be designed to be 90 degrees, wherever possible. For acute-angle intersections, standard angles of 30, 45, 60, 120, 135, and 150 degrees are preferred.

7. *Runway Incursions*: Taxiways should be designed to reduce the probability of runway incursions.

    - *Increase Pilot Situational Awareness*: Pilots who know where they are on the airport are less likely to enter a runway improperly. Complexity leads to confusion. Taxiway systems should be kept simple by using the three-path concept.

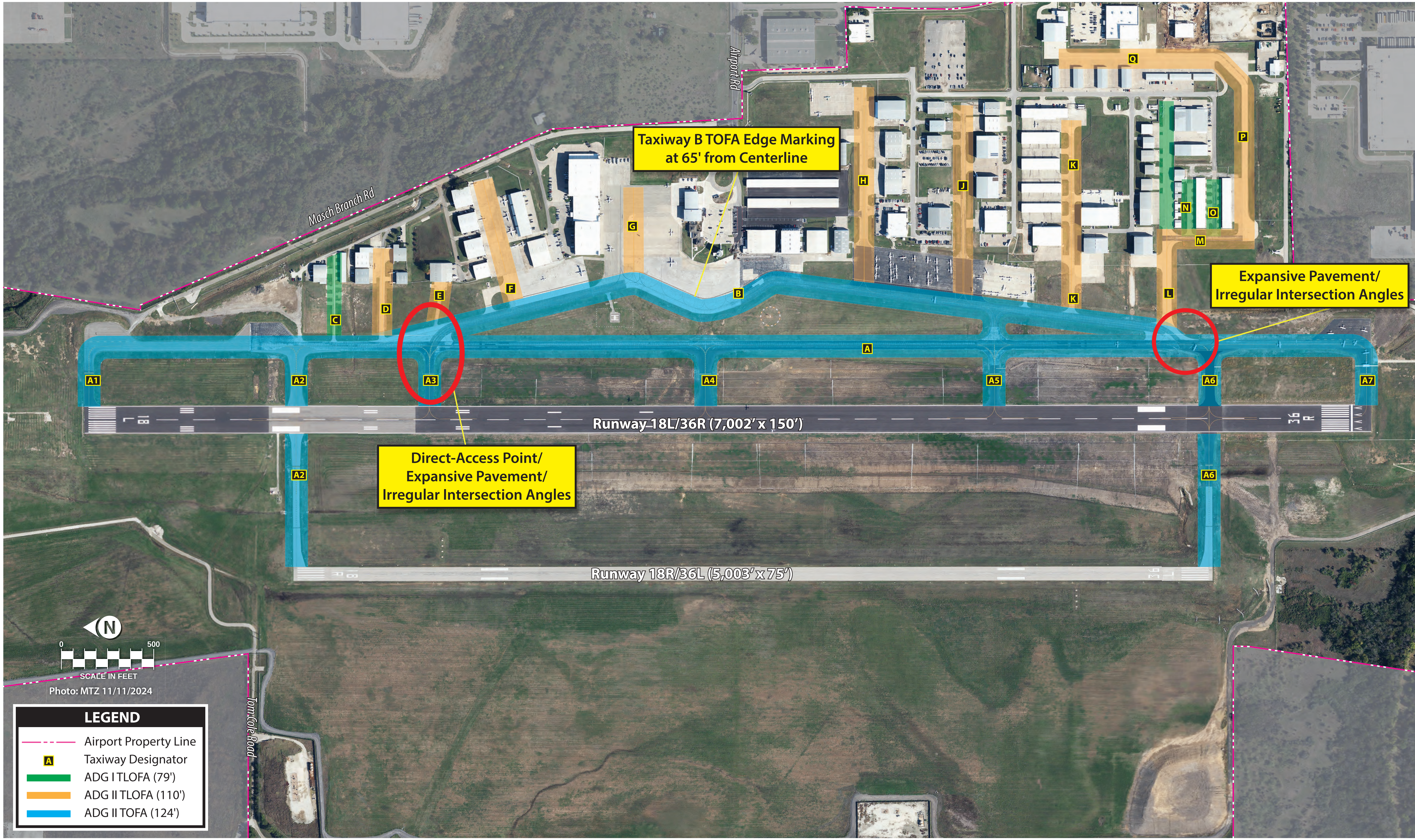


Exhibit 3C
EXISTING TAXIWAY/TAXILANE OBJECT FREE AREAS

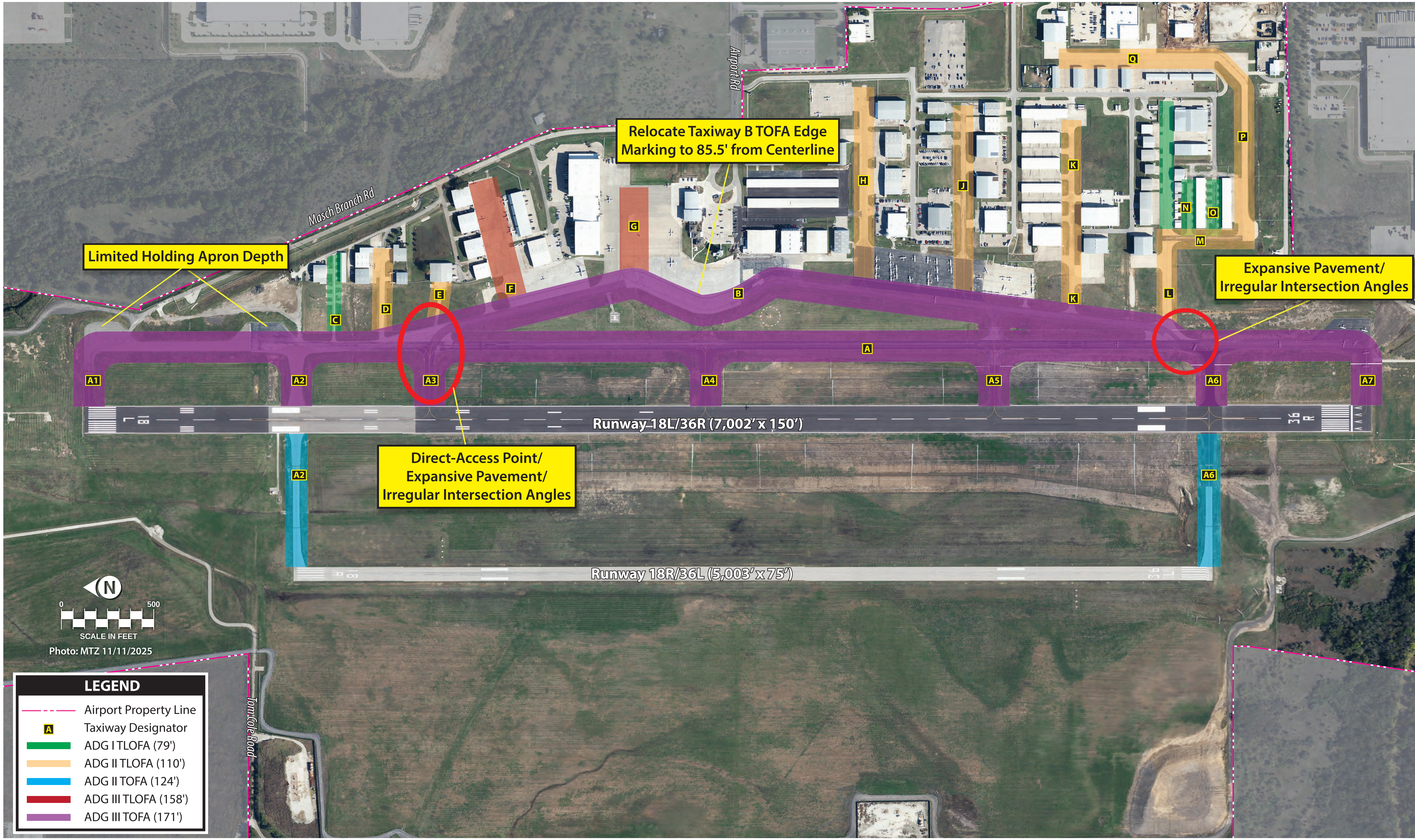


Exhibit 3C (continued)
ULTIMATE TAXIWAY/TAXILANE OBJECT FREE AREAS

- *Avoid Wide Expanses of Pavement*: Wide pavements require placement of signs far from a pilot's eye. This is especially critical at runway entrance points. Where a wide expanse of pavement is necessary, direct access to a runway should be avoided.

- *Limit Runway Crossings*: The taxiway layout can reduce the opportunity for human error. The benefits are twofold: through a simple reduction in the number of occurrences and a reduction in air traffic controller workload.

- *Avoid High-Energy Intersections*: These are intersections in the middle thirds of runways. By limiting runway crossings to the first and last thirds of a runway, the portion of the runway where a pilot can least maneuver to avoid a collision is kept clear.

- *Increase Visibility*: Right-angle intersections between taxiways and runways provide the best visibility. Acute-angle runway exits provide greater efficiency in runway usage but should not be used as runway entrance or crossing points. A right-angle turn at the end of a parallel taxiway is a clear indication of approaching a runway.

- *Avoid Dual-Purpose Pavements*: Runways used as taxiways and taxiways used as runways can lead to confusion. A runway should always be clearly identified as a runway, and only a runway.

- *Avoid Direct Access*: Taxiways should not be designed to lead directly from an apron to a runway. Such configurations can lead to confusion when a pilot typically expects to encounter a parallel taxiway.

- *Mitigate Hot Spots*: Confusing intersections near runways are more likely to contribute to runway incursions. These intersections must be redesigned when the associated runway is subject to reconstruction or rehabilitation. Other hot spots should be corrected as soon as practicable.

8. *Runway/Taxiway Intersections*:

   - *Right Angle*: Right-angle intersections are the standard for all runway/taxiway intersections, except where there is a need for an acute-angled exit. Right-angle taxiways provide the best visual perspective to a pilot approaching an intersection with the runway to observe aircraft in both the left and right directions. They also provide optimal orientation of the runway holding position signs so the signage is visible to pilots.

   - *Acute Angle*: Acute angles should not be larger than 45 degrees from the runway centerline. A 30-degree taxiway layout should be reserved for high-speed exits. The use of multiple intersecting taxiways with acute angles creates pilot confusion and improper positioning of taxiway signage. The construction of high-speed exits is typically only justified for runways that experience regular use by jet aircraft in approach categories C and above.

   - *Large Expanses of Pavement*: A taxiway must never coincide with the intersection of two runways. Taxiway configurations with multiple taxiway and runway intersections in a single area create large expanses of pavement, which make it difficult to provide proper signage, marking, and lighting.

9. *Taxiway/Runway/Apron Incursion Prevention*: Apron locations that allow direct access to a runway should be avoided. Taxiways should be designed in a manner that increases pilot situational awareness by forcing pilots to consciously make turns. Taxiways that originate from aprons and form straight lines across runways at mid-span should be avoided.

   - *Wide Throat Taxiways*: Wide throat taxiway entrances should be avoided because such large expanses of pavement may cause pilot confusion and can make lighting and marking more difficult.

   - *Direct Access from Apron to Runway*: Taxiway connectors that cross over a parallel taxiway and directly onto a runway should be avoided. A staggered taxiway layout or a no-taxi island that forces pilots to make a conscious decision to turn should be considered.

   - *Apron to Parallel Taxiway End*: Direct connection from an apron to a parallel taxiway at the end of a runway should be avoided.

The taxiway system at DTO generally provides for the efficient movement of aircraft, and there are no FAA-designated hot spots or RIM locations. Taxiway A3 and Taxilane E create a direct-access point from a hangar apron to Runway 18L-36R. The same intersection involves expansive pavement areas and irregular taxiway intersection angles, which make it difficult for aircraft taxiing north on Taxiway B to see aircraft taxiing north on Taxiway A, creating a potential for conflict. These non-standard geometry conditions at the intersection of Taxiways A, B, and A3 and Taxilane E are highlighted in **Figure 3A**.

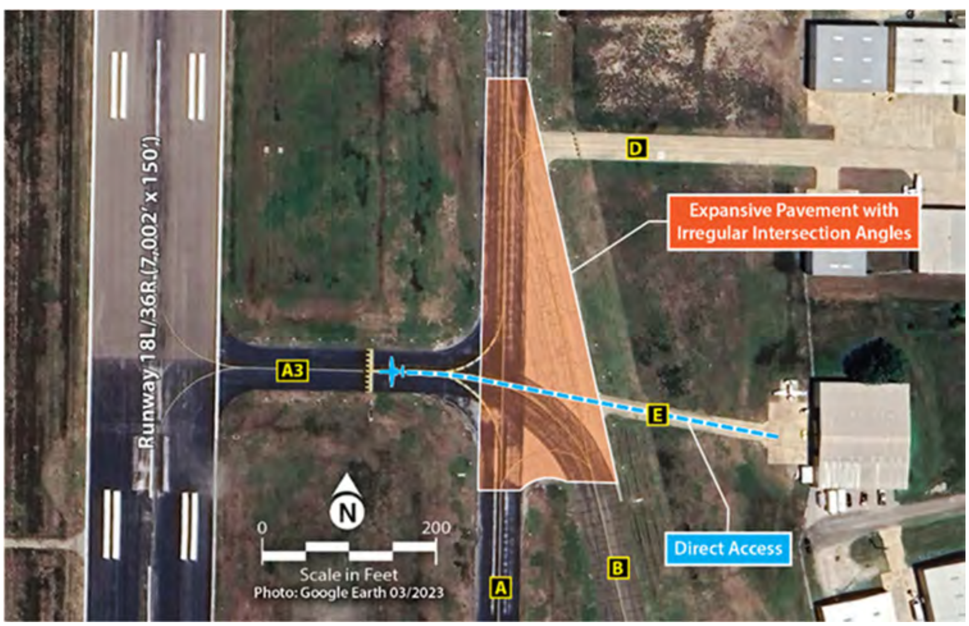


Figure 3A – Non-standard Taxiway Geometry

Similarly, the intersection of Taxiways A, B, and A6 and Taxilane L also creates the potential for conflict with expansive pavement and irregular taxiway intersection angles. This area is highlighted in **Figure 3B**.

The alternatives in the next chapter will explore options to mitigate these non-standard taxiway configurations to minimize the potential for runway incursions and improve efficiency.

Figure 3B – Non-standard Taxiway Geometry

Taxilane Design Considerations | Taxilanes are distinguished from taxiways in that they do not provide direct access to or from the runway system. Taxilanes typically provide access to hangar areas and can be planned to varying design standards, depending on the type(s) of aircraft that utilize the taxilane, as previously described.

Helipad

The helipad at DTO, which is located between Taxiways A and B, is used infrequently and is under consideration for elimination. The alternatives analysis will consider redevelopment potential for the helipad site, as well as options for new areas for focused helicopter and other vertical takeoff and landing (VTOL) aircraft operations, if desired by airport management and operators. Continued maintenance of the existing helipad or development of new helicopter operations areas is subject to FAA AC 150/5390-2C, *Heliport Design*.

NAVIGATIONAL AND APPROACH AIDS

Navigational aids are devices that provide pilots with guidance and position information when utilizing the runway system. Electronic and visual guidance to arriving aircraft enhances the safety and capacity of the airfield. Such facilities are vital to the success of an airport and provide additional safety to passengers using the air transportation system. While instrument approach aids are especially helpful during poor weather, they are often used by pilots conducting flight training and operating larger aircraft when visibility is good.

Instrument Approach Aids

DTO has five published instrument approach procedures. Runway 18L is equipped with a precision ILS approach and a global positioning system (GPS)-based localizer performance with vertical guidance (LPV) approach that provide visibility minimums down to ½-mile. Runways 18R, 36R, and 36L each have LPV approaches with visibility minimums down to ¾-mile. All of these instrument approach procedures are considered adequate and no new approaches are planned for any runway.

Runway 18L is equipped with a medium intensity approach lighting system with runway alignment indicator lights (MALSR) that supports the ILS and LPV approach procedures to achieve ½-mile visibility minimums. The MALSR extends for approximately 2,210 feet north of the Runway 18L end. The MALSR equipment is adequate and should be maintained for the duration of the planning period. No new approach lighting systems are required for the airfield.

Visual Approach Aids

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. Currently, each runway at DTO is equipped with a four-box precision approach path indicator (PAPI-4). These approach aids are adequate and should be maintained for the duration of the planning period.

Runway end identification lights (REILs) are flashing lights located at the runway threshold end that facilitate rapid identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify the runway thresholds and distinguish the runway end lighting from the other lighting on the airport and in the approach areas. REILs should be considered for all lighted runway ends not planned for more sophisticated approach lighting systems. Runway 18L is equipped with a MALSR; therefore, a REIL system is not needed. Consideration should be given to adding REILs to Runways 36R, 18R, and 36L.

Weather Reporting Aids

DTO has a lighted wind cone and segmented circle located between Runway 18L-36R and Taxiway A and south of Taxiway A4. The wind cone provides information to pilots regarding wind speed and direction. Typically, the wind cone is centralized on the airfield system and is often co-located within a segmented circle, which is the case at DTO. The segmented circle consists of a system of visual indicators designed to provide traffic pattern information to pilots.

DTO is equipped with an automated surface observing system (ASOS) co-located with the ILS glideslope antenna for Runway 18L. The ASOS provides weather observations 24 hours per day and updates weather observations every minute, continuously reporting significant weather changes as they occur in real time. This information is then transmitted via a designated radio frequency at regular intervals. This system should be maintained through the duration of the planning period.

Airport Traffic Control Tower

DTO has an operational airport traffic control tower (ATCT) located on the east landside area near midfield. The ATCT cab height is 140 feet AGL and the ATCT roof is 152 feet AGL. The ATCT is staffed from 6:00 a.m. to 10:00 p.m. daily. This site provides clear lines-of-sight to all areas of the airfield. Additional tower space may be needed as operation levels grow at DTO necessitating additional controllers. The need for additional staff could result in a tower cab and office space constraints in the existing tower. Consideration should be given to expanding the tower cab and office spaces to accommodate additional controllers.

AIRFIELD LIGHTING, MARKING, AND SIGNAGE

Several lighting and pavement marking aids serve pilots using the airport. These aids assist pilots in locating an airport and runway at night or in poor visibility conditions. They also serve aircraft navigating the airport environment on the ground when transitioning to/from aircraft parking areas to the runway.

Airport Identification Lighting | DTO's rotating beacon is located on top of the ATCT. The beacon is in good working order and should be maintained for the duration of the planning period.

Runway and Taxiway Lighting | Runways 18L-36R and 18R-36L are equipped with medium intensity runway lighting (MIRL) systems. Runway 18R-36L's MIRL system has been upgraded to light-emitting diode (LED) fixtures, while Runway 18R-36L has incandescent MIRL fixtures. The incandescent fixtures are planned to be upgraded to LED fixtures. The taxiway system is equipped with medium intensity taxiway lighting (MITL). This system is also adequate and should be maintained. Planning should consider expansion of the MIRL and MITL systems when/if new pavements are constructed.

Pavement Markings | Runway markings are typically designed to the type of instrument approach available on the runway. FAA AC 150/5340-1K, *Standards for Airport Markings*, provides guidance necessary to design airport markings. Runway 18L has precision markings that aid in accommodating the ILS precision approach and provide enhanced identification. Runways 36R, 18R, and 36L have non-precision markings, which are adequate for the existing and ultimate conditions.

Airfield Signs | Airfield identification signs assist pilots in identifying their locations on the airfield and directing them to their desired locations. Lighted signs are installed on the runway and taxiway systems on the airfield. The signage system includes runway and taxiway designation signage, holding position signage, routing/directional signage, and mandatory instruction signs. All of these signs should be maintained through the planning period.

A summary of the airside facilities at DTO is presented on **Exhibit 3D**.

ADVANCED AIR MOBILITY (AAM)

Since the turn of the decade, private companies have been developing and testing AAM technologies. AAM, which may also be called urban air mobility (UAM), is an emerging concept of air transportation using electric vertical takeoff and landing (eVTOL) aircraft to move people and cargo between places that are not easily or currently served by surface or air modes. A common example is the air taxi, in which a person or small group of people could travel within or between metropolitan areas, including airports, using small eVTOL aircraft. Development of infrastructure in support of AAM is currently underway in test cities across the county and AAM is projected to become a key component of the nation's air transportation network. The following images show several different AAM/eVTOL aircraft currently in development that would use a vertiport like the one proposed in some alternatives.

CATEGORY	EXISTING	ULTIMATE
Runway	**18L-36R**	
Runway Design Code (RDC)	C-II-2400	C/D-III-2400
Dimensions	7,002' x 150'	Maintain Length; Consider Width Reduction to 100'
Pavement Strength	70,000 SWL; 100,000 DWL	Maintain
Blast Pads	None	Add Blast Pads (140' x 200')
RSA	RSA with Declared Distances	Consider Improvements to Eliminate Declared Distances
ROFA	ROFA with Declared Distances	Consider Improvements to Eliminate Declared Distances
ROFZ	Standard ROFZ	Maintain
POFZ	Standard POFZ (18L)	Maintain
RPZ	Approximately 2.8 Acres of Uncontrolled RPZ Property	Establish Full Control Over All RPZs
Runway	**18R-36L**	
Runway Design Code (RDC)	B-II-4000	B-II-4000
Dimensions	5,003' x 75'	Consider Extension to Minimum Length of 5,500'
Pavement Strength	30,000 SWL; 50,000 DWL	Maintain
Blast Pads	None	None
RSA	Standard RSA	Maintain
ROFA	Standard ROFA	Maintain
ROFZ	Standard ROFZ	Maintain
RPZ	Approximately 7.2 Acres of Uncontrolled RPZ Property	Establish Full Control Over All RPZs
Taxiways		
Design Group	TDG 3 (East of 18L-36R); TDG 2A (West of 18L-36R)	Maintain
Parallel Taxiway	Taxiway A (18L-36R)	Consider Full-Length Parallel Taxiway For 18R-36L
Parallel Taxiway Separation from Runway	400' (Taxiway A)	Minimum 240' Separation for Ultimate Parallel Serving 18R-36L
Widths	50' (East of 18L-36R); 35' (West of 18L-36R)	Maintain
Holding Position Separation	250' (18L-36R); 260' (18R-36L)	Increase Separation for 18L-36R Markings to 256'; Consider Relocating 18R-36L Markings to 200'
Notable Conditions	No Hot Spots; 2 Areas of Non-Standard Geometry	Consider Corrective Measures
Navigational and Weather Aids		
Instrument Approaches	ILS (18L); LPV GPS (All Runways)	Maintain
Weather Aids	ASOS, Wind Cone, Rotating Beacon, Segmented Circle	Maintain
Approach Aids	PAPI-4s (All Runways); MALSR (18L)	Add REILs to 36R, 18R, and 36L
Lighting and Marking		
Runway Lighting	MIRL (Both Runways)	Upgrade 18L-36R to LED MIRLs
Runway Marking	Precision (18L); Non-Precision (36R, 18R, 36L)	Maintain
Taxiway Lighting	MITL	Maintain
Airfield Signage	Standard Runway/Taxiway Identification, Holding Position, and Routing Signage	Maintain

KEY

ASOS - Automated Surface Observation System
DWL - Dual Wheel Loading
GPS - Global Positioning System
LPV - Localizer Performance with Vertical Guidance
MALSR - Medium Intensity Approach Lighting System
MIRL/HIRL - Medium/High Intensity Runway Lighting
MITL - Medium Intensity Taxiway Lighting
POFZ - Precision Obstacle Free Zone
PAPI - Precision Approach Path Indicator
RDC - Runway Design Code
REIL - Runway End Identification Lights
RSA - Runway Safety Area
RPZ - Runway Protection Zone
ROFA - Runway Object Free Area
SWL - Single Wheel Loading
TDG - Taxiway Design Group

Exhibit 3D
AIRFIELD SUMMARY

eVTOL Aircraft in Development (Courtesy of Archer and Joby)

DESIGN STANDARDS FOR VERTIPORTS

Design dimensions for a vertiport are established by a reference aircraft. A vertiport may consist of several facilities, including aircraft charging and storage, a passenger terminal, and takeoff and landing areas. The landside facilities of a vertiport will be specific to and determined by the unique AAM company that chooses to establish a presence in the study area. The airside facilities are the focus of FAA Draft Engineering Brief (EB) 105A, *Vertiport Design*, which was published in September 2024. The takeoff and landing area design and geometry contained in *Vertiport Design* include the TLOF, the FATO, and the safety area, which are defined in detail as follows.

- **Final Approach and Takeoff Area (FATO) |** The FATO is a defined load-bearing area over which an aircraft completes the final phase of its approach to a hover or landing, and from which the aircraft initiates takeoff. The FATO is similar to the total surface of a helipad.
- **Touchdown and Liftoff Area (TLOF) |** The TLOF is a load-bearing, generally paved area centered in a FATO on which the aircraft performs a touchdown or liftoff. The TLOF is analogous to the center "H" of a helipad.
- **Safety Area |** The safety area is a defined area surrounding the FATO that is intended to reduce the risk of damage to aircraft accidentally diverging from the FATO. The vertiport safety area is identical in purpose to a runway or taxiway safety area.

The calculations for these areas are presented in **Table 3P** and are based on the controlling dimension (designated "D") or propulsion dimension (designated "D-p") of the design eVTOL aircraft as defined for the vertiport facility (see **Figure 3C**). D is the diameter of the smallest circle enclosing the aircraft on a horizontal plane while the aircraft is in the takeoff or landing configuration with rotors/propellers turning (if applicable). D-p is the smallest circle enclosing all the propulsion units (including propellers, rotors, fans, etc.) on a horizontal plane while the aircraft is in the vertical takeoff or landing configuration with rotors turning (if applicable).

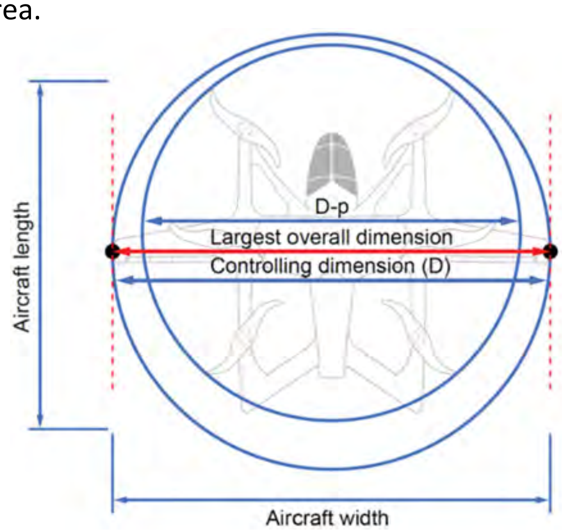


Figure 3C – eVTOL Controlling Dimensions

TABLE 3P | Takeoff and Landing Area Minimum Dimensions

	DIMENSION (length and width or diameter)	
Element	**Non-Powered Lift**	**Powered Lift**
TLOF	1.88 D-p	1 D-p
FATO	1.88 D-p	2 D-p
Safety Area	2.5 D	2.5 D
FATO = final approach and takeoff area TLOF = touchdown and liftoff area		

Source: FAA, Draft EB 105A, Vertiport Design, Table 2-1

Each element is centered within the subsequent element: the TLOF is located in the center of the FATO, which is centered within the safety area, as shown in **Figure 3D**. The "broken wheel" symbol should be used and located in the center of the TLOF to identify the site as a vertiport, as opposed to a heliport. Both the TLOF and FATO are expected to be located on level terrain or a structure, be clear of penetrations and obstructions, and support the weight of the design eVTOL aircraft. The TLOF may be circular, square, or rectangular in shape.

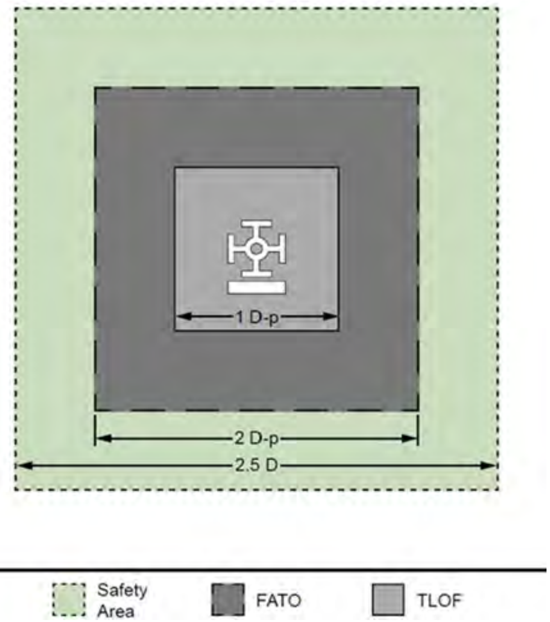


Figure 3D – Relationship and Dimensions of TLOF, FATO, and Safety Area

APPROACH PROFILES – IMAGINARY SURFACES

The imaginary surfaces defined for heliports in Title 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, are applicable to vertiports and include the primary surface, approach, and transitional surfaces. Section 77.23 defines these surfaces for heliports and they have been adopted for use and presented in *Vertiport Design*.

- **Primary Surface |** The primary surface is the same size and shape as the FATO. This surface is a horizontal plane at the established vertiport elevation.
- **Approach Surface |** This surface begins at each end of the vertiport's primary surface, has the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet, at which point its width is 500 feet. The slope of this surface is 8:1 and it doubles as the departure surface.
- **Transitional Surface |** The transitional surface extends outward and upward from the lateral boundaries of the primary and approach surfaces at a slope of 2:1 for 250 feet horizontally from the centerline of the primary and approach surfaces.

The primary, approach, and transitional surfaces should remain clear of penetrations whenever possible, unless an FAA analysis determines the penetrations to any Part 77 surface not to be hazardous. **Figure 3E** is a visual representation of the imaginary surfaces as they apply to vertiports.

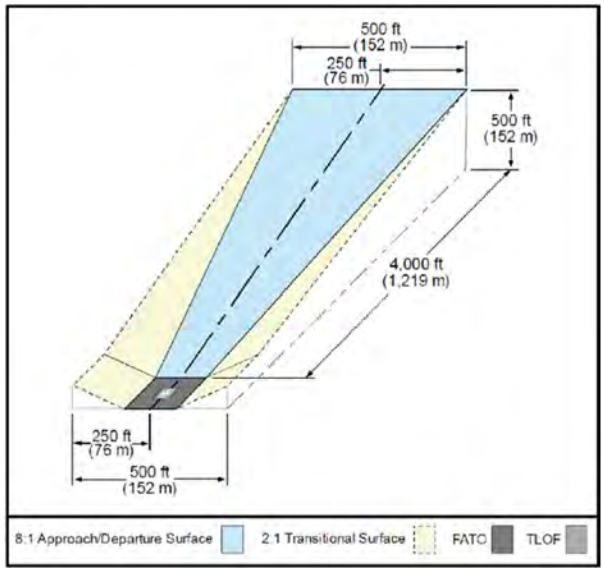


Figure 3E – Vertiport Imaginary Surfaces

VERTIPORT SUMMARY

eVTOLs and AAM/UAM represent an emerging (yet unproven) aviation market. Testing and initial adoption are likely to occur in large metropolitan areas and then expand to mid-sized and smaller markets. Full integration of eVTOL into the national airspace system may not occur for many years; however, it is prudent for this planning study to consider the potential for such activity at DTO. For this reason, the alternatives analysis includes options for a potential future vertiport on airport property. The vertiport dimensions depicted are conceptual and are not based on a specific reference aircraft.

As most eVTOL vehicles under development are powered by electricity, electrical infrastructure will be the most significant need to support vertiport development. For recharging capabilities, initial power supply estimates from manufacturers range between 500 kilowatts (kW) to 1.0 megawatts (MW) per charger with a goal to provide an 80 percent charge in 15 to 25 minutes.

LANDSIDE FACILITY REQUIREMENTS

Landside facilities are those necessary for the handling of aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacity of the various components of each element was examined in relation to projected demand to identify future landside facility needs. At DTO, this includes components for general aviation needs and support facilities.

GENERAL AVIATION FACILITIES

General aviation facilities are those necessary for handling general aviation aircraft, passengers, and cargo while on the ground. This section is devoted to identifying future general aviation facility needs during the planning period for the following types of facilities normally associated with general aviation terminal areas.

- General aviation terminal services
- Aircraft hangars
- Aircraft parking aprons

General Aviation Terminal Services

The general aviation terminal facilities at an airport are often the first impression of the community that corporate officials and other visitors will encounter. General aviation terminal facilities at an airport provide space for passenger waiting, a pilots' lounge, flight planning, concessions, management, storage, and many other various needs. This space is not necessarily limited to a single, separate terminal building, but can include space offered by fixed base operators (FBOs) and other specialty operators for these functions and services. At DTO, general aviation terminal services are primarily provided from the 4,800-square-foot (sf) GA Administration Building, as well as Sheltair's FBO facilities, which total approximately 18,000 sf.

The methodology used in estimating general aviation terminal facility needs was based on the number of airport users expected to utilize general aviation facilities during the design hour. Space requirements for terminal facilities were based on providing 125 square feet per design hour itinerant passenger. A multiplier of 2.5 in the short term, increasing to 3.5 in the long term, was also applied to terminal facility needs to better determine the number of passengers associated with each itinerant aircraft operation. This increasing multiplier indicates an expected increase in larger aircraft operations through the long term. These operations typically support larger turboprop and jet aircraft, which can accommodate an increasing passenger load factor. Such is the case at DTO, where an increasing number of turbine operations are anticipated.

Table 3Q outlines the space requirements for general aviation terminal services at DTO through the long-term planning period. The combined amount of space currently offered by the GA terminal and Sheltair is approximately 22,800 sf. Other specialty aviation service operators (SASOs) on the airfield also provide space for pilots and passengers; however, these areas are not widely utilized by transient operators. As shown in the table, the space currently provided is sufficient through the long-term planning horizon.

TABLE 3Q | General Aviation Terminal Area Facilities

	Currently Available	Short-Term Need	Intermediate-Term Need	Long-Term Need
Input Data				
General Aviation Itinerant Design Hour Operations	–	30	33	41
Passenger Multiplier	–	2.0	2.2	2.5
Design Hour Passengers	–	60	73	103
Terminal Service Space Requirements				
Space per Design Hour Passenger (sf)	–	125	125	125
Terminal Building Need (sf)	22,800	9,375	12,375	18,000
Terminal Vehicle Parking Requirements				
Terminal Visitor Vehicle Space Need	87	75	99	144
FBO Visitor Space Need	144	119	137	179
Total Terminal Visitor/FBO Vehicle Parking	**231**	**194**	**236**	**323**

Red indicates a projected need that exceeds current capacity.
Source: Coffman Associates analysis

General aviation terminal service vehicle parking demands have also been determined for DTO. Space determinations for passengers were based on an evaluation of existing airport use, as well as standards set forth to help calculate projected terminal facility needs. There are currently 231 individual spaces provided by the FBO and at the GA Administration Building. As shown in the table, existing vehicle parking is adequate through the short-term period; however, additional capacity may be needed by the intermediate- and long-term periods.

The airport has an additional 499 vehicle parking spaces located throughout the landside areas associated with the various SASOs and hangar facilities. The alternatives analysis in the next chapter will consider additional parking capacity along with any new hangar development to accommodate both transient users and based tenants.

Aircraft Hangars

Utilization of hangar space varies as a function of local climate, security, and owner preference. The trend in general aviation aircraft is toward more sophisticated (and, consequently, more expensive) aircraft; therefore, many aircraft owners prefer enclosed hangar space over outside tiedowns.

The demand for aircraft storage hangars is dependent on the number and type(s) of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based on forecasted operational activity; however, hangar development should be based on actual demand trends and financial investment conditions.

While most aircraft owners prefer enclosed aircraft storage, some will still use outdoor tiedown spaces, usually due to lack of available hangar space, high hangar rental rates, or operational needs; therefore, enclosed hangar facilities do not necessarily need to be planned for each based aircraft.

Hangar types vary greatly in size and function. T-hangars are popular with aircraft owners who need to store individual private aircraft. These hangars typically provide individual spaces within a larger structure or in portable standalone buildings. There is approximately 160,709 sf of total T-hangar storage space, including 91 individual T-hangar storage units, at DTO. For determining future aircraft storage needs, it is assumed that owners of new single-engine and other smaller aircraft (e.g., ultralights, gliders, etc.) will prefer T-hangar storage space. A planning standard of 1,200 sf per single-engine piston and other aircraft is utilized for this hangar type.

Box and conventional hangars are open-space facilities with no interior supporting structures. Box hangars can vary in size from 1,500 and 2,500 sf to nearly 10,000 sf. They are typically able to house single-engine, multi-engine, turboprop, and jet aircraft, as well as helicopters. Conventional hangars provide for bulk aircraft storage and are often utilized by airport businesses, such as FBOs or aircraft maintenance operators. Conventional hangars are generally larger than executive box hangars and can range in size from 10,000 sf to more than 20,000 sf. There is approximately 576,011 sf of space for box and conventional hangars at DTO. For future planning, standards of 3,000 sf per turboprop, 5,000 sf per jet, and 1,500 sf per helicopter are utilized for box and conventional hangars.

Future hangar requirements for the airport are summarized in **Table 3R**.

TABLE 3R | Aircraft Hangar Requirements

	Currently Available	Short-Term Need	Intermediate-Term Need	Long-Term Need	Difference
Total Based Aircraft	412	475	546	717	+305
Hangar Area Requirements					
T-Hangar Area (sf)	160,709	214,700	275,900	419,900	+259,191
Box/Conventional Hangar Area (sf)	576,011	639,000	706,500	888,500	+312,489
Total Hangar Area (sf)	**736,720**	**853,700**	**982,400**	**1,308,400**	**+571,680**
Red indicates a projected need that exceeds current capacity.					

Source: Coffman Associates analysis

Because most based aircraft owners prefer enclosed hangar space, it is assumed that all based aircraft will occupy hangar spaces, as opposed to tying down on the apron. The analysis shows that future hangar requirements indicate a potential need for over 571,680 sf of new hangar storage capacity through the long-term planning period. This includes a mixture of hangar types; the largest need is projected in the box/conventional hangar category. Due to the projected increase in based aircraft, the existing demand for hangar space, annual general aviation operations, and hangar storage needs, facility planning will consider additional hangars at the airport. It is expected that the aircraft storage hangar requirements will continue to be met through a combination of hangar types.

It should be noted that hangar requirements are general in nature and are based on aviation demand forecasts. The actual need for hangar space will further depend on the usage within the hangars. For example, some hangars may be utilized entirely for non-aircraft storage, such as maintenance, but they have an aircraft storage capacity from a planning standpoint; therefore, the needs of an individual user may differ from the calculated space necessary.

Aircraft Parking Aprons

The aircraft parking apron is an expanse of paved area intended for aircraft parking and circulation. Typically, a main apron is centrally located near the airside entry point, such as the terminal building or FBO facility. Ideally, the main apron is large enough to accommodate transient airport users, as well as a portion of locally based aircraft. Smaller aprons are often available adjacent to SASO hangars and at other locations around the airport. The apron layout at DTO generally follows this pattern: the main terminal apron, which totals 33,375 square yards (sy), is adjacent to the terminal and the FBO facilities. Apron 1, which is also adjacent to the FBO, comprises 6,400 sy of pavement that is used primarily for transient aircraft. Aprons 2 and 3, which respectively total 9,200 sy and 6,700 sy, are leased to U.S. Aviation and are not available for public use and thus are used exclusively for based aircraft. Apron 4 totals 4,500 sy and is used primarily by locally based aircraft.

To determine future apron needs, the FAA-recommended planning criterion[3] of 360 sy was used for ADG I aircraft (single-engine and multi-engine piston aircraft), while a planning criterion of 490 sy was used for larger ADG II aircraft (turboprops and jets). A parking apron should also provide space for locally based aircraft that require temporary tiedown storage. Locally based tiedowns are typically utilized by smaller single-engine aircraft; thus, a planning standard of 360 sy per position was utilized in the analysis.

[3] Per the FAA Apron Size Calculation Tool

The total apron parking requirements are presented in **Table 3S**. Existing apron pavement area at DTO encompasses approximately 60,175 sy. Using the planning standards described above and factoring in assumptions regarding operational and based aircraft growth, an additional 44,725 sy of aircraft parking apron pavement is estimated to be needed over the next 20 years.

TABLE 3S | Aircraft Parking Apron Requirements

	Currently Available	Short-Term Need	Intermediate-Term Need	Long-Term Need	Difference
Aircraft Parking Area (square yards)					
Based/Local Aircraft	20,400	17,100	19,700	25,800	+5,400
Transient Small Aircraft	39,775	53,300	59,000	72,700	+39,325
Transient Jet Aircraft		3,900	4,400	6,400	
Total Apron Area	**60,175**	**74,300**	**83,100**	**104,900**	**+44,725**

Red indicates a projected need that exceeds current capacity.

Source: Coffman Associates analysis

SUPPORT FACILITIES

Various other landside facilities that play a supporting role in overall airport operations have also been identified. These support facilities include:

- Aviation fuel storage
- Perimeter fencing and gates

Aviation Fuel Storage

Sheltair is the airport's public fuel service provider and owns/leases all fuel storage facilities on the airport. There are a total of seven aboveground fuel storage tanks on the airport, including three tanks used for Jet A fuel that total 36,340 gallons of storage capacity and four tanks used for AvGas fuel that total 37,340 gallons of storage capacity.

Fuel flowage records for 2023 show the airport dispensed 1,344,331 gallons of Jet A fuel and 476,312 gallons of AvGas fuel. Utilizing operations reported by the FAA's TFMSC database, the number of turbine operations in 2023 totaled approximately 5,828. Dividing the total fuel flowage by the total number of operations provides a ratio of fuel flowage per operation. In 2023, the airport dispensed approximately 230.7 gallons of Jet A fuel per turbine operation and 2.2 gallons of AvGas fuel per piston operation.

Maintaining a 14-day fuel supply would allow the airport to limit the impact of a disruption of fuel delivery. Currently, the airport has enough static fuel storage to meet the 14-day supply criteria for AvGas fuel through the long-term horizon; however, the analysis shows there is a need to expand Jet A fuel storage capacity. The forecasted fuel storage requirements are summarized in **Table 3T**.

Fuel storage requirements are typically based on keeping a two-week supply of fuel during an average month; however, more frequent deliveries can reduce the fuel storage capacity requirements. Generally, fuel tanks should be of adequate capacity to accept a full refueling tanker, which is approximately 8,000 gallons, while maintaining a reasonable level of fuel in the storage tank. Future aircraft demand experienced by the FBOs will determine the need for additional fuel storage capacity. It is important that airport personnel work with the FBOs to plan for adequate levels of fuel storage capacity through the long-term planning period of this study.

TABLE 3T | Fuel Storage Requirements

	Capacity	2023 Flowage Summary	Planning Horizon		
			Short-Term	Intermediate-Term	Long-Term
Jet A					
Daily Usage (gal.)	36,340	3,615	4,045	4,930	7,585
14-Day Supply (gal.)		50,754	56,633	69,022	106,189
Annual Usage (gal.)		1,344,331	1,476,500	1,799,500	2,768,500
AvGas (100LL)					
Daily Usage (gal.)	37,340	1,123	1,433	1,573	1,888
14-Day Supply (gal.)		15,769	20,068	22,020	26,431
Annual Usage (gal.)		476,312	523,200	574,100	689,100

Red indicates a projected need that exceeds current capacity.

Sources: Historical fuel flowage data provided by airport administration; fuel supply projections prepared by Coffman Associates

Perimeter Fencing and Gates

Perimeter fencing is used at airports primarily to secure the aircraft operational area. The physical barrier of perimeter fencing provides the following functions:

- Gives notice of legal boundary of the outermost limits of the facility or security-sensitive area
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion detection equipment and closed-circuit television (CCTV)
- Deters casual intruders from penetrating the aircraft operations areas on the airport
- Creates a psychological deterrent
- Demonstrates a corporate concern for facilities
- Limits inadvertent access to the aircraft operations area by wildlife

DTO operations areas are completely enclosed by fencing, including 10-foot game fencing and six-foot chain-link fence topped by three-strand barbed wire. A series of controlled access gates are available for access to movement and non-movement areas that are secured either electronically or with padlocks.

A summary of the overall general aviation landside facilities is presented in **Table 3U**.

TABLE 3U | General Aviation Landside Facility Requirements

	Current Capacity	Projected Needs		
		Short-Term	Intermediate-Term	Long-Term
General Aviation Terminal Facilities and Parking				
Terminal/FBO Service Space (sf)	22,800	9,375	12,375	18,000
Total Terminal/FBO Public Vehicle Parking	231	194	236	323
Aircraft Storage Hangar Requirements				
T-Hangar (sf)	160,709	214,700	275,900	419,900
Conventional/Box Hangar (sf)	576,011	639,000	706,500	888,500
Total Hangar Storage Area (sf)	736,720	853,700	982,400	1,308,400
Aircraft Parking Apron				
Based/Local Aircraft Parking (sy)	20,400	17,100	19,700	25,800
Transient Parking (sy)	39,775	57,200	63,400	79,100
Total Apron Area (sy)	60,175	74,300	83,100	104,900
Fuel Storage				
100LL (14-Day Fuel Storage)	37,340	20,068	22,020	26,431
Jet A (14-Day Fuel Storage)	36,340	56,633	69,022	106,189

Red indicates a projected need that exceeds current capacity.

Source: Coffman Associates analysis

SUMMARY

This chapter outlines the safety design standards and facilities required to meet the potential aviation demand projected at DTO for the next 20 years. To provide a more flexible master plan, the yearly forecasts from Chapter Two have been converted to planning horizon levels. The short term roughly corresponds to a five-year period, the intermediate term is approximately 10 years, and the long term is 20 years. By utilizing planning horizons, airport management can focus on demand indicators for initiating projects and grant requests, rather than on specific dates in the future.

In Chapter Four, potential improvements to the airside and landside systems will be examined through a series of airport development alternatives. Most of the alternatives discussion will focus on capital improvements that would be eligible for federal and state grant funds. Ultimately, an overall airport development plan that presents a vision beyond the 20-year scope of this master plan will be developed.

Chapter Four

Alternatives

Chapter Four

Alternatives

In the previous chapter, the aviation facilities required to satisfy airside and landside demand through the long-term planning period of the master plan were identified. In addition, several Federal Aviation Administration (FAA) standards were discussed that apply to airfield design. The next step in the planning process is to evaluate reasonable ways these facilities can be provided while meeting design standards. The purpose of this chapter is to formulate and examine rational development alternatives that address the short-, intermediate-, and long-term planning horizon levels. Because there are multiple possibilities and combinations, it is necessary to focus on the opportunities that have the greatest potential for success. Each alternative provides a different approach to meeting existing and future facility needs; these layouts are presented for evaluation and discussion.

Some airports become constrained due to limited availability of space, while others may be constrained due to adjacent land use development or geographical features. Careful consideration should be given to the layout of future facilities and impacts on potential airfield improvements at Denton Enterprise Airport (DTO). Proper planning at this time can ensure the long-term viability of the airport for aviation and economic growth.

The primary goal of this planning process is to develop a feasible plan for meeting the needs that result from the projected market demand over the next 20 years. The plan of action should be developed in a manner that is consistent with the future goals and objectives of the City of Denton and airport stakeholders, including users of the airport and the local community and region, all of which have a vested interest in the development and operation of DTO.

The goal is to develop an underlying rationale that supports the final recommended concept. Through this process, an evaluation of the highest and best uses of airport property will be made, while also weighing local development goals, efficiency, physical and environmental factors, capacity, and appropriate safety design standards.

The alternatives presented in this chapter have been formulated as potential means to meet the overall program objectives for the airport in a balanced manner. Through coordination with the City of Denton, DTO management, the planning advisory committee (PAC), and the public, an alternative (or combination of alternatives) will be refined and modified, as necessary, into a recommended development concept (Chapter 5); therefore, the planning considerations and alternatives presented in this chapter can be considered a beginning point in the evolution of a recommended concept for the future of DTO.

NO-ACTION/NON-DEVELOPMENT ALTERNATIVES

Prior to the presentation of development alternatives for DTO, several non-development options should be taken into consideration. Non-development alternatives include a "no-build" or "do-nothing" alternative, development of a replacement airport at a new location, or closure of the existing airport and the transfer of services to another existing airport. This section presents a discussion of the primary non-development alternatives.

NO-BUILD/DO-NOTHING ALTERNATIVE

The City of Denton is charged with managing the airport for the economic improvement of the community and region. In some cases, alternatives may include a no-action option; for DTO, this would effectively reduce the quality of services being provided to the public, affect the aviation facility's ability to meet FAA design standards, and affect the region's ability to support aviation needs. The ramifications of a no-action alternative expand into impacts on the economic well-being of the region. **An analysis of the economic benefit of the airport was completed in 2018, and it was found that DTO had a total annual economic impact of $156.3 million and supported more than 1,435 jobs.** If facilities are not maintained and improved so the airport can support general aviation operations, delays become unacceptable, or aircraft storage is not available, aviation activities and business may shift elsewhere. The no-action alternative is also inconsistent with the long-term goal of the FAA and Texas Department of Transportation (TxDOT) Aviation Division to enhance local and interstate commerce.

Furthermore, DTO has received nearly $22.4 million in state and federal grants since 2005. These grants represent a direct economic stimulus that has lasting positive economic impacts. The City of Denton has a vested interest in maintaining and improving airport facilities for business and general aviation users. Without a commitment to the ongoing improvement of the airport, users of the airport will be constrained from taking full advantage of the airport's air transportation capabilities; therefore, a no-action alternative is not considered further in this master plan.

TRANSFER OF SERVICE/RELOCATE AIRPORT

This study will not consider the relocation of services to another airport or the development of a new airport site. The development of a new facility is a complex and expensive option. A new site would require greater land area, duplication of investment in facilities, installation of supporting infrastructure that is already available at the existing site, and greater potential for negative impacts to natural, biological, and cultural resources.

As previously mentioned, the City of Denton has accepted nearly $22.4 million in federal and state development grant funding over the past 20 years, including the construction of a new parallel runway. Through grant assurances, the acceptance of these grants obligates the airport sponsor to maintain the airport as an airport. Closing the existing airport and transferring services to another existing airport would be considered a violation of the grant assurances and would require repayment of grants that are not yet fully depreciated. The investments made and the economic benefits received from the airport (both public and private) could not readily be shifted or regenerated to another airport without significant costs/losses. As such, this alternative is not considered practical, reasonable, or financially feasible.

NON-DEVELOPMENT ALTERNATIVES SUMMARY

The purpose of this master plan is to examine aviation needs at DTO over the course of the next 20 years; therefore, this master plan will examine the needs of the existing airport and present a program of needed capital improvement projects to cover the scope of the plan. The airport is a lucrative business, transportation utility, and economic asset for the region. It can accommodate existing and future demand and should be developed accordingly to support the interests of the residents and businesses that rely upon it. Ultimately, the final decision regarding development rests with the City of Denton, TxDOT, and the FAA on an individual project basis. DTO is a vibrant facility with abundant remaining growth potential; as such, the non-development alternatives will not be considered further in this planning process. The following analysis covers airside and landside development alternatives that consider an array of facility demands, including safety, capacity, access, and efficiency.

PLANNING OBJECTIVES

A set of basic planning objectives has been established to guide the alternatives development process. It is the goal of this master planning effort to produce a development plan for the airport that addresses the forecasted aviation demand and meets FAA design standards to the greatest degree possible. As the owner and operator of the airport, the City of Denton provides overall guidance for its operation and development. It is of primary concern that DTO is marketed, developed, and operated for the betterment of the community and users of the airport. The following basic planning principles and objectives are utilized as general guidelines during this planning effort:

- Develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations.
- Preserve and protect public and private investments in existing airport facilities.
- Provide a means for the airport to grow as dictated by demand.
- Establish a plan to ensure the long-term viability of the airport and promote compatible land uses surrounding the airport.
- Develop a facility that is readily responsive to the changing needs of all aviation users.
- Reflect and support the long-term planning efforts that currently apply to the region.

- Develop a facility with a focus on achieving self-sufficiency in operational and developmental cost recovery.
- Ensure future development is environmentally compatible.

REVIEW OF PREVIOUS AIRPORT PLANS

The previous master plan for DTO was completed in 2015. Recommendations from this study are depicted on **Exhibit 4A**, and include the following:

- Development of a new parallel runway (18R-36L) along with associated parallel taxiways to support landside facilities on the west side of the airport.
- Maintain existing Runway 18L-36R at its existing dimensions.
- Realign Taxiway B to allow for the expansion of the terminal apron.
- Realign Taxiways A3 and A6 to align with the future (now existing) connecting taxiways to the parallel runway.
- Proposed helicopter training site at the south end of the existing landside area.
- Hangar development throughout the east landside area.
- Reflecting the proposed Loop 288 extension on the west side of the airfield planned by TxDOT.
- Develop infrastructure (roads/utilities) to allow for development of the west side of the airport.

The analysis presented in this chapter revisits the recommendations presented in the previous master plan. Since the completion of the last plan, the parallel runway has been constructed and taxiways A3 and A6 have been realigned as proposed. In addition, several new hangars have been developed within the east landside areas and a new firefighting station has been constructed adjacent to the terminal.

AIRSIDE ALTERNATIVES

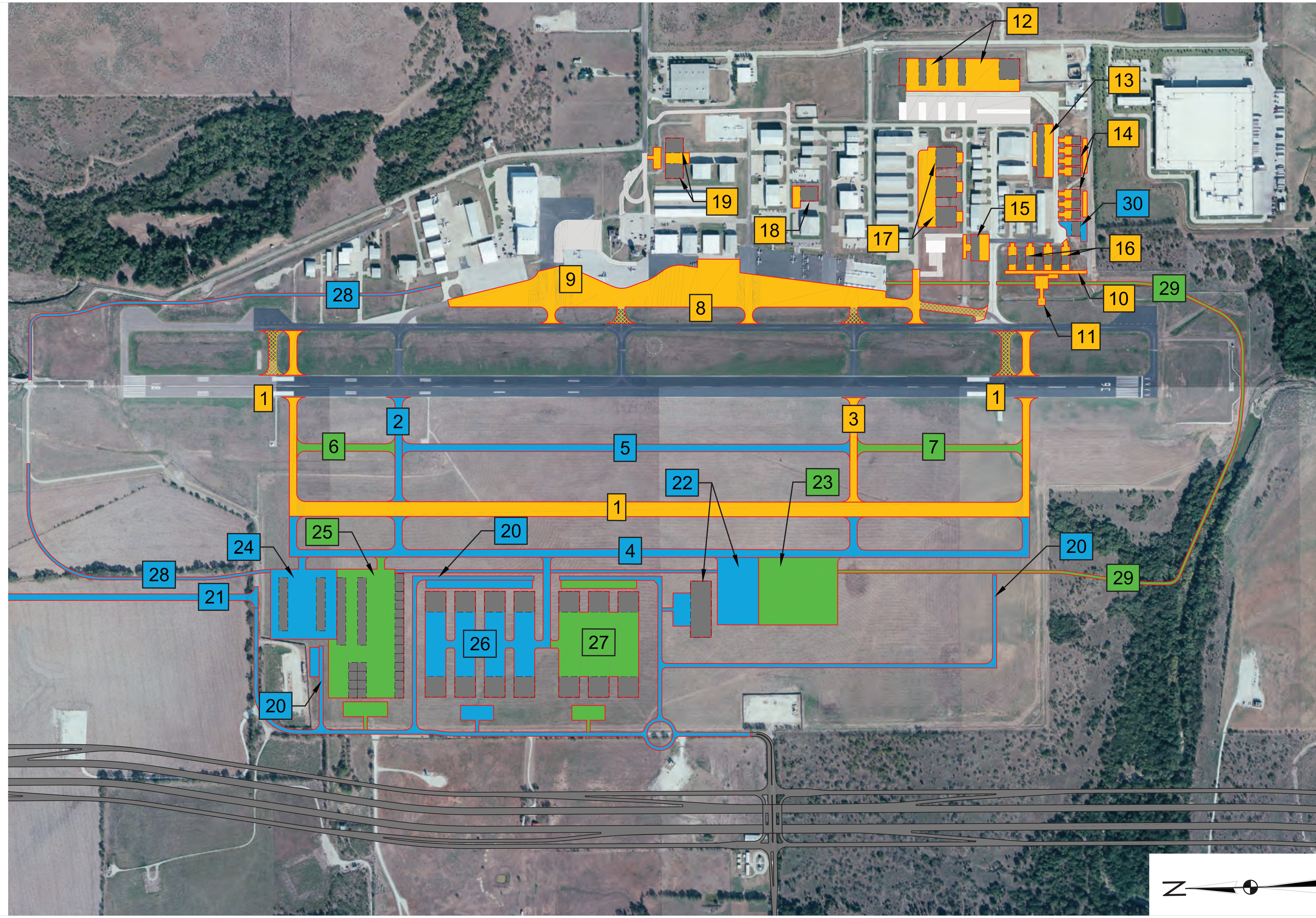
Development alternatives are categorized into two functional areas: airside and landside. Airside considerations relate to elements such as runways, taxiways, navigational aids, lighting, and marking aids, and require the greatest commitment of land area to meet the physical layout of the airport, as well as the required airfield safety standards. The design of the airfield also defines minimum setback distances from the runway and object clearance standards. These criteria are defined first to ensure the fundamental needs of the airport are met. Landside considerations include hangars, aircraft parking aprons, and terminal services, as well as utilization of remaining property to provide revenue support for the airport and benefit the economic development and well-being of the regional area.

The remainder of this chapter describes various development alternatives for airside and landside facilities. Although each area is treated separately, ultimate planning will integrate the individual requirements so they can complement one another.

LEGEND

- PROPOSED BUILDING
- PAL 1 PROJECT
- PAL 2 PROJECT
- PAL 3 PROJECT
- PAVEMENT DEMOLITION

AIRFIELD	
1	New Parallel Runway 18R-36L
2	Extend Taxiway A3
3	Extend Taxiway A5
4	New West Parallel Taxiway
5	New Interior Parallel Taxiway
6	Extend Parallel Taxiway North
7	Extend Parallel Taxiway South
8	Realign Taxiway B
11	New Helicopter Training Area
GENERAL AVIATION	
9	Expand East Aprons
10	Extend Schweizer Street
12	Construct Hangars East of Q
13	Construct Hangars North of P
14	Construct Hangars South of P
15	Construct Hangar North of L
16	Construct Hangars West of M
17	Construct Hangars South of K
18	Construct Hangar North of J
19	Construct Hangars North of H
20	Construct West Side Access Roads
21	Relocate Tom Cole Road
22	New GA Ramp, Support Facility
23	Expand GA Ramp
24	Construct Small Box / T-Hangars
25	Expand Box / T-Hangars
26	Conventional Hangar Development 1
27	Conventional Hangar Development 2
MISCELLANEOUS	
28	North Vehicle Service Road
29	South Vehicle Service Road
30	ARFF Facility and Vehicle



Source: Geodetix, Inc. 2012 (Aerial Photography)

Source: Denton Enterprise Airport Master Plan, 2015

Exhibit 4A
2015 AIRPORT MASTER PLAN RECOMMENDATIONS

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AIRSIDE CONSIDERATIONS

Table 4A presents the airside considerations that are specifically addressed in this analysis. Landside planning considerations are outlined later in this chapter. These issues are the result of the findings of the aviation demand forecasts and facility requirements evaluations, as well as input from the PAC, airport management, the City of Denton, and the public. In addition to these considerations, both runways are planned to meet applicable runway design code (RDC) standards.[1] Runway 18L-36R is planned to meet RDC C-II-2400 standards in the existing condition and C/D-III-2400 standards in the ultimate condition. Runway 18R-36L is planned to meet RDC B-II-4000 design standards in both the existing and ultimate condition.

TABLE 4A | Airside Planning Considerations

#	Non-Standard/Deficient Condition	Applicable Design Standard	Proposed Action(s) to be Evaluated
1	Runway 18L-36R has only one exit taxiway within the designated 2,000' to 4,000' range from the landing threshold for airfield capacity calculation purposes.	FAA AC 150/5060-5, Change 2, *Airfield Capacity and Delay*	Consider adding additional exits within the target range to enhance airfield capacity.
2	Runway 18L-36R has applied declared distances to meet FAA RSA/ROFA design standards. A standard RSA/ROFA on a RDC C-II-2400 and C/D-III-2400 runway extend 1,000 feet from the end of the runway. There are currently only 500' of RSA/ROFA to the south of the runway and only 600' of RSA/ROFA to the north of the runway.	FAA AC 150/5300-13B, *Airport Design,* Appendix H, H.1.5.b	As part of the master plan process, the FAA expects a review of reasonable mitigation measures to reduce or eliminate the use of declared distances.
3	At 5,003 feet long, Runway 18R-36L is limited in its ability to serve small and mid-sized business jet aircraft at 60 percent useful loads.	FAA AC 150/5325-4B, *Runway Length Requirements for Airfield Design,* Paragraph 306	Consider extension options to a minimum length of 5,500 feet to satisfy the FAA recommended length to accommodate 75 percent of business jets operating at 60 percent useful loads.
4	Portions of the RPZs on each runway are not controlled by the airport via fee ownership or avigation easement. Affected property totals approximately 10 acres.	FAA AC 150/5190-4B, *Airport Land Use Compatibility Planning,* §2.2.5	Establish control via new avigation easements or fee ownership of all properties within the RPZs.
5	Runway 18R-36L is not equipped with a full-length parallel taxiway, which is required for runways with instrument approaches with visibility minimums down to ¾-mile.	FAA AC 150/5300-13B, *Airport Design,* Appendix K, Table K-1	Consider adding a parallel taxiway to Runway 18R-36L.
6	The north and south intersections of Taxiway B and Taxiway A result in non-standard taxiway geometry conditions, including direct-access and irregular turning angles.	FAA AC 150/5300-13B, *Airport Design,* Paragraph 4.3	Consider taxiway design improvements to mitigate non-standard geometry.

REIL = runway end identifier lights
ROFA = runway object free area
RPZ = runway protection zone
RSA = runway safety area

Source: Coffman Associates analysis

[1] Applicable RDC standards are detailed in Chapter 3.

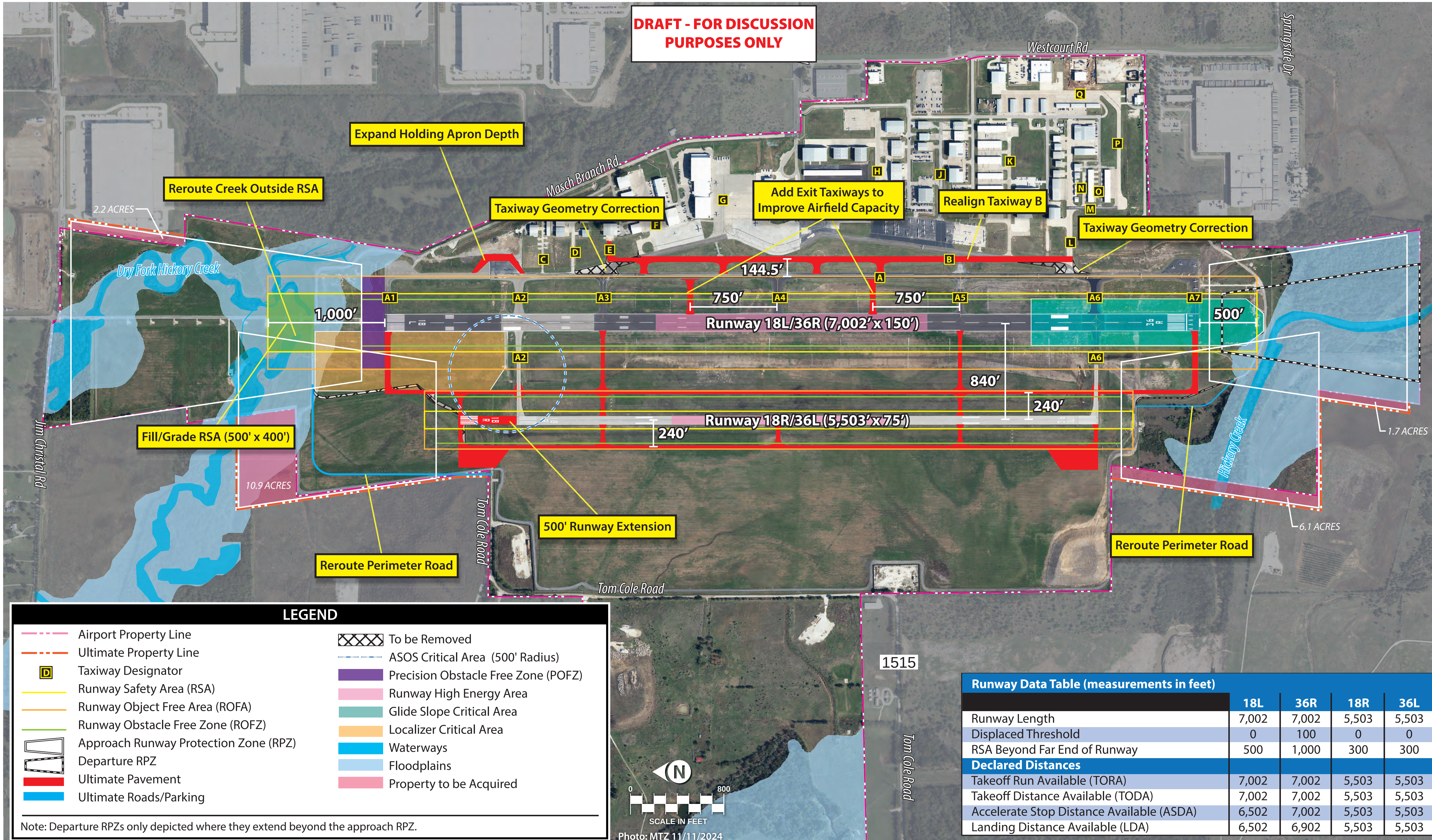
AIRFIELD ALTERNATIVES

Three alternatives have been prepared to address the items outlined in **Table 4A**. The details of each alternative, including associated advantages and disadvantages, are described as follows.

Airfield Alternative 1

Airfield Alternative 1 is depicted on **Exhibit 4B** and considers the following:

- Adding fill and grading the full 1,000 feet of RSA beyond the north end of the runway. The airport already maintains 600 feet of RSA off the north end of the runway, so this project extends the graded RSA area an additional 400 feet north at a width of 500 feet. This will require the rerouting of the Dry Fork Hickory Creek in this area. Providing a standard RSA increases usable takeoff and landing distances on Runway 36R (see declared distances table on the exhibit). The Runway 36R accelerate stop distance available (ASDA) increases from 6,602 feet to 7,002 feet (the full runway length) and the landing distance available (LDA) increases from 6,502 feet to 6,902 feet (accounts for the 100-foot displaced threshold). The increased Runway 36R utility, while beneficial, is minimal and is only applied to one runway end. To increase utility on Runway 18L, the more frequently used runway end, Hickory Creek, a much more substantial waterway, would need to be rerouted and significant amounts of fill material would need to be added to meet grading standards (terrain drops ±34 feet in elevation south of the runway). Due to the significant terrain issues and needing to reroute a major waterway, extending the RSA further to the south of the runway is not feasible and is not considered further in the alternatives analysis.
- Two new exit taxiways serving Runway 18L-36R are added within the middle 1/3rd of the runway to allow landing aircraft to exit the runway more quickly, thereby reducing runway occupancy times. The exits are spaced at a minimum of 750 feet separation (minimum spacing requirement to be considered as a capacity enhancement).
- Runway 18R-36L is extended 500 feet to the north for a full length of 5,503 feet. At this length, the parallel runway meets the FAA recommended length to accommodate 75 percent of business jets at 60 percent useful loads. This length would also accommodate the existing and future critical aircraft at useful loads of between 60 and 70 percent. Improving the utility of the parallel runway builds redundancy into the airfield if Runway 18L-36R is closed for maintenance or emergency situations.
- Additional taxiways to be located between the parallel runways and on the west side of Runway 18R-36L. These taxiways will enhance airfield circulation and support landside development of the west side of airport property. The taxiways are at a 240-foot separation distance from Runway 18R-36L, meeting RDC B-II-4000 design standards. Taxiways A1, A3, A5, and A7 are extended west to provide additional access points to the parallel runway and to aid in circulation of aircraft across the airfield.
- The Taxiway A taxiway object free area (TOFA) width is planned to increase from 124 feet (ADG II) to 171 feet (ADG III), which will restrict the use of the existing holding bay located adjacent to Taxiway A2. Expanding the depth of the holding bay will allow it to be used by aircraft without impacting the TOFA. Two new holding aprons are planned along the west parallel taxiway serving Runway 18R-36L to allow aircraft to perform preflight engine checks and to enhance circulation.



Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,002	7,002	5,503	5,503
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	1,000	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,002	7,002	5,503	5,503
Takeoff Distance Available (TODA)	7,002	7,002	5,503	5,503
Accelerate Stop Distance Available (ASDA)	6,502	7,002	5,503	5,503
Landing Distance Available (LDA)	6,502	6,902	5,503	5,503

Exhibit 4B
AIRFIELD ALTERNATIVE 1

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- Taxiway B is realigned to a parallel configuration with Taxiway A with a separation distance of 144.5 feet, meeting ADG III separation standards. Realigning Taxiway B opens the possibility of expanding the aprons on the east landside area. It also allows for reconfiguring the intersection of Taxiway B with Taxiway A, thereby creating 90-degree intersections and mitigating non-standard geometry.
- Fee simple or avigation easement acquisition of approximately 20.9 acres of property to protect the runway protection zones (RPZs) for each runway.
- The perimeter road is rerouted to the north and south of the parallel runway to avoid impacts to expanded runway/taxiway pavements.

Airfield Alternative 2

Airfield Alternative 2 is depicted on **Exhibit 4C** and considers the following:

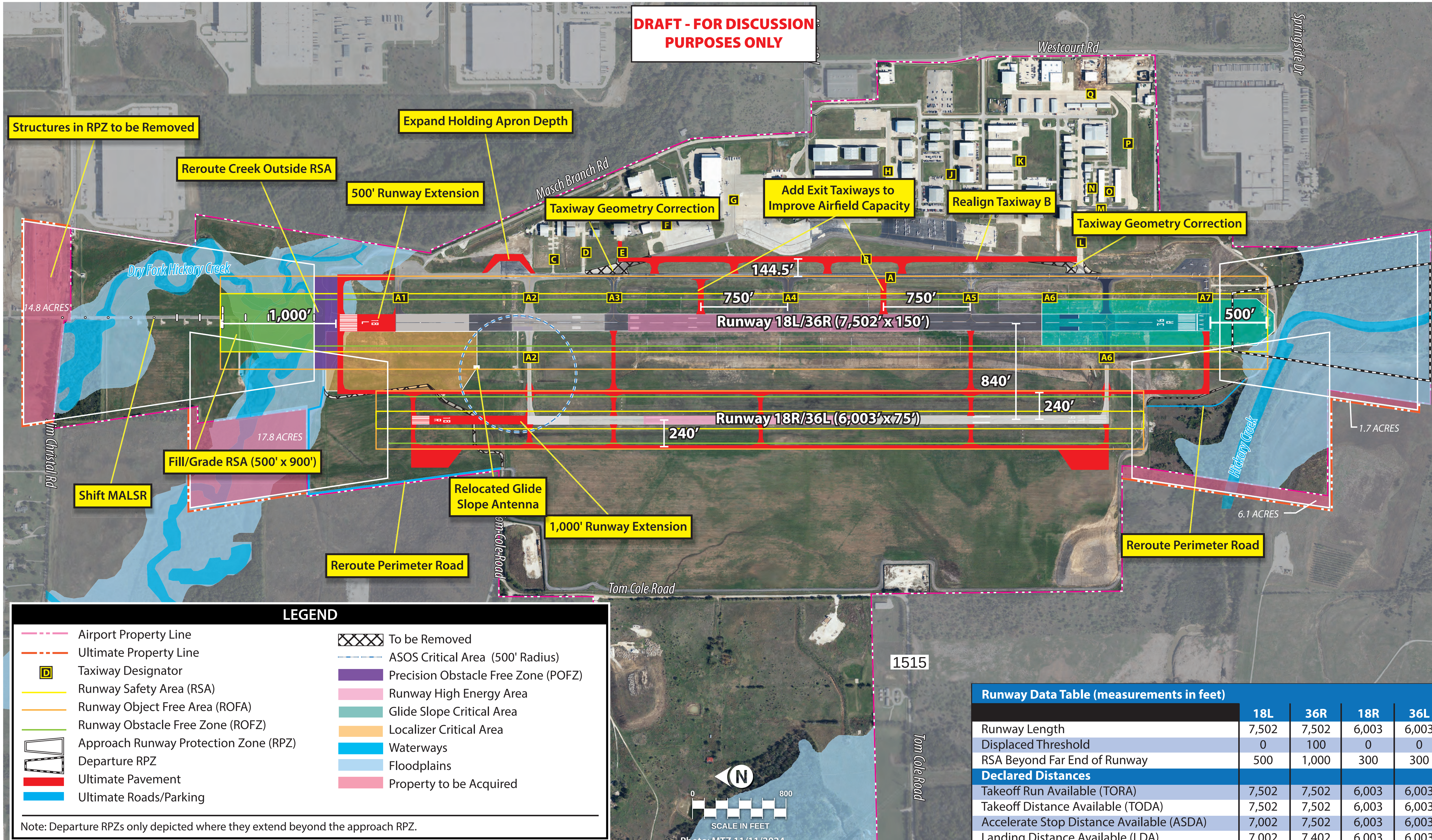
- Extending Runway 18L-36R 500 feet to the north, adding fill material, and grading the full 1,000-foot RSA. This alternative requires rerouting Dry Fork Hickory Creek to the north of the runway to a greater degree than what was proposed in Alternative 1. The runway extension results in a full length of 7,502 feet while maintaining the south end of the runway in its existing condition. The resulting declared distances provide 7,002 feet of ASDA and LDA on Runway 18L, and 7,502 feet of ASDA and 7,402 feet of LDA on Runway 36R. At these lengths, the runway's utility is enhanced to accommodate the existing and ultimate critical aircraft at useful loads of up to 90 percent. A result of extending the runway to the north is the shifting of the RPZ over uncontrolled property north of Jim Christal Road, which includes properties currently developed or under development. These areas would need to be cleared from the RPZ. The Runway 18L medium intensity approach lighting system (MALSR) and the glide slope antenna would also need to be shifted north to align to the ultimate runway end, and the precision approach path indicator (PAPI-4) would need to be relocated.
- Two new exit taxiways serving Runway 18L-36R are added within the middle 1/3rd of the runway to allow landing aircraft to exit the runway more quickly, thereby reducing runway occupancy times. The exits are spaced at a minimum of 750 feet separation (minimum spacing requirement to be considered as a capacity enhancement).
- Runway 18R-36L is extended 1,000 feet to the north for a full length of 6,003 feet. At this length, the parallel runway meets the FAA recommended length to accommodate 100 percent of business jets at 60 percent useful loads. This length would also accommodate the existing and future critical aircraft at useful loads of between 70 and 80 percent. Improving the utility of the parallel runway builds redundancy into the airfield if Runway 18L-36R is closed for maintenance or emergency situations.
- Additional taxiways to be located between the parallel runways and on the west side of Runway 18R-36L. These taxiways will enhance airfield circulation and support landside development of the west side of airport property. The taxiways are at a 240-foot separation distance from Runway 18R-36L, meeting RDC B-II-4000 design standards. Taxiways A3, A5, A7, and the new entrance taxiway at the ultimate Runway 18L threshold are extended west to provide additional access points to the parallel runway and to aid in circulation of aircraft across the airfield.

- The Taxiway A taxiway object free area (TOFA) width is planned to increase from 124 feet (ADG II) to 171 feet (ADG III), which will restrict the use of the existing holding bay located adjacent to Taxiway A2. Expanding the depth of the holding bay will allow it to be used by aircraft without impacting the TOFA. Two new holding aprons are planned along the west parallel taxiway serving Runway 18R-36L to allow aircraft to perform preflight engine checks and to enhance circulation.
- Taxiway B is realigned to a parallel configuration with Taxiway A with a separation distance of 144.5 feet, meeting ADG III separation standards. Realigning Taxiway B opens the possibility of expanding the aprons on the east landside area. It also allows for reconfiguring the intersection of Taxiway B with Taxiway A, creating 90-degree intersections and mitigating non-standard geometry.
- Fee simple or avigation easement acquisition of approximately 40.4 acres of property to protect the runway protection zones (RPZs) for each runway.
- The perimeter road is rerouted to the north and south of the parallel runway to avoid impacts to expanded runway/taxiway pavements.

Airfield Alternative 3

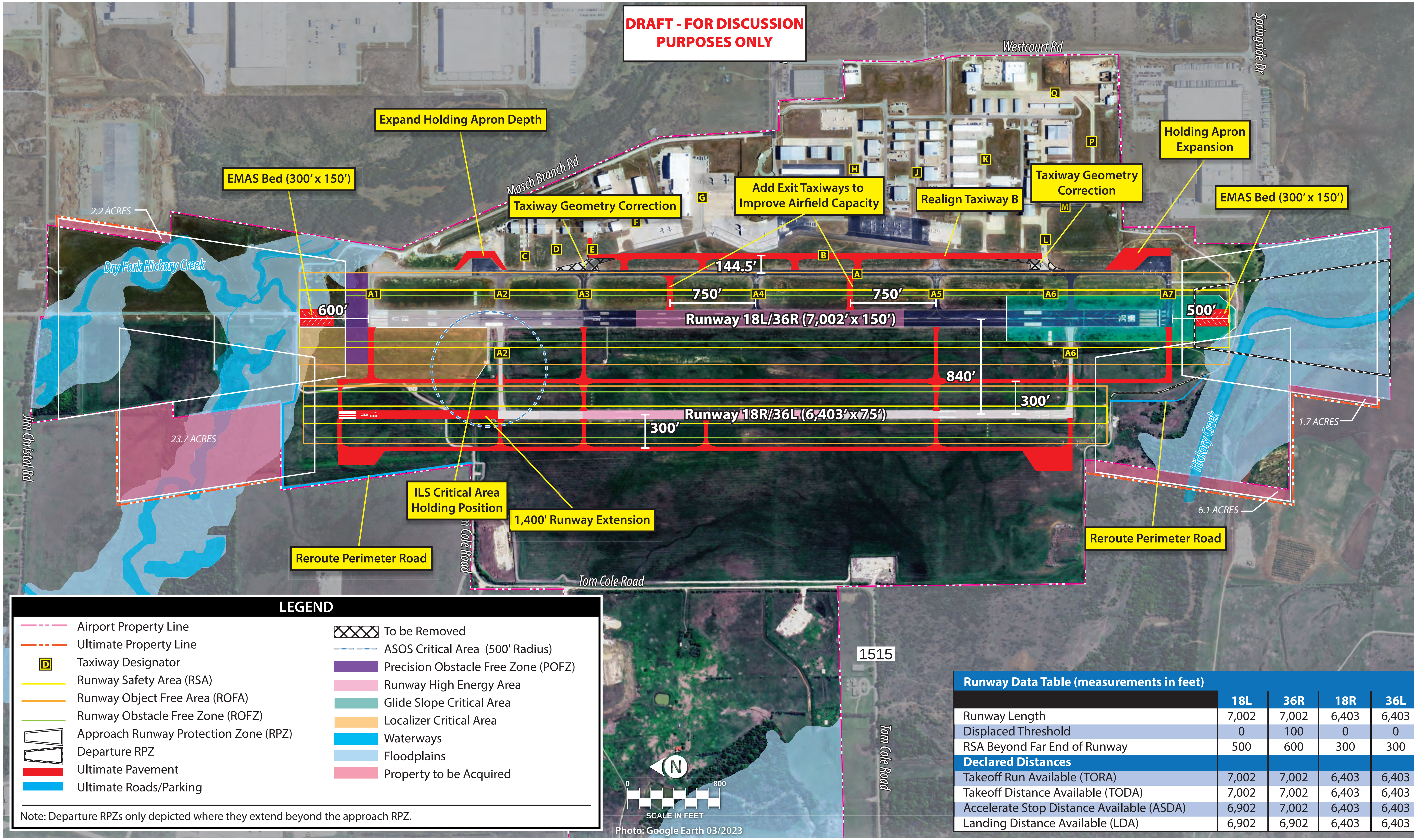
Airfield Alternative 3 is depicted on **Exhibit 4D** and considers the following:

- Installing engineered material arresting system (EMAS) beds on both ends of the runway. EMAS is a crushable concrete material that decelerates aircraft during an excursion incident without damaging the landing gear of the aircraft. The implementation of EMAS reduces the RSA/ROFA beyond the end of the runway requirement from 1,000 feet to 600 feet. The EMAS bed shown in the alternative is 300 feet long, 150 feet wide, and is set back 300 feet north of the runway end and 200 south of the runway end. The Runway 36R threshold would remain displaced by 100 feet to meet the 600-foot of RSA prior to the landing threshold requirement. The reduced RSA/ROFA requirement increases the Runway 18L ASDA and LDA to 6,902 feet and the 36R ASDA to 7,002 feet and the LDA to 6,902 feet. This alternative gets more utility out of the existing runway pavement while also not requiring filling/grading any additional RSA, rerouting the Dry Fork Hickory Creek, or altering approach lighting systems or navigational aids.
- Two new exit taxiways serving Runway 18L-36R are added within the middle 1/3rd of the runway to allow landing aircraft to exit the runway more quickly, reducing runway occupancy times. The exits are spaced at a minimum of 750 feet separation (minimum spacing requirement to be considered as a capacity enhancement).
- Runway 18R-36L is extended 1,400 feet to the north for a full length of 6,403 feet. At this length, the parallel runway meets the FAA recommended length to accommodate the existing and future critical aircraft at useful loads of between 80 and 90 percent. Improving the utility of the parallel runway builds redundancy into the airfield if Runway 18L-36R is closed for maintenance or emergency situations.
- Additional taxiways to be located between the parallel runways and on the west side of Runway 18R-36L. These taxiways will enhance airfield circulation and support landside development of the west side of airport property. The taxiways are at a 300-foot separation distance from



Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,502	7,502	6,003	6,003
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	1,000	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,502	7,502	6,003	6,003
Takeoff Distance Available (TODA)	7,502	7,502	6,003	6,003
Accelerate Stop Distance Available (ASDA)	7,002	7,502	6,003	6,003
Landing Distance Available (LDA)	7,002	7,402	6,003	6,003



Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,002	7,002	6,403	6,403
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	600	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,002	7,002	6,403	6,403
Takeoff Distance Available (TODA)	7,002	7,002	6,403	6,403
Accelerate Stop Distance Available (ASDA)	6,902	7,002	6,403	6,403
Landing Distance Available (LDA)	6,902	6,902	6,403	6,403

Runway 18R-36L, meeting RDC C-II-4000 design standards. This separation allows the parallel runway opportunity to grow into a higher design standard in the future without needing to relocate the taxiways. The increased separation from what is proposed in the previous two alternatives also allows for better alignment of aircraft at holding position markings, giving pilots greater visibility of aircraft traffic. A disadvantage of the 300-foot separation distance is that the mid-field parallel taxiway extends through the glide slope critical area, which would require a separate instrument landing system (ILS) critical area holding position marking located north of the intersection of the parallel taxiway with Taxiway A2. Taxiways A1, A3, A5, and A7 are extended west to provide additional access points to the parallel runway and to aid in circulation of aircraft across the airfield.

- The Taxiway A taxiway object free area (TOFA) width is planned to increase from 124 feet (ADG II) to 171 feet (ADG III) which will restrict the use of the existing holding bay located adjacent to Taxiway A2. Expanding the depth of the holding bay will allow it to be used by aircraft without impacting the TOFA. This alternative also considers expanding the south holding apron on Taxiway A to provide increased capacity for queuing aircraft. Two new holding aprons are planned along the west parallel taxiway serving Runway 18R-36L to allow aircraft to perform preflight engine checks and to enhance circulation.
- Taxiway B is realigned to a parallel configuration with Taxiway A with a separation distance of 144.5 feet, meeting ADG III separation standards. Realigning Taxiway B opens the possibility of expanding the aprons on the east landside area. It also allows for reconfiguring the intersection of Taxiway B with Taxiway A, creating 90-degree intersections and mitigating non-standard geometry.
- Fee simple or avigation easement acquisition of approximately 33.7 acres of property to protect the runway protection zones (RPZs) for each runway.
- The perimeter road is rerouted to the north and south of the parallel runway to avoid impacts to expanded runway/taxiway pavements.

LANDSIDE ALTERNATIVES

Generally, landside issues are related to the facilities necessary or designed for the safe and efficient parking and storage of aircraft, movement of pilots and passengers to and from aircraft, airport support facilities, and overall revenue support functions. To maximize airport efficiency, it is important to locate facilities together that are intended to serve similar functions. The best approach to landside facility planning is to consider the development like that of a community for which land use planning is the guide. For general aviation airports, land use in the landside areas should generally be dictated by aviation activity levels. In the case of DTO, all landside facilities are currently concentrated on the east side of the airfield. The proposed development of the Loop 288 extension along the west boundary of the airport will bring west landside development opportunities and the ability to further segregate disparate airport users.

LANDSIDE CONSIDERATIONS

Landside planning considerations are summarized in **Table 4B**. Generally, the considerations reflect the needs of a growing general aviation airport that has strong hangar demand and growing itinerant traffic that demands greater apron capacity. Greater Jet A fuel storage capacity is needed, and an additional unleaded aviation fuel (100UL) tank may be added once 100UL fuel is more widely available and demanded by users. Consideration is also given to reserving space for advanced air mobility (AAM), a new entrant to the aviation industry, as well as for potential air cargo facilities.

TABLE 4B | Landside Planning Considerations

#	Landside Component	Existing Capacity	Consideration
1	Aircraft Storage Hangars	736,720 sf of existing capacity	Increase total capacity by 571,680 sf.
2	Aircraft Parking Apron	60,175 sy of apron/parking	Increase total capacity by 44,725 sy.
3	Fuel Storage Capacity	36,340 gallons (Jet A); 37,340 gallons (100LL)	Increase Jet A storage by 69,849 gallons. Add a dedicated unleaded aviation fuel (100UL) tank.
4	Advanced Air Mobility (AAM)	None	Reserve space for future vertiport and support facility development.
5	Air Cargo	None	Reserve space for the potential development of an air cargo handling facility and dedicated apron and truck loading and staging areas.

sf = square feet
sy = square yards
Source: Coffman Associates analysis

The following section describes a series of landside alternatives as they relate to the identified considerations. Variations of future hangar and apron developments are presented to help visualize what future facility developments could look like.

Six alternatives have been prepared: three for the east side, where existing landside facilities are already present, and three for the west side, which is largely undeveloped. The alternatives provide potential development plans aimed at meeting the needs of general aviation through the long-term planning period and beyond.

The alternatives presented are not the only reasonable options for development. In some cases, a portion of one alternative could be intermixed with another, and some development concepts could be replaced with others. The overall intent of this exercise is to outline basic development concepts to spur collaboration for a final recommended plan. The final recommended plan only serves as a guide for the airport to aid the City of Denton in the strategic planning of airport property. Airport operators often change their plans to meet the needs of specific users. **The goal in analyzing landside development alternatives is to focus future development so airport property can be maximized and aviation activity can be protected.**

EAST LANDSIDE ALTERNATIVES

The east side is nearing a built-out condition with most undeveloped areas already under development for new hangar facilities. The three alternatives to follow are each similar in that they present concepts for filling in undeveloped areas with new hangars. Each alternative will also consider redevelopment of certain areas on the east side to include the removal/relocation of some existing hangar facilities to meet the growing demand for new, larger conventional/executive style hangars. Impacted hangar units are planned to be relocated or replaced by new hangars on the west side. An area of focus for the alternatives is the segregation of uses. In this case, the future potential of west side development allows for the east side to be focused on larger facilities to support aircraft needing to operate on the longer primary runway, whereas west side development can be focused on facilities supporting smaller aircraft that are able to utilize the shorter parallel runway.

East Landside Alternative 1

East Landside Alternative 1 is depicted on **Exhibit 4E** and considers the following:

- Hangar development in this alternative is focused on filling in developable property with hangar sizes and types that can accommodate larger and more sophisticated aircraft. In total, this alternative presents a net increase of 347,000 square feet (sf) of hangar capacity.
- The north portion of the east side, consisting of hangars along Taxilanes C and D, is proposed to be redeveloped to include a 24,000 square yard (sy) apron and three hangars sized to support FBO/specialty aviation service operator (SASO) types of activities.
- A 40,000-sf air cargo handling facility and associated 16,000 sy apron is proposed at the south end of the east side. This site has direct accessibility to the airfield, and the perimeter road would be improved to accommodate truck traffic to Westcourt Road.
- With the realignment of Taxiway B, the main terminal apron can be extended to provide an additional 21,350 sy for aircraft parking/circulation, particularly for larger business jets. This alternative presents a net apron increase of 70,550 sy.
- Vehicle parking is planned in the terminal area and where appropriate to accompany new hangar developments.
- Fuel storage facilities are planned to be expanded in their current locations, as needed.

East Landside Alternative 2

East Landside Alternative 2 is depicted on **Exhibit 4F** and considers the following:

- Alternative 2 also considers a variety of hangar types/sizes to fill in developable property. Redevelopment is focused on the north portion (Taxilanes C and D) and south portion (between Taxilanes L and P). In total, this alternative presents a net increase of 475,000 sf of hangar capacity.
- The north portion of the east side, consisting of hangars along Taxilanes C and D, is proposed to be redeveloped to include a 24,000 sy apron with two taxilanes to support four new FBO/SASO hangars.
- Like Alternative 1, the main terminal apron is extended to provide an additional 21,350 sy for aircraft parking/circulation, particularly for larger business jets. This alternative presents a net apron increase of 64,500 sy.

- Vehicle parking is planned in the terminal area and where appropriate to accompany new hangar developments.
- Fuel storage facilities are planned to be expanded in their current locations, as needed.

East Landside Alternative 3

East Landside Alternative 3 is depicted on **Exhibit 4G** and considers the following:

- Alternative 3 focuses on redevelopment of the north portion (Taxilanes C and D), the south portion (between Taxilanes L and P), and along Taxilane K, with the purpose of allowing development of larger conventional style hangars. In total, this alternative presents a net increase of 458,550 sf of hangar capacity.
- The north portion of the east side, consisting of hangars along Taxilanes C and D, is proposed to be redeveloped to include an extended taxilane from Taxiway A to support several new FBO/SASO style hangars.
- Taxiway B is eliminated in this alternative to create a larger main terminal apron with an additional 66,125 sy of pavement. Taxiway A becomes an apron edge taxiway with a no-taxi island created to eliminate direct access from Taxiway A4. This alternative presents a net apron increase of 84,325 sy.
- Vehicle parking is planned in the terminal area and where appropriate to accompany new hangar developments.
- Fuel storage facilities are planned to be expanded in their current locations, as needed.

WEST LANDSIDE ALTERNATIVES

The west landside area, aside from natural gas well sites, is entirely undeveloped. Access is limited and utilities are not presently available for large scale development. However, with the east side reaching a built-out condition, focus must turn to the west side if the airport is to continue to grow. Each west landside alternative reflects proposed TxDOT plans for the extension of Loop 288, which will provide new access opportunities for the west side. To engage development on the west side, the City of Denton will likely need to invest in utility expansion and access roadways to these areas. The three alternatives to follow present conceptual layouts for new landside facility development as well as areas reserved for potential AAM facilities and non-aeronautical development.

West Landside Alternative 1

West Landside Alternative 1 is depicted on **Exhibit 4H** and considers the following:

- Assumes parallel taxiways are set to a C-II-4000 separation distance of 300 feet from Runway 18R-36L. This pushes new landside development further back from the runway but protects against needing to relocate the parallel taxiways at some point in the future if higher design standards are achieved on the parallel runway.

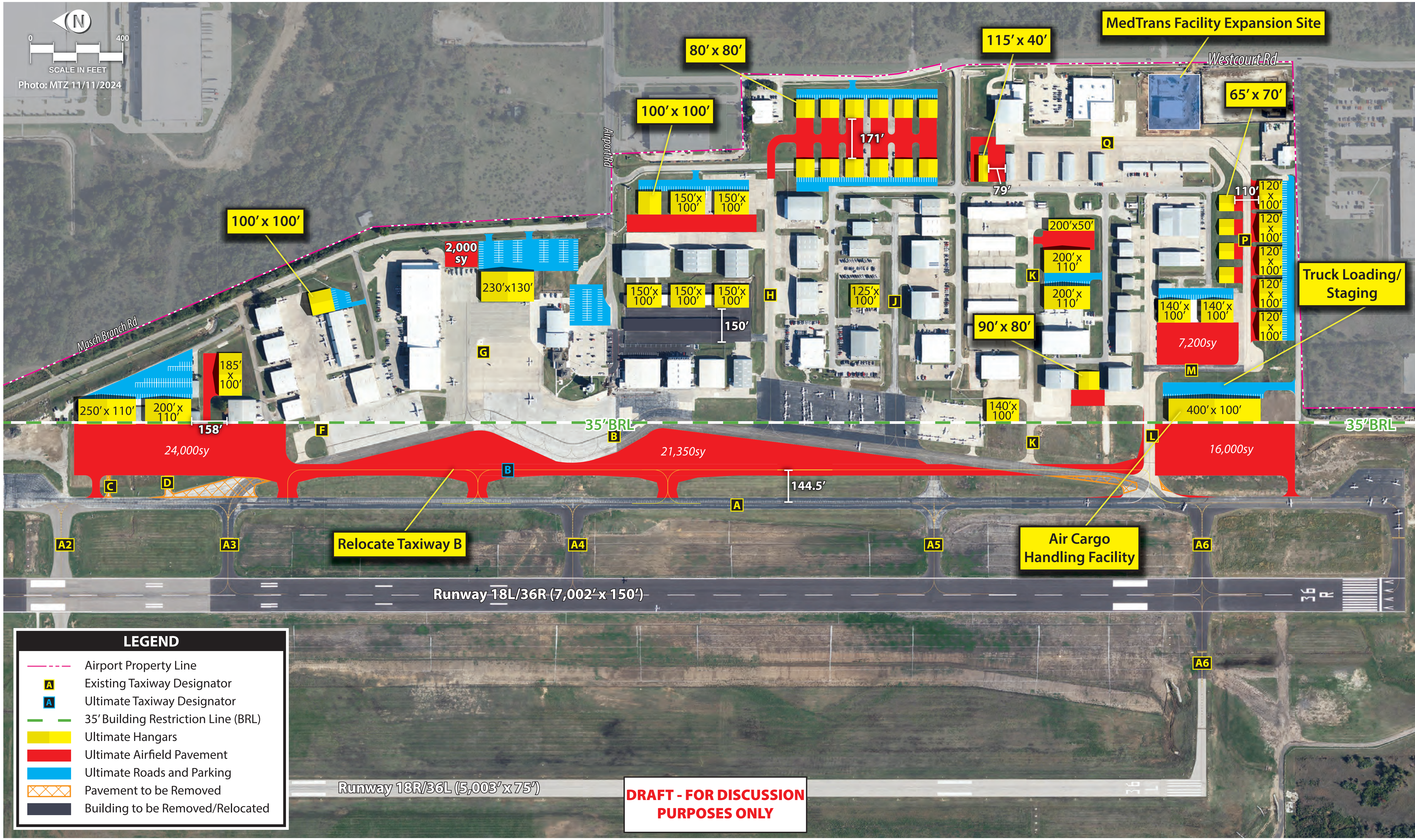
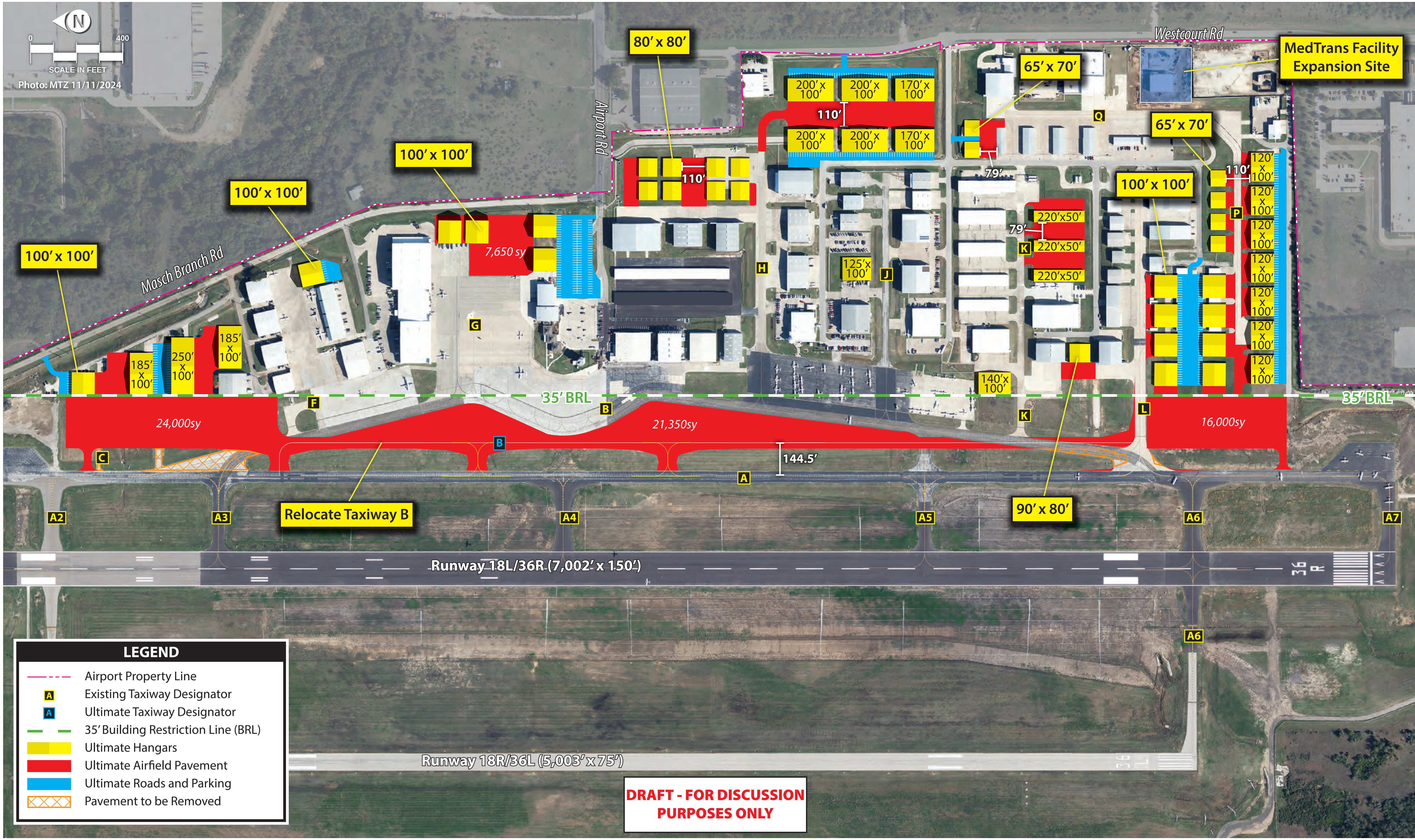


Exhibit 4E
EAST LANDSIDE ALTERNATIVE 1


N
0
400
SCALE IN FEET
Photo: MTZ 11/11/2024
Westcourt Rd
MedTrans Facility Expansion Site
80' x 80'
65' x 70'
65' x 70'
100' x 100'
100' x 100'
100' x 100'
100' x 100'
200' x 100'
200' x 100'
170' x 100'
200' x 100'
200' x 100'
170' x 100'
110'
110'
110'
79'
79'
220'x50'
220'x50'
220'x50'
125' x 100'
140' x 100'
120' x 100'
185' x 100'
250' x 100'
185' x 100'
7,650 sy
Airport Rd
Masch Branch Rd
35' BRL
35' BRL
24,000sy
21,350sy
16,000sy
144.5'
Relocate Taxiway B
90' x 80'
A
B
C
F
G
H
J
K
L
P
Q
A2
A3
A4
A5
A6
A7
Runway 18L/36R (7,002' x 150')
Runway 18R/36L (5,003' x 75')
LEGEND
Airport Property Line
Existing Taxiway Designator
Ultimate Taxiway Designator
35' Building Restriction Line (BRL)
Ultimate Hangars
Ultimate Airfield Pavement
Ultimate Roads and Parking
Pavement to be Removed
DRAFT - FOR DISCUSSION PURPOSES ONLY

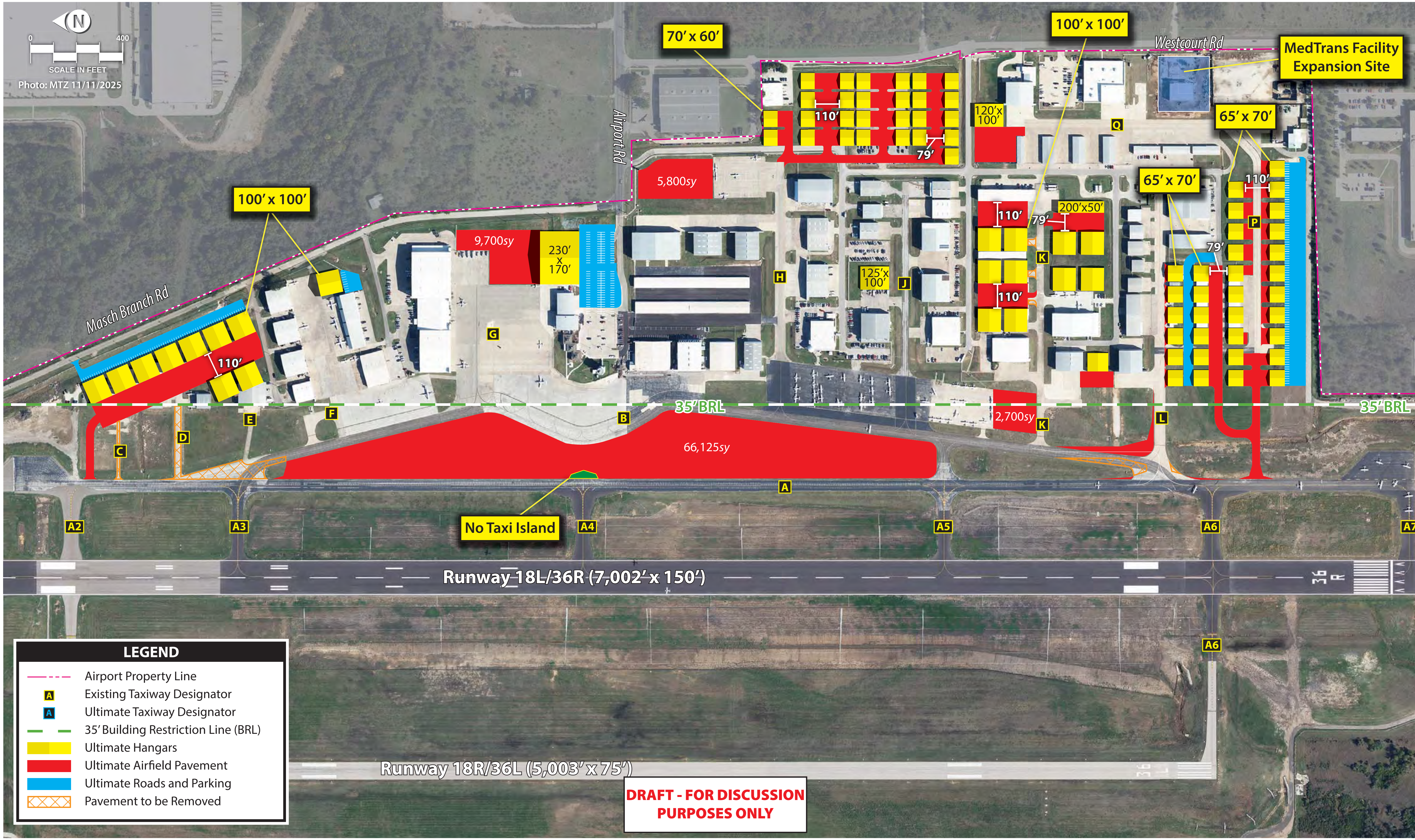
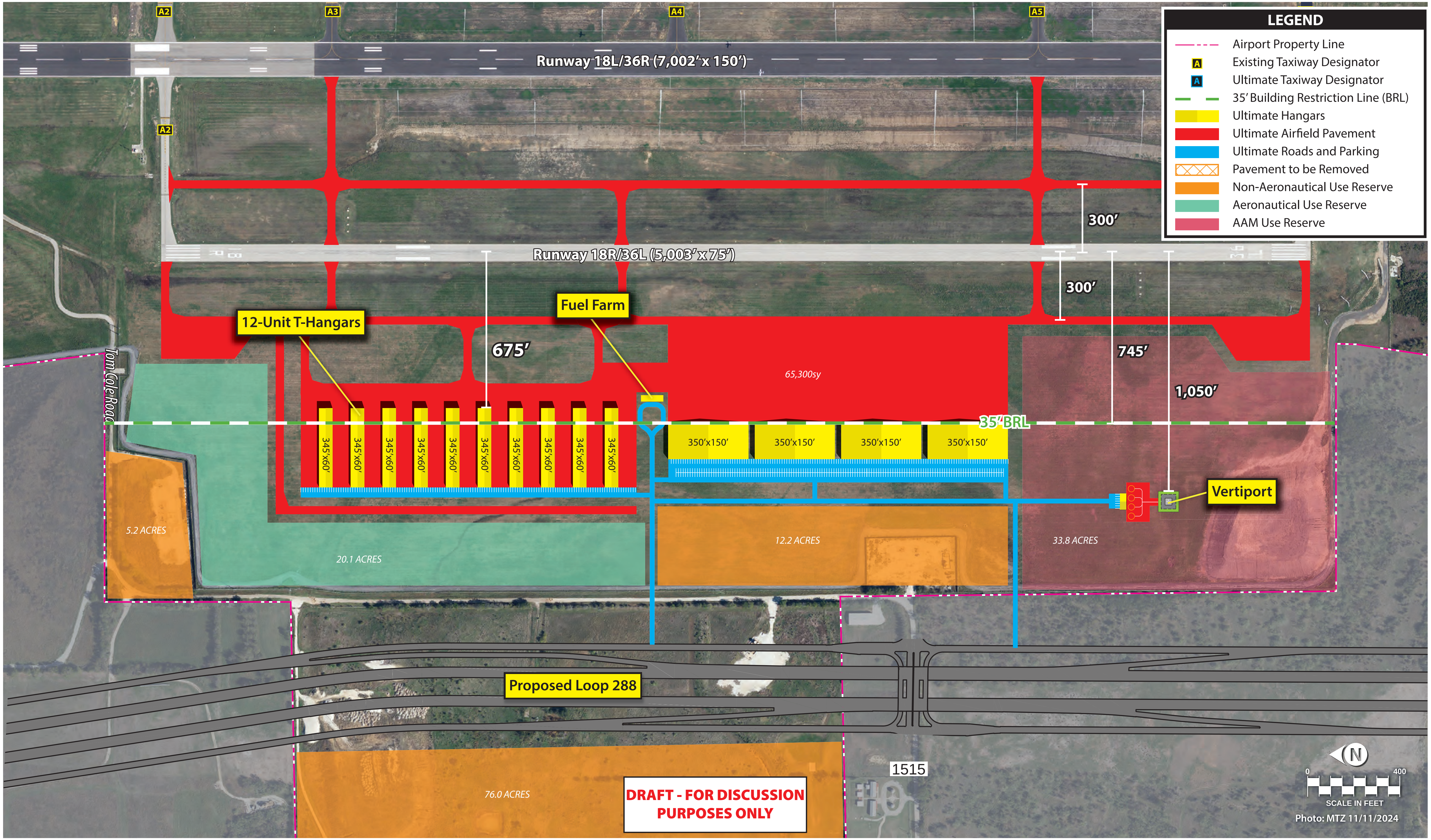


Exhibit 4G
EAST LANDSIDE ALTERNATIVE 3


LEGEND
Airport Property Line
Existing Taxiway Designator
Ultimate Taxiway Designator
35' Building Restriction Line (BRL)
Ultimate Hangars
Ultimate Airfield Pavement
Ultimate Roads and Parking
Pavement to be Removed
Non-Aeronautical Use Reserve
Aeronautical Use Reserve
AAM Use Reserve
Runway 18L/36R (7,002' x 150')
Runway 18R/36L (5,003' x 75')
A2
A3
A4
A5
300'
300'
675'
745'
1,050'
12-Unit T-Hangars
Fuel Farm
65,300sy
35' BRL
345'x60'
350'x150'
Vertiport
5.2 ACRES
20.1 ACRES
12.2 ACRES
33.8 ACRES
76.0 ACRES
Tom Cole Road
Proposed Loop 288
1515
DRAFT - FOR DISCUSSION PURPOSES ONLY
N
0
400
SCALE IN FEET
Photo: MTZ 11/11/2024

- A 65,300 sy apron centrally located to support four large FBO/SASO hangars. Ten 12-unit T-hangars provide 120 individual storage units. In total, this alternative presents 417,000 sf of new hangar capacity.
- A taxilane extension to provide aeronautical access to 20.1 acres of property reserved for future development, which will include SASO and small hangar facilities.
- A centralized fuel farm consisting of Jet A, 100LL, and 100UL fuel tanks, including self-service.
- The south 33.8 acres is reserved for AAM development, including a vertiport, aircraft parking, a small terminal facility, and vehicle parking. The vertiport is separated from Runway 18R-36L by 1,050 feet, which exceeds the 700-foot minimum separation distance recommended in the FAA's draft Engineering Brief (EB) 105A, *Vertiport Design*. However, EB105A also notes that vertiports located between 700 and 2,499 feet from a runway centerline may still experience impacts by eVTOL wake turbulence. This location for a vertiport would also put eVTOL operations directly under the downwind leg of the traffic pattern for aircraft operating right hand traffic to Runway 18R and for left hand traffic to Runway 36L. The FAA cautions airports with significant amounts of visual flight rule (VFR) traffic, which is the case for DTO, that a vertiport located below the visual traffic pattern may experience additional delays as controllers sequence eVTOL arrivals and departures with aircraft in the visual traffic pattern.
- Due to the large electricity demands associated with AAM eVTOL aircraft, AAM reserve areas could also include solar farms to help provide on-site electricity generation, lessening off-airport energy demand.
- Reserving 93.4 acres for non-aeronautical uses. These areas, which include the existing natural gas well sites, could be developed with new commercial/industrial developments. The non-aeronautical reserve areas are those that are cut off from airfield access by vehicle roads or the proposed Loop 288.

West Landside Alternative 2

West Landside Alternative 2 is depicted on **Exhibit 4J** and considers the following:

- Assumes parallel taxiways are set to a B-II-4000 separation distance of 240 feet from Runway 18R-36L. This separation meets current design standards and allows for deeper apron development between the taxiway and the 35-foot building restriction line (BRL). However, at this separation, the airport risks having to undergo a future project to relocate the taxiways out to a 300-foot separation if higher design standards are achieved on the parallel runway.
- A 77,000 sy apron centrally located to support three columns of large FBO/SASO style hangars; six columns of executive style hangars, totaling 36 individual hangars; and six 12-unit T-hangars to provide 72 individual storage units. In total, this alternative presents 489,600 sf of new hangar capacity.
- A 5,000 sf GA terminal is included to provide terminal services to tenants and visitors to the west side. An adjacent fuel farm, consisting of Jet A, 100LL, and 100UL fuel tanks, to support the FBO/SASO hangars and self-serve users.

- The southwest 25.9 acres is reserved for AAM development. The vertiport is separated from Runway 18R-36L by 1,130 feet. Like Alternative 1, this separation exceeds the recommended 700-foot minimum separation distance from the runway, but would have similar wake turbulence concerns, as well as cause potential operational delays due to its location under the Runway 18R-36L traffic pattern. The remaining portion of the AAM site can be developed with a solar farm to support electric charging for eVTOL aircraft.
- A 50,000 sf air cargo handling facility with truck loading/staging area and dedicated 30,000 sy apron. The west side location for air cargo provides easy truck access to the proposed Loop 288.
- Reserving 36.6 acres along the parallel runway flightline for future aeronautical developments to include new hangars and FBO/SASO facilities.
- Reserving 86.0 acres for non-aeronautical uses. These areas, which include the existing natural gas well sites, could be developed with new commercial/industrial developments. The non-aeronautical reserve areas are those that are cut off from airfield access by vehicle roads or the proposed Loop 288.

West Landside Alternative 3

West Landside Alternative 3 is depicted on **Exhibit 4K** and considers the following:

- Assumes parallel taxiways are set to a C-II-4000 separation distance of 300 feet from Runway 18R-36L. This pushes new landside development further back from the runway, but protects against needing to relocate the parallel taxiways at some point in the future if higher design standards are achieved on the parallel runway.
- Hangar development focus in this alternative is entirely on small aircraft T-hangar facilities. A 51,800-sy apron to support 19 new 12-unit T-hangars, providing 228 individual storage units. In total, this alternative presents 393,300 sf of new hangar capacity.
- A 5,000 sf GA terminal is included to provide terminal services to tenants and visitors to the west side. An adjacent fuel farm, consisting of Jet A, 100LL, and 100UL fuel tanks, to support the FBO/SASO hangars and self-serve users.
- A 20,000-sf air cargo handling facility with truck loading/staging area and dedicated 12,500 sy apron. The west side location for air cargo provides easy truck access to the proposed Loop 288.
- Reserving 21.8 acres along the parallel runway flightline for future aeronautical developments, which will include new hangars, FBO/SASO facilities, and future air cargo facility expansion.
- 62.9 acres located west of proposed Loop 288 is reserved for AAM development. This location offers the ability to meet the minimum 2,500-foot separation from Runway 18R-36L, which is needed to provide independent flight paths and minimal disruption to runway operations. This site is also further out from the standard traffic pattern for Runway 18R-36L, which will potentially avoid controller sequencing issues with eVTOL and fixed-wing aircraft in the visual traffic pattern.

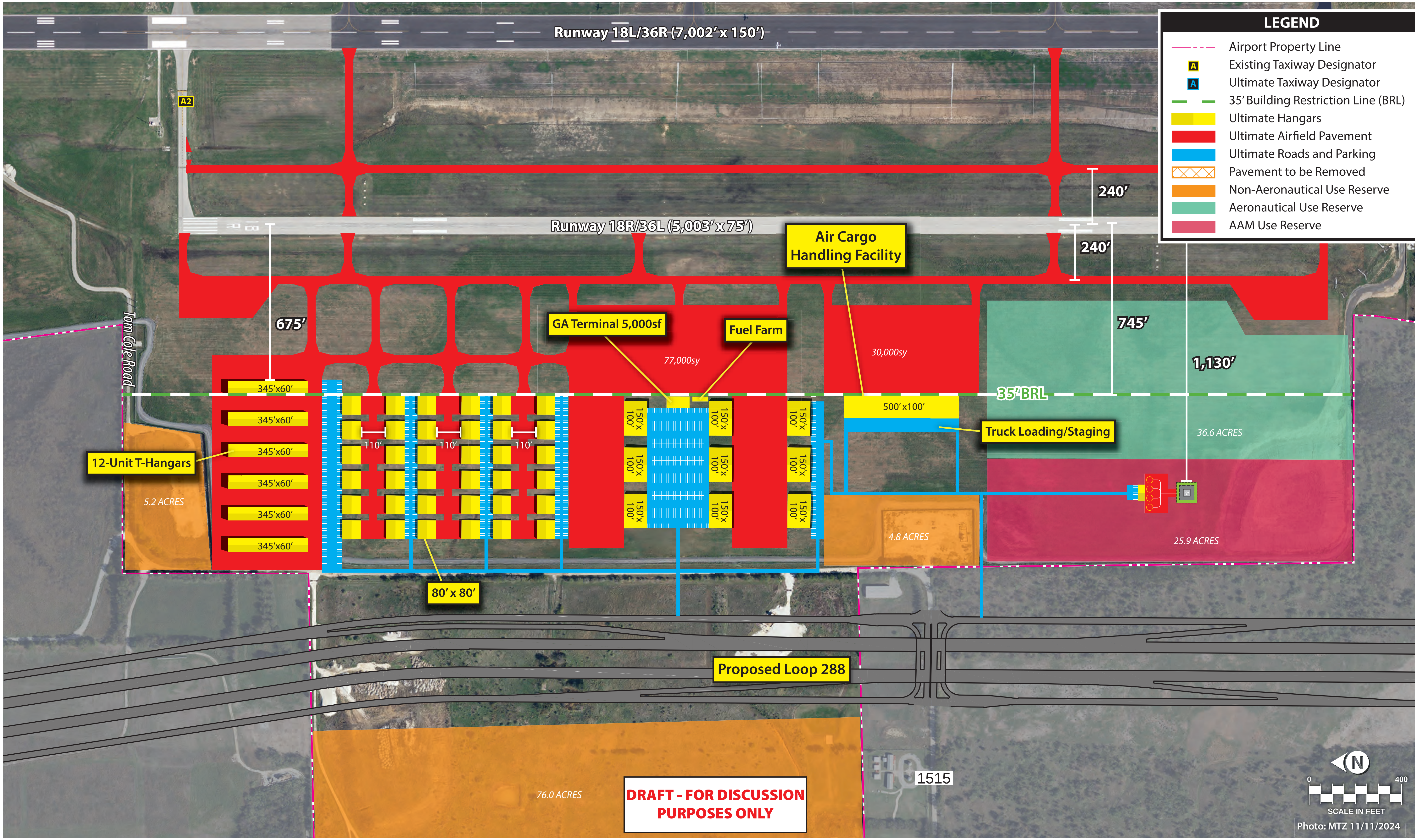


Exhibit 4J
WEST LANDSIDE ALTERNATIVE 2

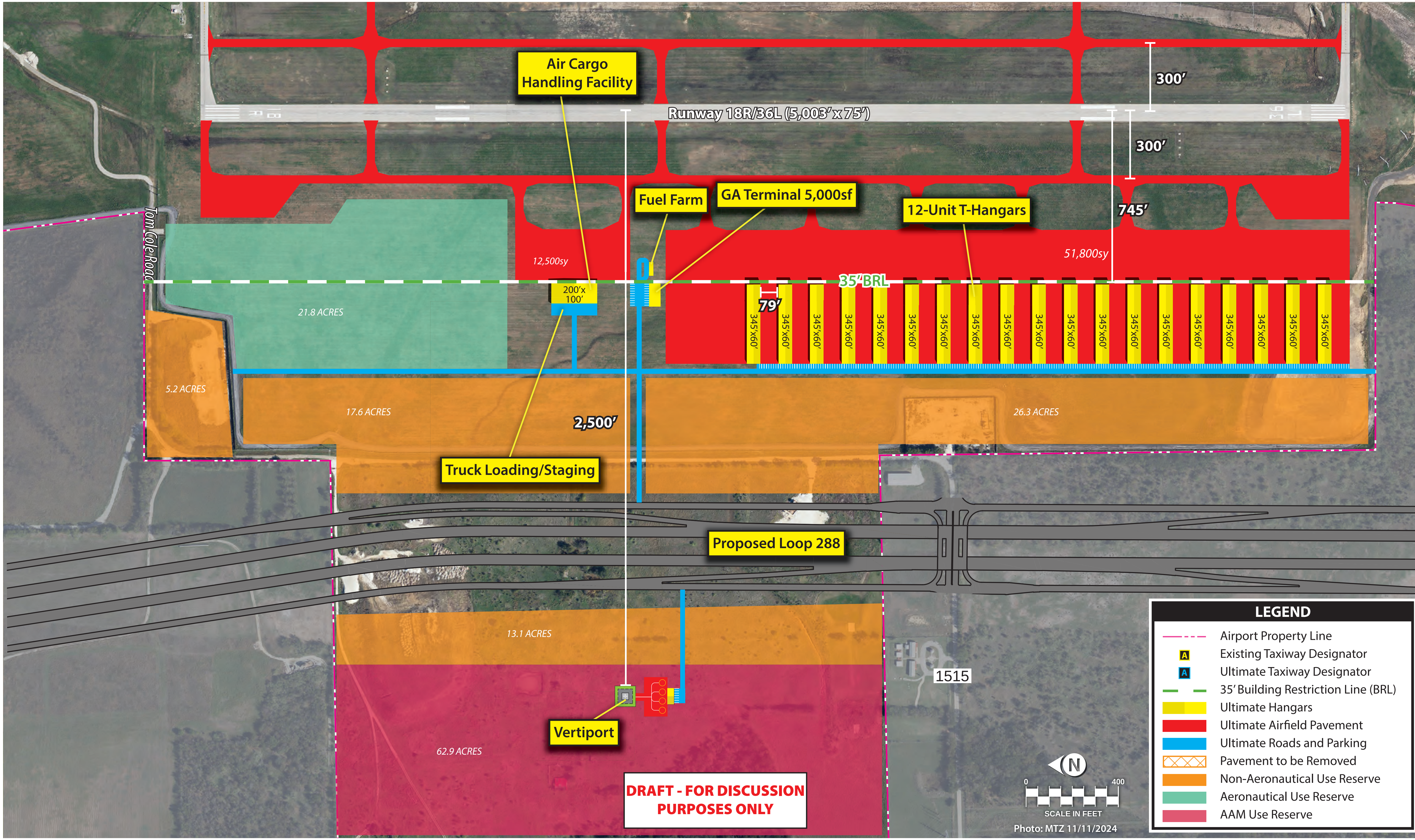


Exhibit 4K
WEST LANDSIDE ALTERNATIVE 3

- Reserving 62.2 acres for non-aeronautical uses. These areas, which include the existing natural gas well sites, could be developed with new commercial/industrial developments. The non-aeronautical reserve areas are those that are cut off from airfield access by vehicle roads or the proposed Loop 288.

SUMMARY

This chapter presents an analysis of various options that may be considered for specific airport elements. The need for alternatives is typically spurred by projections of aviation demand growth and/or by the need to resolve non-standard airport elements. Several development alternatives related to both the airside and the landside have been presented.

The next step in the master plan development process is to arrive at a recommended development concept. Participation of the PAC and the public will be important considerations. Additional consultation with the FAA and TxDOT may also be required. Once a consolidated development plan is identified, a 20-year capital improvement program will be presented that includes a prioritized list of projects tied to aviation demand and/or necessity. Finally, a financial analysis will be presented to identify potential funding sources and show airport management what local funds will be necessary to implement the plan.

Chapter Five

Master Plan Concept

Chapter Five
Master Plan Concept

The airport master plan for Denton Enterprise Airport (DTO) has progressed through a systematic and logical process with a goal of formulating a recommended 20-year development plan. The process began with an evaluation of existing and future operational demand, which aided in creating an assessment of future facility needs. Those needs were then used to develop alternative facility plans to meet projected needs. Each step in the planning process has included the development of draft working papers, which were presented and discussed at previous planning advisory committee (PAC) meetings and public information workshops and have been made available on the project website.

In the previous chapter, several development alternatives were analyzed to explore options for the future growth and development of DTO. The development alternatives have been refined into a single recommended concept for the master plan. This chapter describes, in narrative and graphic form, the recommended direction for the future use and development of DTO.

The recommended concept provides the ability to meet the disparate needs of various airport operators. The goal of this plan is to ensure the airport can continue (and improve) in its role of serving general aviation operators. The plan has been specifically tailored to support existing and future growth in all forms of potential aviation activity as the demand materializes.

The recommended master plan concept, as shown on **Exhibit 5A**, presents a long-term configuration for the airport that preserves and enhances the role of the airport while meeting Federal Aviation Administration (FAA) design standards. The phased implementation of the recommended development concept will be presented in Chapter Six. The following sections describe the key details of the recommended master plan concept.

AIRFIELD PLAN

The airfield plan generally considers improvements related to the runway and taxiway system and navigational aids. The following sections provide descriptions of the airfield recommendations.

DESIGN STANDARDS

The FAA has established design criteria to define the physical dimensions of runways and taxiways, as well as the imaginary surfaces surrounding them, to enhance the safe operation of aircraft at airports. These design standards also define the separation criteria for the placement of landside facilities.

As previously discussed, the design criteria primarily center on the airport's critical design aircraft. The critical design aircraft is the most demanding aircraft (or family of aircraft) that currently conducts or is projected to conduct 500 or more operations (takeoffs and landings) per year at the airport. Factors included in airport design are an aircraft's wingspan, approach speed, and tail height, as well as the instrument approach visibility minimums for each runway. The FAA has established the runway design code (RDC) to relate these critical design aircraft factors to airfield design standards.

While airfield elements, such as safety areas, must meet design standards associated with the applicable RDC, landside elements can be designed to accommodate specific categories of aircraft. For example, an airside taxiway must meet taxiway object free area (TOFA) standards for all aircraft types that use the taxiway, while the taxilane to a T-hangar area only needs to meet width standards for smaller single- and multi-engine piston aircraft that are expected to utilize the taxilane.

The applicable RDC and critical design aircraft for each runway at DTO in the existing and ultimate conditions, as established in Chapter Two, are summarized in **Table 5A**.

TABLE 5A | Airport and Runway Classifications

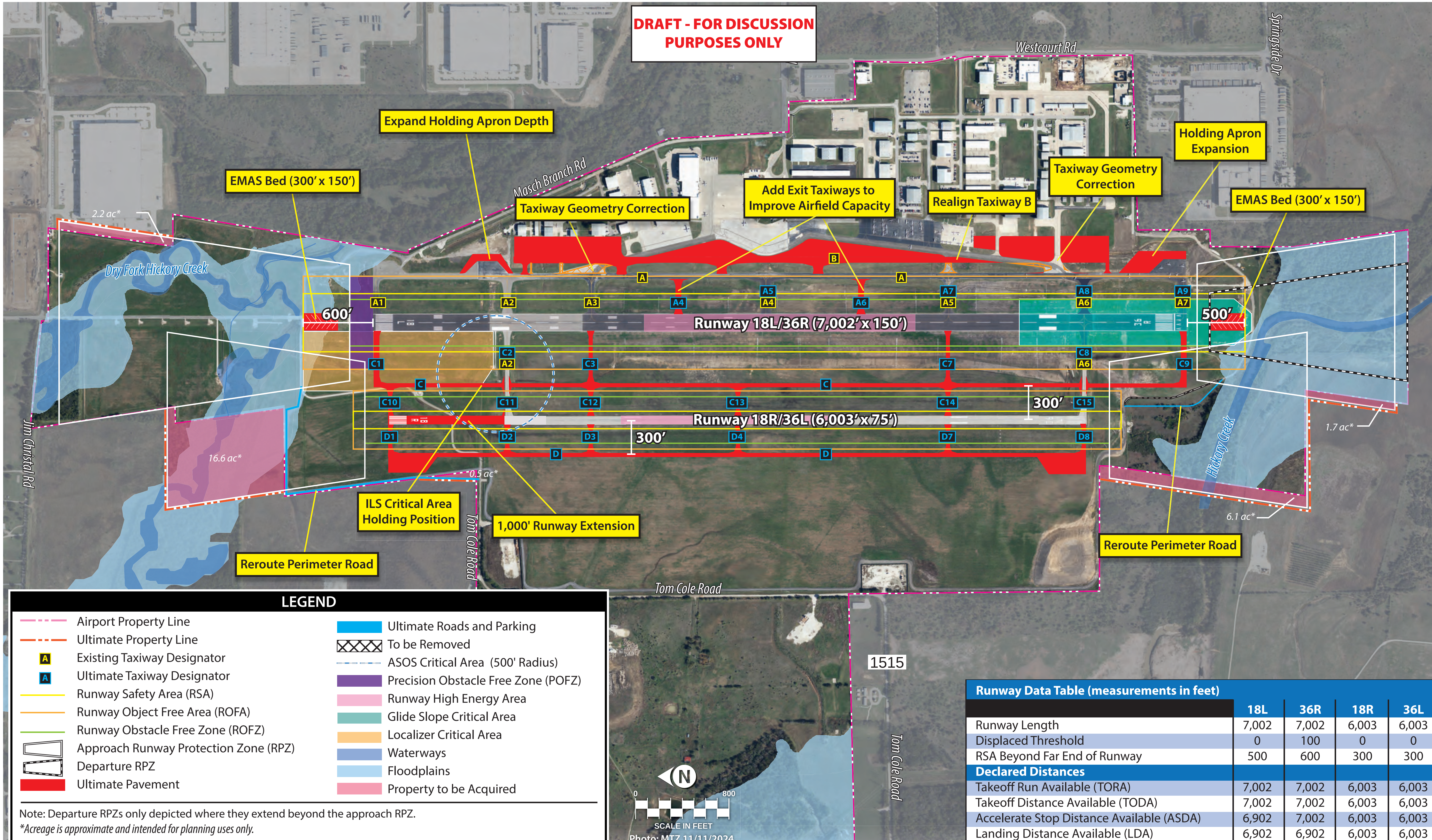
	Runway 18L-36R		Runway 18R-36L
	Existing	Ultimate	Existing/Ultimate
Airport Reference Code (ARC)	C-II	C/D-III	B-II
Critical Aircraft (Typ.)	Bombardier Challenger 600	Gulfstream G550/G650	Beechcraft King Air 90/200/300/350
Runway Design Code (RDC)	C-II-2400	C/D-III-2400	B-II-4000
Taxiway Design Group (TDG)	3	3	2A

Source: FAA AC 150/5300-13B, Airport Design, Change 1

RUNWAY 18L-36R

Runway Dimensions

Runway 18L-36R is currently 7,002 feet long and 150 feet wide. Due to the presence of Hickory Creek south of the runway and Dry Fork Hickory Creek north of the runway, the standard 1,000-foot runway safety area (RSA) beyond each runway end cannot be met. To ensure property safety area standards, the airport has published declared distances that reduce the accelerate-stop distance available (ASDA) and landing distance available (LDA) in both directions, resulting in an ASDA and LDA of 6,502 feet for Runway 18L and an ASDA of 6,602 feet and LDA of 6,502 feet for Runway 36R. As a result of the applied declared distances, the RSA extends 500 feet beyond the south end of the runway and 600 feet beyond the north end of the runway. The takeoff run available (TORA) and takeoff distance available (TODA) declared distances for Runway 18L-36R are the full pavement length of 7,002 feet.



Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,002	7,002	6,003	6,003
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	600	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,002	7,002	6,003	6,003
Takeoff Distance Available (TODA)	7,002	7,002	6,003	6,003
Accelerate Stop Distance Available (ASDA)	6,902	7,002	6,003	6,003
Landing Distance Available (LDA)	6,902	6,902	6,003	6,003

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The FAA recommends that the use of declared distances be reduced or eliminated whenever possible. Where it is not practicable to obtain the standard RSA dimensions, the FAA recommends installing engineered material arresting system (EMAS) beds. EMAS is a crushable concrete material that decelerates an aircraft during an excursion incident without damaging the landing gear of the aircraft. The recommended development concept includes the installation of EMAS beds at both ends of the runway within the existing graded RSA to reduce the RSA/runway object free area (ROFA) standards beyond the end of the runway from 1,000 feet to 600 feet. Installing EMAS allows the Runway 18L ASDA and LDA to increase from 6,502 feet to 6,902 feet. The Runway 36R ASDA would increase from 6,602 feet to 7,002 feet and the LDA would increase from 6,502 feet to 6,902 feet. This EMAS solution would enhance the runway's utility by increasing the amount of usable runway for takeoff and landing aircraft with no impacts to the waterways north and south of the runway.

The existing runway width of 150 feet exceeds the ultimate RDC C/D-III-2400 design standard of 100 feet. At some point in the future, when Runway 18L-36R needs major rehabilitation/reconstruction, the FAA will likely only support maintenance of 100 feet of runway width unless it can be demonstrated at that time that aircraft with maximum takeoff weights of greater than 150,000 pounds are operating at least 500 times annually at DTO. If the FAA only supports a 100-foot width, the sponsor can choose to reduce the runway width or fund the maintenance of the additional 50 feet.

Pavement Strength

Runway 18L-36R is currently strength-rated for up to 70,000 pounds for single wheel loading (SWL) aircraft and 100,000 pounds for dual wheel loading (DWL) aircraft. These strengths are adequate for the general aviation aircraft operating at DTO now and in the future; therefore, no additional strength is currently recommended.

Runway Lighting/Marking/Navigational Aids

Runway 18L-36R is currently equipped with medium intensity runway edge lighting (MIRL) and a four-box precision approach path indicator (PAPI-4) system, and Runway 18L has a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The runway is marked with precision runway markings. The MIRL system is planned to be upgraded to a more efficient light-emitting diode (LED) system. Runway end identifier lights (REILs) are planned to be added to Runway 36R. Holding position markings associated with Runway 18L-36R are established at a separation distance of 250 feet from the runway centerline, which meets current design standards. In the ultimate condition, these markings should be moved to a separation distance of 256 feet.

Runway Protection Zones (RPZs)

The Runway 18L-36R RPZs encompass a combined 127.892 acres of property (18L: 78.914 acres / 36R: 48.978 acres). Approximately 3.9 acres (18L: 2.2 acres / 36R: 1.7 acres) of the total RPZ area extend beyond airport property and are not protected by existing avigation easements. The plan includes the acquisition of 3.9 acres of property via fee simple acquisition or avigation easement to ensure the airport sponsor can prevent or mitigate new incompatible land uses within the RPZs.

RUNWAY 18R-36L

Runway Dimensions

Runway 18R-36L is currently 5,003 feet long and 75 feet wide. These dimensions are sufficient for small piston aircraft; however, the runway is designed to meet RDC B-II-4000 design standards, which includes small and mid-sized business jets. The runway length analysis determined that a minimum length of 5,500 feet is needed to accommodate 75 percent of the business jet fleet at 60 percent useful loads and 6,000 feet is needed to accommodate 100 percent of the business jet fleet at 60 percent useful loads. As development of the west side of the airfield occurs, it is reasonable to anticipate that the parallel runway will be used more frequently by a wider range of business jets. For this reason, the development plan includes a 1,000-foot extension of Runway 18R-36L to achieve a full-length of 6,003 feet. The existing runway width meets RDC B-II-4000 design standards and is not planned to change.

Connected actions and notes regarding the runway extension are as follows:

- The PAPI-4 visual approach aid on the 18R end should be relocated.
- Planned parallel Taxiway D should be extended to the new runway end once the runway is extended. This includes the addition of a new entrance taxiway (D1) at the Runway 18R threshold, as well as a new holding apron.
- MIRL should be added to all new runway pavement to be consistent with the existing system.
- New airfield signage should be updated to reflect new taxiway connectors associated with the runway extension.
- Existing instrument approach procedures should be revalidated once the runway shift/extension is completed.
- Approximately 0.5 acres of property needs to be acquired north of the runway to protect the ultimate primary surface. This acquisition will also allow for a portion of the perimeter road reroute to allow for new taxiway development in the area.

Pavement Strength

Runway 18R-36L is currently strength-rated for up to 30,000 pounds for SWL aircraft and 50,000 pounds for DWL aircraft. These strengths are adequate for the smaller general aviation aircraft anticipated to use the secondary runway on a regular basis, including the existing critical aircraft for the airport, the Challenger 600, which has a maximum takeoff weight of 45,100 pounds on DWL main landing gear.

Runway Lighting/Marking/Navigational Aids

Runway 18R-36L is currently equipped with MIRL and PAPI-4s on both runway ends. The runway is marked with non-precision runway markings. REILs are planned to be added to both runway ends. Holding position markings associated with Runway 18R-36L are established at a separation distance of 260 feet from the runway centerline. These markings should be moved to 200 feet from the runway centerline to meet the design standard.

Runway Protection Zones (RPZs)

The Runway 18R-36L RPZs encompass a combined 97.956 acres of property (48.978 acres for both approach RPZs). Approximately 22.7 acres (18R: 16.6 acres / 36L: 6.1 acres) of the total RPZ area extend beyond airport property and are not protected by existing avigation easements. The plan includes the acquisition of 22.7 acres of property via fee simple acquisition or avigation easement to ensure the airport sponsor can prevent or mitigate new incompatible land uses within the RPZs.

TAXIWAY IMPROVEMENTS

The taxiway system associated with Runway 18L-36R is planned to meet airplane design group (ADG) III and taxiway design group (TDG) 3 design standards in the ultimate condition, while the taxiway system associated with Runway 18R-36L is planned to ADG II and TDG 2A standards. All taxiways east of Runway 18L-36R currently meet TDG 3 standards, while the two taxiways extending west to the parallel runway meet TDG 2A standards. Improvements related to the taxiway system at DTO are summarized as follows.

Taxiway Nomenclature

The FAA recommends using the guidelines in Engineering Brief 89, *Taxiway Nomenclature Convention*, when developing or revising airport plans, such as this master plan. Following the standards presented in the brief, the taxiway system at DTO has been given alphanumeric designations to improve the situational awareness of pilots and the safety margins at the airport. The ultimate taxiway designations are shown on **Exhibit 5A**. The new taxiway designations are largely associated with the realignment of Taxiway B. Once Taxiway B is realigned, the new nomenclature starts at the north end with connections between Taxiway A and Taxiway B, starting with B1 and extending south to B6. On the east side of Taxiway B, all existing taxilanes are redesignated, starting with B9 (existing Taxilane F) and moving south to B14 (existing Taxilane L). Existing Taxilanes M, P, and Q are consolidated into a single designation, Taxilane E. The ultimate parallel taxiway between the runways is designated as Taxiway C and the west side parallel taxiway is designated Taxiway D.

Taxiway A

Taxiway A (50 feet wide) is a parallel taxiway that extends the entire length of Runway 18L-36R on its east side. The only alteration planned for this taxiway is the addition of two new exit taxiways (ultimate A4 and A6) to reduce runway occupancy times by allowing aircraft more opportunities to exit in the middle portion of the runway.

Taxiway B

Taxiway B (50 feet wide) is a partial parallel taxiway that serves the east side of the airfield, including the terminal ramp and aircraft hangars. Taxiway B is nonlinear and several turns are incorporated into its route, creating non-standard intersections with Taxiway A. The plan includes realignment of Taxiway B to be a true dual parallel taxiway extending from A2 on the north end to Taxilane L and beyond once new apron pavement is constructed on the south end. The new Taxiway B alignment will be set at a centerline separation distance of 144.5 feet, allowing for the terminal apron to be expanded to the west. The new alignment eliminates the non-standard intersection geometry and direct-access points from those areas.

Taxiways C and D

To support new developments planned for the west side of the airfield, new taxiway infrastructure is needed, including a west side parallel taxiway (ultimate Taxiway D) and a mid-field parallel taxiway between the two runways (Taxiway C). Both taxiways and their associated connecting taxiways are planned to ADG II and TDG 2A standards. Taxiways C and D are planned at a centerline separation distance of 300 feet from Runway 18R-36L, which meets RDC C-II-4000 design standards. Planning for the higher design standard will allow the parallel runway to grow into a higher design standard in the future without the need to relocate the taxiway.

The perimeter service road is planned to be rerouted in areas that will be impacted by the construction of Taxiways C and D.

Holding Aprons

Existing Taxiway A holding aprons are planned to be expanded to support use by more aircraft and larger aircraft, particularly once the runway/taxiway meet ultimate ADG III TOFA standards. Once ADG III standards are applied, the TOFA for Taxiway A will increase in width from 124 feet to 171 feet. The additional depth planned will allow for aircraft to hold on the apron without impacting the TOFA. Two additional holding aprons are planned at the north and south ends of ultimate Taxiway D to support operations on the west side of the airfield.

LANDSIDE CONCEPT

The primary goal of landside facility planning is to provide adequate space to meet reasonably anticipated needs of the various users while optimizing operational efficiency and land use. Achieving these goals yields a development scheme that segregates functional uses while maximizing the airport's revenue potential. The landside development plan reflects a potential build-out scenario where depicted hangar and apron facility growth may be beyond the forecasted 20-year need identified in the facility requirements. Planning for more capacity than the forecast shows is intentional because not every identified development site will necessarily be viable, or development may be delayed. Factors like financing and environmental constraints, regulatory changes, leasing issues, or engineering challenges can make developing on some sites impractical. Building extra capacity into the plan ensures the airport can meet demand even if certain sites are ultimately removed from the development program.

All landside development should occur only as dictated by demand. The locations and sizes of aprons and hangars proposed in the recommended plans are conceptual and may not reflect the needs of future developers and their customers. The recommended concept is strictly intended to be used as a guide for DTO staff when considering new developments.

Recommended landside developments are depicted on **Exhibits 5B** (east side) and **5C** (west side).

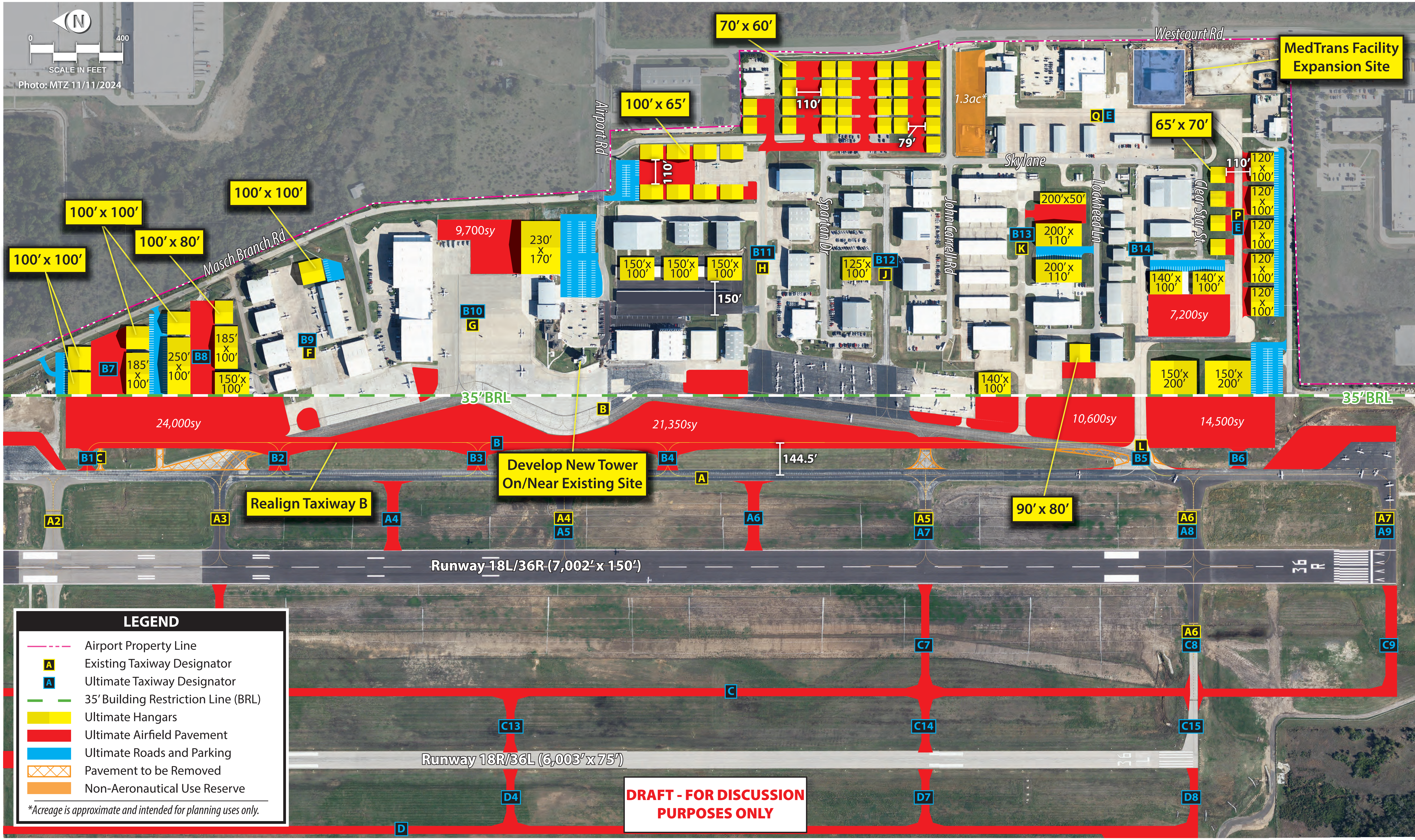


Exhibit 5B
RECOMMENDED DEVELOPMENT CONCEPT - EAST SIDE

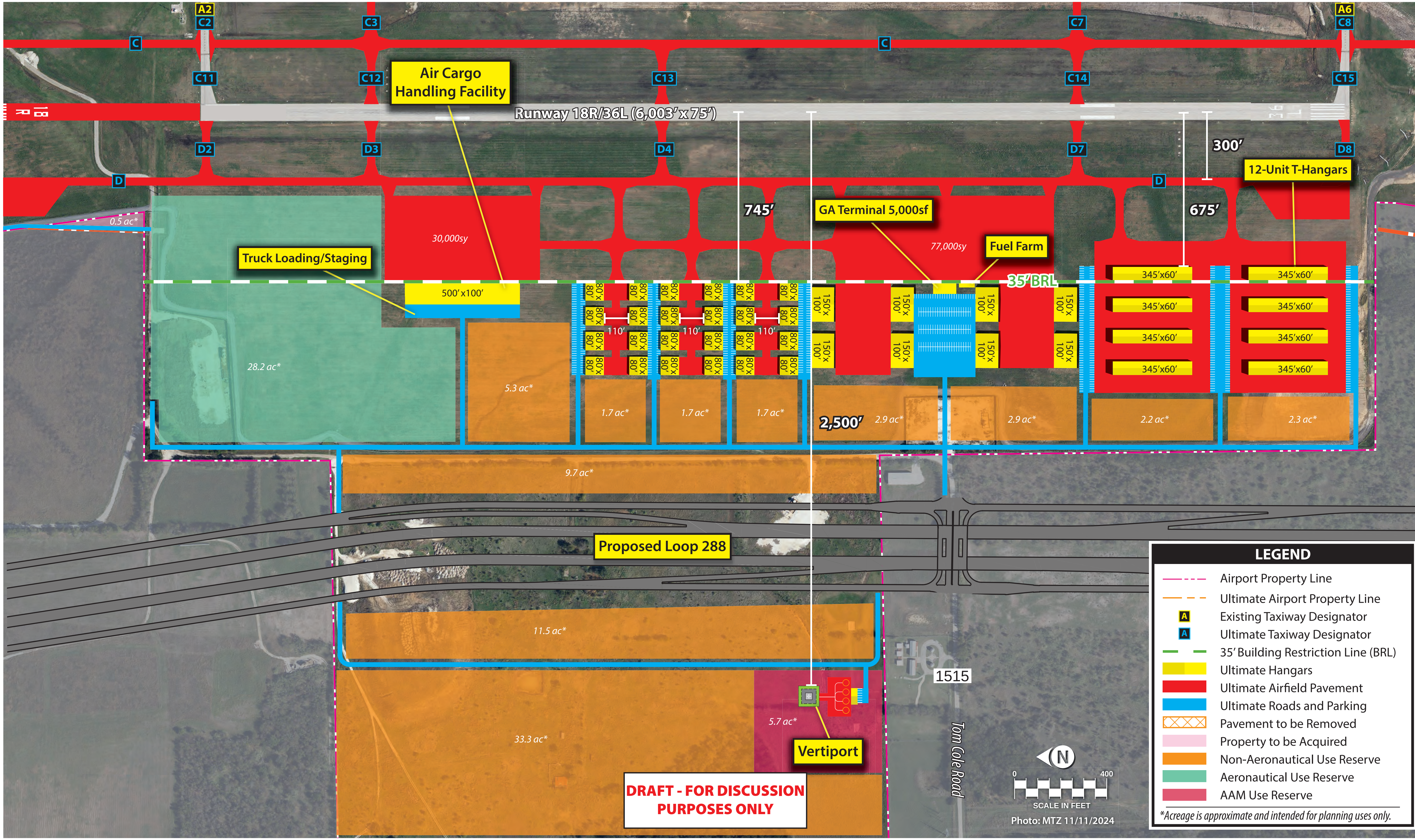


Exhibit 5C
RECOMMENDED DEVELOPMENT CONCEPT - WEST SIDE

GENERAL AVIATION FACILITIES

Terminal

General aviation terminal services are provided from the 4,800-square-foot (sf) GA Administration Building, as well as Sheltair's fixed base operator (FBO) facilities, which total approximately 18,000 sf. It is projected that the combined available square footage (22,800 sf) is sufficient to meet the long-term demand at DTO. Over time, the FBO and various specialty aviation service operators (SASOs) on the airport will develop new facilities or modernize and/or expand existing general aviation (GA) services facilities to better serve their customers and the users of the airport, so there are no specific plans to expand the GA Administration Building in the master plan; however, the plan includes the development of an additional 5,000-sf GA terminal facility on the west side of the airfield to support activities and developments in that area. The GA terminal facility is planned to include a passenger waiting area, a pilots' lounge, flight planning, concessions, and leasable spaces for FBOs/SASOs. The west GA terminal is accompanied by a vehicle parking lot accessible from a new access road constructed from Tom Cole Road, which would extend from the proposed Loop 288.

Aprons

DTO has five aprons on the east side of the airfield that combine to provide 60,175 square yards (sy) of aircraft parking and circulation area. The project apron requirements indicate additional capacity is needed within the existing east landside area and to support new developments on the west side.

The plan includes realignment of Taxiway B to a uniform separation distance of 144.5 feet from Taxiway A to allow the terminal apron to be expanded by 21,350 sy. An additional 9,700-sy expansion of the terminal apron and infill of areas that are currently unpaved would bring the total terminal/FBO apron capacity to approximately 76,470 sy. Additional east side expansions include a 24,000-sy apron within the redeveloped north side and apron expansions on the south side that total approximately 28,300 sy. West side plans include a 77,000-sy main apron to support the GA terminal and FBO/SASO hangars and a 30,000-sy apron dedicated to the potential for air cargo activities. Including the two existing private aprons (15,900 sy), the plan calls for increasing DTO apron capacity to approximately 251,670 sy.

Hangars

Existing hangars at DTO include a variety of T-hangars, corporate/box hangars, and conventional hangars that total 736,720 sf of storage capacity. Strong demand exists for new hangars; the airport maintains a hangar waiting list of 100 individuals and many SASOs have expressed interest in developing hangar facilities at DTO. The plan reflects new hangar developments on what remains of the airport's undeveloped properties on the east side, along with redevelopment of certain areas with the aim of focusing on facilities to support larger GA aircraft, while new developments on the west side of the airfield are planned to support smaller GA aircraft. Redevelopment areas on the east side include the north area, which includes smaller hangars along existing Taxilanes C, D, and E. These existing hangars are planned to be relocated/removed to allow for development of a new apron and larger hangar facilities. Two T-hangar facilities located immediately south of the new aircraft rescue and firefighting station (ARFF) are also planned to be relocated/removed to make way for three larger conventional hangars and apron frontage for those hangars. Finally, on the south side of the area, several small, detached hangars and T-hangars along Taxilanes L, N, M, and O are planned to be relocated/removed to make way for larger hangars and associated ramp space.

As previously mentioned, the west side includes a variety of planned hangar developments, including 96 new or relocated T-hangar units, 24 individual 6,400-sf box hangars and eight 15,000-sf conventional hangars. Beyond what is shown on the exhibit, an additional 28.2-acre area has been reserved for aeronautical use that would focus on a large-scale SASO or additional private hangar developments.

Fuel Storage

The existing fuel farms are planned to remain and be expanded as needed. The facility requirements analysis identified a need for additional Jet A fuel storage capacity over the course of the planning period as turbine traffic grows. Ultimately, it is up to the FBO(s) operating at the airport that own or lease all fuel storage facilities at DTO to make the business decision about when to add more fuel storage capacity. The plan identifies the need for a fuel farm to be added to the west side of the airfield as new facilities begin to develop in that area to avoid the need to send refuel trucks across the active airfield. Future fuel storage capacity should also plan for unleaded aviation fuel when it becomes more widely adopted and available.

Vehicle Parking

Generally, new or expanded parking lots and vehicle access roads are planned with most of the new hangar developments on the east and west sides. In the existing core terminal area, a vehicle parking lot expansion is planned for the GA Administration Building and the new ARFF station to support new hangar facilities in the area. The planned west GA terminal will be supported by a large vehicle parking lot centrally located between new hangars planned for FBO/SASOs.

AIR CARGO FACILITIES

Air cargo activities at DTO currently comprise a small share of the overall operational activity at DTO. There are no scheduled cargo flights; all cargo flights operate as on-demand charters. Most cargo charters carry inbound freight to Denton and outbound shipments are rare. The *Air Cargo Assessment* prepared for this master plan (included as **Appendix C**) found that prevailing trends in scheduled air cargo operators (e.g., FedEx, UPS, Amazon Air, etc.) do not indicate the addition of new airports like DTO to their networks. Competition from established commercial airports in the Dallas-Fort Worth Metroplex limits DTO's ability to capitalize on potential opportunities and grow its air cargo business. A substantial expansion of air cargo services at DTO would likely require significant investments in cargo facilities, infrastructure, and handling equipment – investments that may not be justifiable given the low revenue levels the airport/city currently receives from cargo operations. Despite this, DTO's air cargo services provide substantial value to key companies in the Denton community, making the continuation of charter cargo operations a priority.

Should opportunities arise for expanded air cargo operations at DTO, the plan includes a dedicated air cargo handling facility, associated apron, and truck loading/staging area on the west side of the airfield. Once Loop 288 is developed, the west side will be more accessible to the regional roadway network for distribution trucks.

AIRPORT TRAFFIC CONTROL TOWER

The existing airport traffic control tower (ATCT) located on the east side of the airfield has been identified by staff as undersized, with limited space for more controllers, which may be needed as operation levels continue to rise at DTO. The plan includes the option to expand the existing tower or develop a new tower in a location nearby the existing tower at some point in the future. If a new tower is developed, the FAA, while consulting with the airport sponsor, will lead the evaluation of where a new tower should be located at the airport.

ADVANCED AIR MOBILITY

Advanced air mobility (AAM), also known as urban air mobility (UAM), is an emerging industry that involves next-generation aviation technologies designed to move people and goods more efficiently using innovative aircraft, such as electric vertical takeoff and landing (eVTOL) vehicles, autonomous drones, and hybrid systems. AAM aims to create new transportation options that reduce congestion, improve connectivity, and enhance sustainability by leveraging cleaner propulsion methods, advanced automation, and smart air traffic management systems. While still in the development stages, AAM is being implemented in various ways across the nation's airport network, including regional initiatives, such as the AllianceTexas Mobility Innovation Zone, which is centered around the Perot Field/Fort Worth Alliance Airport (AFW). AllianceTexas is advertised as an "AAM ecosystem" with intermodal corridors and a flight test center supporting drone delivery businesses. Dallas-Fort Worth International Airport (DFW) has also entered into agreements with AAM developers to explore vertiport infrastructure and integration with passenger eVTOL operations across the region.

While still in the early development phase, AAM is a significant growth opportunity for the aviation industry and should be carefully considered for the future of DTO. In this effort, the City of Denton is collaborating with the University of North Texas on an economic feasibility study for a Denton vertiport. The study will evaluate the potential economic benefits, market demand, and infrastructural considerations of vertiport construction in the City of Denton. This study is not yet completed but its findings will be incorporated into this master plan, when available.

This master plan has considered the potential impacts of developing a vertiport on airport property in its alternatives analysis. After consideration, the recommended development plan includes reserving a 5.7-acre site for the potential development of a vertiport and any supporting facilities (taxilane, apron, terminal, vehicle access and parking, and aircraft rescue and firefighting facilities) west of the proposed Loop 288 and north of Tom Cole Road. This site is at least 2,500 feet from the Runway 18R-36L centerline, which is the minimum separation distance recommended by the FAA to avoid controller sequencing issues with eVTOL and fixed-wing aircraft in the visual traffic pattern. Any other site on the airport was found to be too close to the runway system, which could result in eVTOL wake turbulence and traffic pattern conflicts with traditional fixed-wing aircraft.

NON-AERONAUTICAL DEVELOPMENT

Airports often have property areas that are inaccessible to the airfield and offer limited utility for aviation operations. These areas are typically reserved for non-aeronautical related uses that provide opportunities to diversify and expand revenue streams for an airport. The recommended development plan for DTO includes reserving approximately 1.3 acres on the east side and approximately 75 acres on the west side for future non-aeronautical use. The 1.3-acre area on the east side is bound on three sides by roads and is blocked from Taxilane Q by a private ramp. This area is planned to be leased and developed as a vehicle parking lot to serve a flight school located at the airport. On the west side, properties that front the proposed Loop 288 and west of Loop 288 are planned for non-aeronautical use to take advantage of the visibility from the highway, which will attract commercial developments that could boost and diversify airport revenues.

LAND USE COMPATIBILITY

Land use planning around DTO occurs through regulatory and non-regulatory means. The primary regulatory tool for directing land use is the zoning ordinance, which limits the types, sizes, and densities of land uses in various locations. Examples of land use types include residential, commercial, industrial, and agricultural uses. Non-regulatory means of land use controls include comprehensive or strategic land use plans. These documents can be adopted for a greater municipality or for specific areas. In most states, including Texas, zoning ordinances are required to be created in accordance with the city or county's comprehensive plan.

It is important to note the distinction between primary land use concepts used in evaluating development with the airport environs and existing land use, comprehensive plan land use, and zoning land use. Existing land use refers to property improvements as they *exist today*, according to city records.

The comprehensive plan land use map identifies the *projected or future* land use, according to the goals and policies of the locally adopted comprehensive plan. This document guides future development within the city planning area and provides the basis for zoning designations.

Zoning identifies the type of land use *permitted* on a given piece of property, according to the city zoning ordinances and maps. Local governments are required to regulate the subdivision of all lands within their corporate limits. Zoning ordinances should be consistent with the general plan, where one has been prepared. In some cases, the land use prescribed in the zoning ordinance or depicted in the general plan may differ from the existing land use.

The following sections describe the applicable land use policies for the area within the vicinity of the airport. Specifically, these sections pertain to the lands within the 65 day-night average noise level metric (DNL) contours and the FAA Title 14 Code of Federal Regulations (CFR) Part 77 approach surface, which is restricted to one mile from each runway end.

EXISTING LAND USE

As discussed in Chapter One, DTO is located within the city limits of Denton, Texas. The existing runway approach surfaces for all four runways clipped to one mile also lie within the City of Denton jurisdiction; however, the full ultimate approach surface for Runway 18L extends into unincorporated Denton County to the north.

Exhibit 5D depicts the existing land use designations within the airport approach surfaces out to one mile for the existing and ultimate conditions based on U.S. Geological Survey Data from 2025. South of the airport within the approach surfaces to Runway 36L and 36R, existing land consists of undeveloped agricultural, industrial, and light industrial uses. North of the airport within the approach surface to Runway 18R and 18L, the existing land is more developed and includes both medium and high intensity land uses. The highest concentration of developed land uses within the approach surfaces out to one mile are near the end of Runway 18L and east of N Masch Branch Road.

FUTURE LAND USE PLAN

The future land use plan is a general policy document used by a government agency to identify and describe the community's characteristics, articulate goals and policies, and explore alternative plans for future growth, which will be used to produce zoning ordinances and subdivision regulations to carry out the plan's goals. A municipality will often incorporate goals and policies for its airports in the future land use plan, which is typically separate from an airport master plan. Generally, the future land use plan assists local decision-makers regarding complicated issues during the development process, or maintenance issues. The current planning document of this type for the land near the airport is the *Denton 2040 Comprehensive Plan*, which was adopted in March 2022.

Denton 2040 Comprehensive Plan

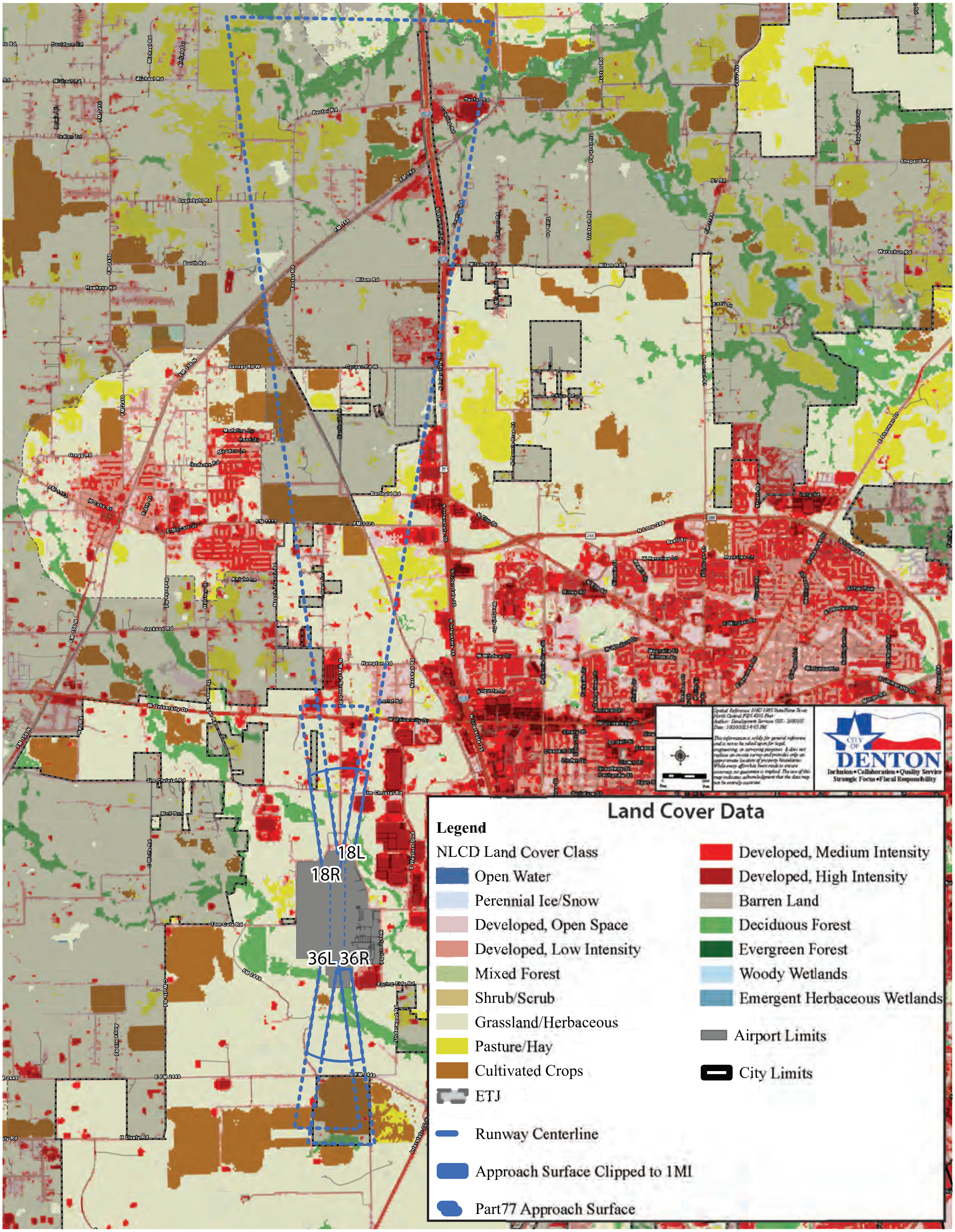
The City of Denton's comprehensive plan sets the course for managing growth, promoting reinvestment, and improving quality of life in the city over a 20-year planning period. The comprehensive plan establishes a preferred growth concept, as depicted on the city's future land use map. It is important to note that land use planning efforts for the future extend beyond the existing city limits into two extraterritorial jurisdictions (ETJ), which are shown as Division 1 and Division 2. An ETJ allows for planning of areas outside city limits for land use development and planning purposes with jurisdiction established by the *Texas Local Government Code*.[1]

Airport property is identified as Government/Institutional on the *Denton 2040 Comprehensive Plan* future land use map, is surrounded by Industrial Commerce uses to the west, north, and east, and borders a Master Planned Community to the south.

The following guidelines are identified in the comprehensive plan for the Industrial land uses surrounding the airport:

- Minimize conflicts with adjoining land uses and efficiently utilize existing transportation systems
- Locate development in a manner that does not compromise the health, safety, and welfare of the community
- Design all facilities (whether freestanding or related to manufacturing uses) to address the street frontage at a pedestrian scale

[1] https://statutes.capitol.texas.gov/Docs/LG/htm/LG.42.htm



U.S. Geological Survey, 2025, Annual National Land Cover Database (NLCD) Collection 1.0 Reference Data. Product: U.S. Geological Survey data release, https://doi.org/10.5066/P13EDMAF.

Exhibit 5D
EXISTING LAND USE APPROACH MAPS

- Consider the adaptive reuse of existing warehouse buildings for non-industrial uses, such as office or community facilities
- Use varying building heights and setbacks to define different functions, such as offices and warehousing
- Screen all loading docks, platforms, and overhead bay doors from public view; loading functions should be located away from front streets and should be designed or screened in such a way as to reduce their visibility

Exhibit 5E depicts the future land use designations within the airport's existing and ultimate Part 77 approach surfaces clipped to one mile. Future land uses identified within the one-mile approach surfaces include open space, single-family residential, light industrial, and airport property. **Table 5B** presents the runway approach location where each land use is planned, the purpose of each land use designation as stated in the comprehensive plan, and the densities/intensities recommended for each designation.

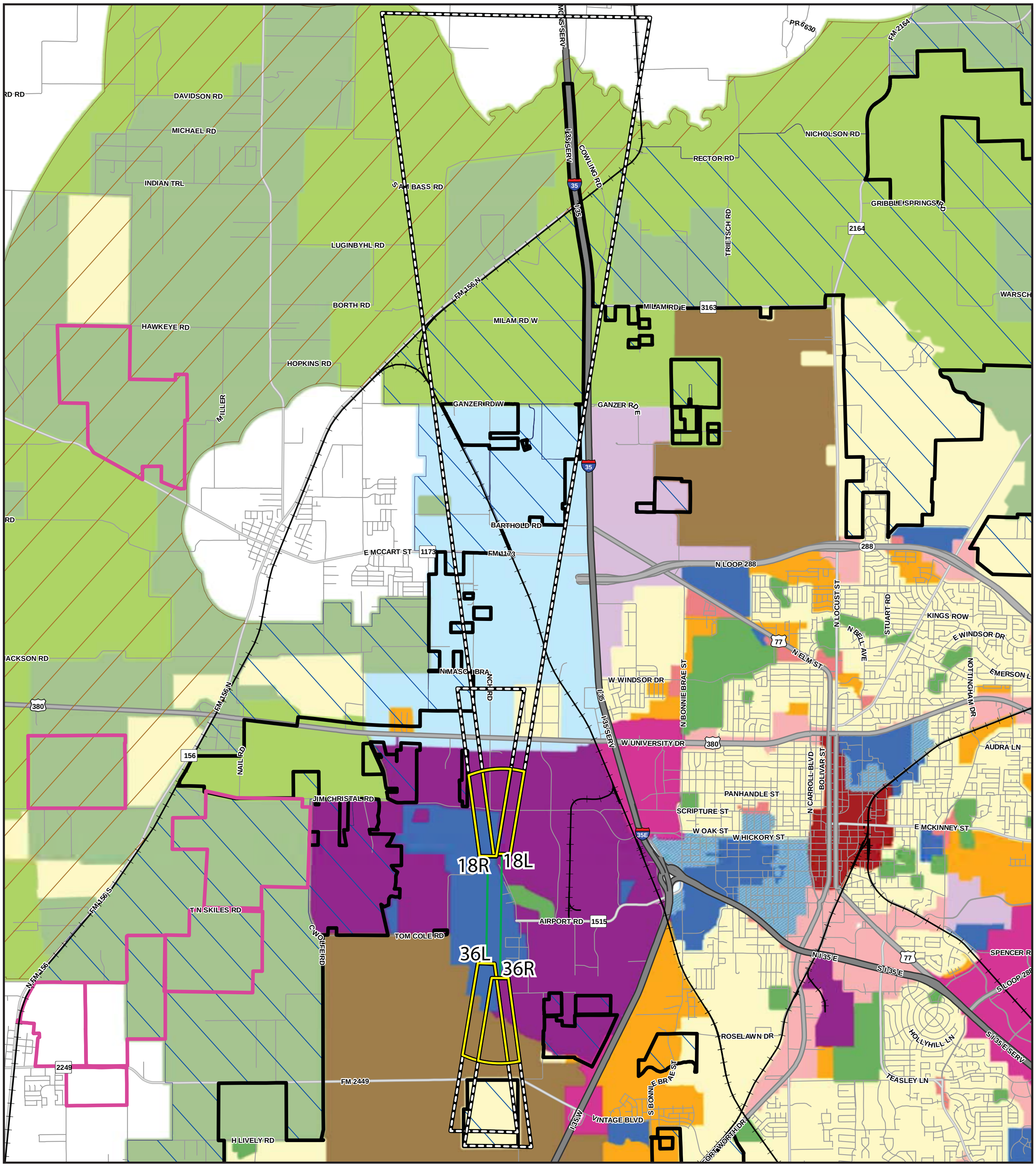
TABLE 5B | Future Land Use Designations Within the Ultimate Approach Surfaces Clipped to One Mile

Future Land Use Designation	Description	Location
Government/ Institutional	This designation applies to government-owned land, university and college campuses, and similar large-scale institutional activity centers. Development in these land use areas is typically subject to particular guidelines and is therefore outside the oversight of development review. It is important that transitions to adjacent land uses are considered in the development of future government and institutional-related uses. Coordination on future development will ensure these land uses are appropriately designed. Government and institutional uses often include structures that become architectural and visual landmarks, which add to the community's sense of place and identity. As such, development of future governmental and institutions uses should recognize principles of placemaking.	Airport property; approach to Runways 18R, 18L, 36R, & 36L
Industrial Commerce	This designation applies to areas where the predominant uses include light and heavy industrial uses, such as moderate to heavy manufacturing, assembly, fabrication, and wholesaling. Distribution warehouses may be included in this designation if used to replace underutilized and heavy industrial uses, or if ultimately reused to house future industrial development. This designation is located primarily west of I-35W near DTO. It is important in future development that transitions to adjacent sensitive land uses are considered.	Approach to Runways 18R, 18L, 36R, & 36L
Master Planned Community (Cole Ranch/ Hunter Ranch)	This category denotes large-scale developments that are guided by separate development approvals, which establish the land uses, densities, and intensities of development, as well as character. These developments typically provide for mixed uses that balance residential and non-residential uses and provide connectivity to other developments throughout the city.	Approach to Runways 36L and 36R

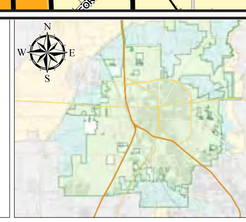
Sources: Denton 2040 Comprehensive Plan, March 2022; Coffman Associates analysis

ZONING

Zoning regulations are used in conjunction with subdivision regulations and are an essential tool to achieve goals and policies outlined in the comprehensive plan. Zoning regulations divide land into districts (or zones), regulate land use activities in those districts, and specify permitted uses, including the intensity and density of each use and the bulk sizes of each building. Traditional zoning ordinances separate land into four basic uses: residential, commercial (including office), industrial, and agricultural.



City Limits	**Future Land Use**	Community Mixed Use	
ETJ Division 1	Agriculture	Neighborhood Mixed Use	
ETJ Division 2	Rural Areas	Neighborhood / University Compatibility Area	
Lakes	Low Residential	Business Center	
Potential Municipal Utility Districts (MUDs) (petitioning for state approval)	Moderate Residential	Light Industrial	
Part 77 Approach Surface	Master Planned Community (refer to approved development plans)	Industrial Commerce	
Approach Surface Clipped to 1-Mile	Downtown Denton	Government / Institutional	
Runway Centerline	Regional Mixed Use	Parks / Open Space	



CITY OF DENTON
Development Services · GIS
Date: 4/1/2022

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. Although every effort was made to ensure the accuracy of this data, no such guarantee is given or implied. Utilization of this map indicates the understanding that there is no guarantee to the accuracy of this data.

The current Denton development code became effective on October 1, 2019, under authority granted to it by the State of Texas[2] and Article X[3] of the *Denton Municipal Charter*. As previously mentioned, the City of Denton's extraterritorial zoning jurisdictions (ETJ) extend beyond the city limits. All of the land within the runway approach surfaces out to one mile are within the jurisdiction of the City of Denton and subject to Article X, *Planning and Zoning*, of the city's municipal code.

As shown on **Exhibit 5F**, the following zoning districts are present within the ultimate runway approach surfaces out to one mile: industrial, agricultural, single-family residential, and mixed-use.

Table 5C summarizes the types of land uses allowed in each zoning district, the maximum allowable heights for structures, maximum building coverage for lots, and overall minimum lot areas.

TABLE 5C | Zoning Classifications Within the Ultimate Approach Surfaces Clipped to One Mile

City of Denton, TX Zoning Classifications	Approach Surface Location	Residential Allowed?	Maximum Building Height[1]	Maximum Building Coverage	Minimum Lot Area
RR – Residential Rural	Runways 18L & 18R	Yes	65'	15%	5 acres
LI – Light Industrial	Runways 18L & 18R	No	75'	85%	5,000 sf
PF – Public Facilities	Airport property; Runways 18R, 18L, 36L & 36R	No	100'	90%	None
HI – Heavy Industrial	Runways 18L & 36R	No	140'	85%	20,000 sf
MPC – Master Planned Community	Runway 36L & 36R	Yes	Varies	Varies	Varies

[1]**May be subject to special height limitations in airport-controlled area.** Building and structure height may be further limited according to Section 4.5: MAO – Municipal Airport Overlay District (https://library.municode.com/tx/denton/codes/development_code?nodeId=CITY_DENTONDECO_SUBCHAPTER_4OVHIDI_4.5MAUNAIOVDI).

Sources: City of Denton, Texas, Development Code; Coffman Associates analysis

In addition to the requirements of the above-listed underlying zoning designations, the City of Denton has adopted the Municipal Airport Overlay District (MAO) to comply with state and federal rules associated with land uses in the vicinity of airports. The overlay district includes two subdistricts: the Airport Height Hazard District (AHHD) and the Airport Compatibility Land Use District (ACLUD).

The AHHD[4] outlines height restrictions in Section 4.5.8, stating that no person shall erect, alter, or maintain a structure, and no person shall allow a tree or other natural object to grow in excess of the applicable height limitations established for each airport height hazard subdistrict, including the area lying beneath the approach surfaces, transitional surfaces, horizontal surface, and conical surfaces of DTO.

The ACLUD consists of two subdistricts (ACLUD-1 and ACLUD-2), which are depicted on the city's official zoning map. The ALCUD overlay prohibits educational uses and healthcare facilities throughout this district, as well as new residential uses in ACLUD-1. All land uses within the underlying zoning districts are allowed in ACLUD-2; however, residential property owners must adhere to specific noise mitigation standards and execute avigation easements for aircraft landing at, taking off from, or operating at DTO. Noise mitigation requirements are also established throughout the ACLUD in accordance with FAA requirements.

2 Texas Local Government Code § 213.002 (https://statutes.capitol.texas.gov/Docs/LG/htm/LG.213.htm), 2024
3 City of Denton, Texas, Code of Ordinances, Article X, Planning and Zoning (https://library.municode.com/tx/denton/codes/code_of_ordinances?nodeId=PTICH_ARTXPLZO), 1979
4 Denton, Texas, Development Code, Section 4.5.6 (https://library.municode.com/tx/denton/codes/development_code?nodeId=CITY_DENTONDECO_SUBCHAPTER_4OVHIDI_4.5MAUNAIOVDI_4.5.8AHIRHEHADI)

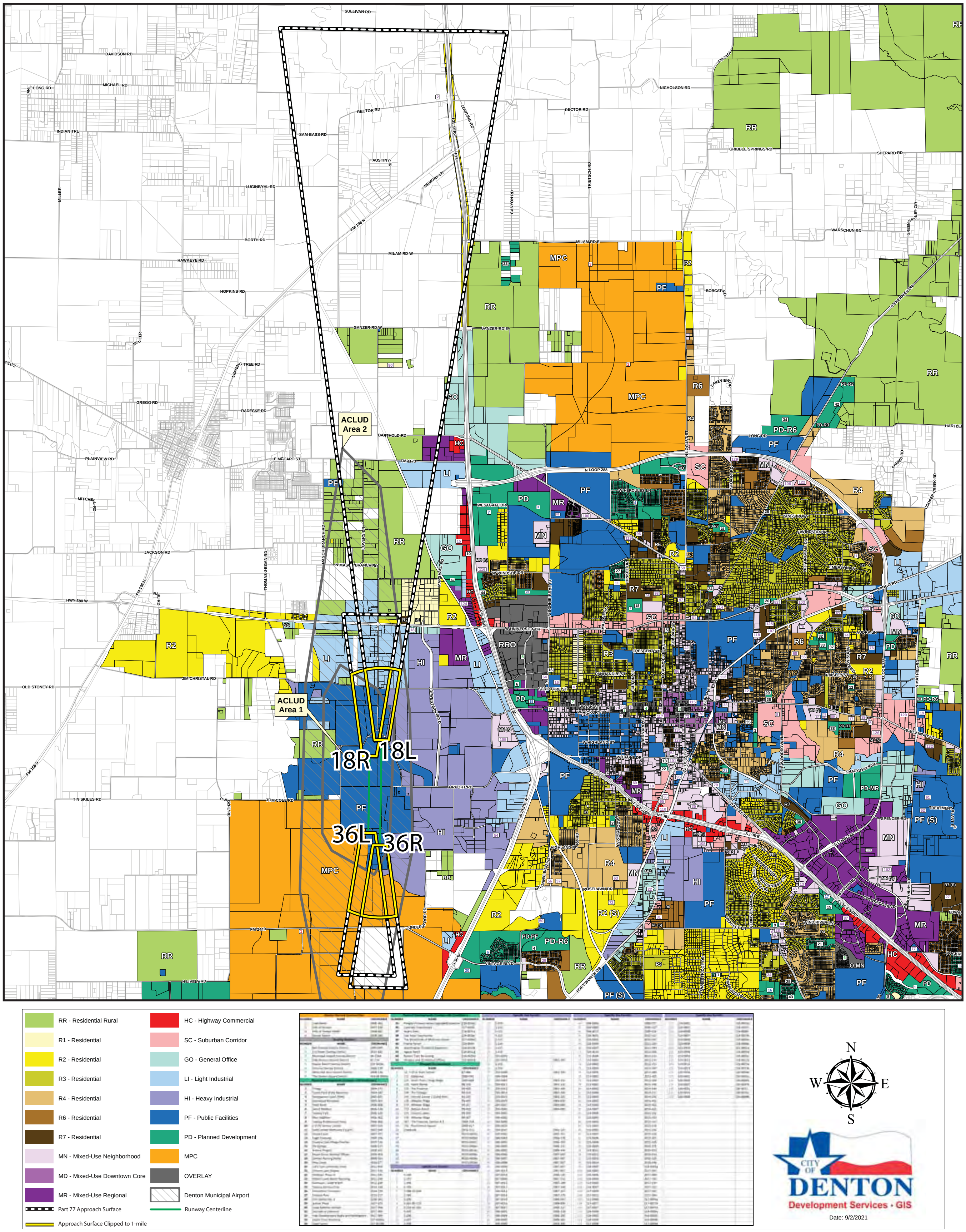


Exhibit 5F
ZONING APPROACH MAP

SUBDIVISION REGULATIONS

Subdivision regulations are legal devices employed to administer the process of dividing land into two or more lots, parcels, or sites for the building and location, design, and installation of supporting infrastructure. The subdivision regulations represent one of two instruments commonly employed to carry out the goals and policies outlined in a comprehensive plan. The land subdivision ordinance of the City of Denton is codified within Subchapter 8, *Subdivisions*, of the *Denton, Texas, Development Code*.[5]

Subdivision regulations can be used to specify requirements for airport-compatible land development by requiring developers to plat and develop land to minimize noise impacts or reduce noise exposure for new development. Subdivision regulations can also be used to protect the airport proprietor from litigation for noise impacts at a later date. The most common requirement is the dedication of a noise or avigation easement to the airport sponsor by the land developer as a condition of the development approval. Easements typically authorize overflights of property with noise levels attendant to such operations.

BUILDING CODE

Building codes are established to provide minimum standards to safeguard life, limb, health, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures. Building codes may require the provision of sound insulation in new residential, office, and institutional buildings when warranted by existing or potential high aircraft noise levels.

The current *City of Denton Building Code*, which was adopted in April 2022, consists of the *International Building Code* (IBC), 2021 edition, with amendments. The IBC generally does not include noise attenuation requirements in the building code. Jurisdictions can pass additional regulations in their building codes to require additional building requirements, such as in reaction to unique threats of regional natural disasters to help build structures properly at the beginning of construction when it matters most, as changes can be expensive and difficult. For new construction near an airport, incorporating noise attenuation can be especially important. Noise attenuation measures can include increased window thicknesses or sound-absorbing building materials.

NON-COMPATIBLE DEVELOPMENT ANALYSIS

In addition to evaluating areas with the potential for non-compatible development based on future land use plans and zoning, the airport's noise exposure contours were evaluated in comparison with the recommended height restrictions within the Part 77 approach surfaces out to one mile. This was accomplished by evaluating city-adopted land use plans and zoning designations for the parcels encompassed by the noise contours to determine if noise-sensitive land uses could be developed in those areas. Noise contours and height restrictions within the Part 77 approach surface area are addressed as follows.

5 Denton, Texas, Development Code, Subchapter 8, Subdivisions (https://library.municode.com/tx/denton/codes/development_code?nodeId=CITY_DENTONDECO_SUBCHAPTER_8SU), 2024

Noise Exposure Contours

The standard methodology for analyzing noise conditions at airports involves the use of a computer simulation model. The purpose of the noise model is to produce noise exposure contours that are overlain on a map of the airport and vicinity to graphically represent aircraft noise conditions. When compared to land use, zoning, and general plan maps, the noise exposure contours may be used to identify areas that are currently, or have the potential to be, exposed to aircraft noise.

To achieve an accurate representation of an airport's noise conditions, the noise model uses a combination of industry-standard information and user-supplied inputs specific to the airport. The software provides noise characteristics, standard flight profiles, and manufacturer-supplied flight procedures for aircraft that commonly operate at DTO. As each aircraft has different design and operating characteristics (number and type of engines, weight, and thrust levels), each aircraft emits different noise levels. The most common way to spatially represent the noise levels emitted by an aircraft is a noise exposure contour.

Airport-specific information is also used in modeling inputs, including runway configuration, flight paths, aircraft fleet mix, runway use distribution, local terrain and elevation, average temperature, and numbers of daytime and nighttime operations.

Based on assumptions provided by the user, the noise model calculates average 24-hour aircraft sound exposure within a grid covering the airport and surrounding areas. The grid values, which represent the DNL at each intersection point on the grid, signify the noise level(s) for that geographic location. To create noise contours, an isoline similar to those on a topographic map is drawn connecting points of the same DNL noise value. In the same way a topographic contour represents areas of equal elevation, the noise contour identifies areas of equal noise exposure.

DNL is the metric currently accepted by the FAA, U.S. Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. Each of these three agencies has identified the 65 DNL noise contour as the threshold of incompatibility.

The guidelines summarized in Table 1 of Title 14 CFR Part 150 indicate that all land uses are acceptable in areas below 65 DNL.[6] At or above the 65 DNL threshold, residential uses (including RV parks and campgrounds), educational and religious facilities, health and childcare facilities, and outdoor sport, recreation, and park facilities are all incompatible. Educational, healthcare, and religious facilities are also generally considered to be incompatible with noise exposure above 65 DNL. As with residential development, a community can make a policy decision that these uses are acceptable with appropriate sound attenuation measures. Hospitals and nursing homes, places of worship, auditoriums, and concert halls are structures that are generally compatible if measures to achieve noise level reduction are incorporated into the design and construction of such structures. Outdoor music shells and amphitheaters are not compatible and should be prohibited within the 65 DNL noise contour. Additionally, agricultural uses and livestock farming are generally considered compatible, except for related residential components of these uses, which should incorporate sound attenuation measures.

[6] Title 14 CFR, Part 150 (https://www.ecfr.gov/current/title-14/chapter-I/subchapter-I/part-150)

As part of this master plan, noise exposure contours were prepared for DTO for a baseline condition (2024) and a long-range condition (2044). The resulting contours are shown on **Exhibit 5G**. As shown on the exhibit, noise contours out to the 65 DNL largely remain on airport property for both the baseline and long-range forecast conditions. To the northeast of the airport, the 65 DNL contour extends off airport property over a wooded area along Masch Branch Road that is currently undeveloped.

Height Restrictions

To analyze the potential for non-compatible development of land off airport property, zoning was evaluated within the Part 77 approach surface area out to one mile from the ends of the runways. **Table 5C** notes the maximum height limit for zoning of the underlying permitted land uses, which range from 35 to 100 feet.

BEST PRACTICES

Based on the previously presented information and the non-compatible development analysis, the following best practices are provided to maintain airport land use compatibility in the vicinity of DTO. These practices are in accordance with the recently published FAA Advisory Circular (AC) 150/5190-4B, which identifies compatible land use development tools, resources, and techniques to protect surrounding communities from adverse effects associated with airport operations.[7]

Review City of Denton's Municipal Airport Overlay District (MAO) Zoning Ordinance and Maps | The MAO zoning ordinance and its associated AHHD and ACLUD maps should be reviewed periodically during the planning period for any necessary updates. The MAO references DTO's existing approach surfaces, as well as descriptions of the approach, transition, horizontal, and conical zones, which may change from time to time as the Part 77 airspace drawing for the airport is updated. Additionally, updated noise contours could necessitate adjustments to the ACLUD map and ACLUD-1 and ACLUD-2 boundaries.

Implement FAA 7460-1 Airspace Analysis | The MAO zoning ordinance and/or building permit application process could be modified so that airport hazards are identified through an FAA 7460-1 airspace analysis. The FAA notice criteria tool[8] allows a user (airport sponsor, developer, or local municipality) to input location and dimensional information about a proposed development to determine if the user is required to file notice with the FAA. If a notice is required, the proponent would be required to submit FAA Form 7460-1, *Notice of Construction or Alteration*, to the FAA for review as a local project review standard.

Consult FAA Advisory Circular for Wildlife Hazard Review | Land uses that create bird strike hazards are currently prohibited in the Denton development code. Certain land uses that attract birds and other wildlife hazards should not be permitted on or near the airport, according to FAA AC 15/5200-33C.[9]

[7] FAA, AC 150/5190-4B, Airport Land Use Compatibility Planning, September 16, 2022
[8] FAA, Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) (https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm)
[9] FAA, AC 15/5200-33C, Hazardous Wildlife Attractants on or near Airports, February 21, 2020

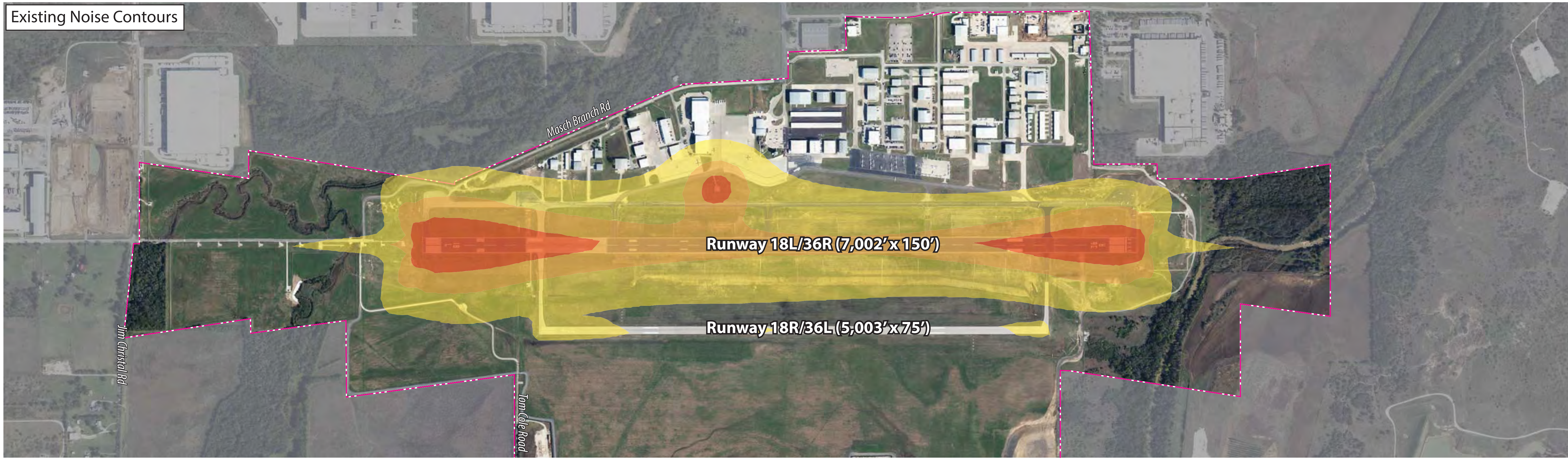
Use Conservation Easement | Conservation easements may be established for vacant land within the approach surfaces designated as open space on the future land use maps. Conservation easements have the potential to preserve land in an undeveloped state, thereby limiting the development of incompatible land uses near the airport. This technique can be a cost-effective strategy to manage noise, safety, and airspace protection for off airport land uses. Conservation easements are recommended for wetlands, forest areas, prime farmland, and other areas with important environmental or scenic attributes, according to FAA AC 150/5190-4B.

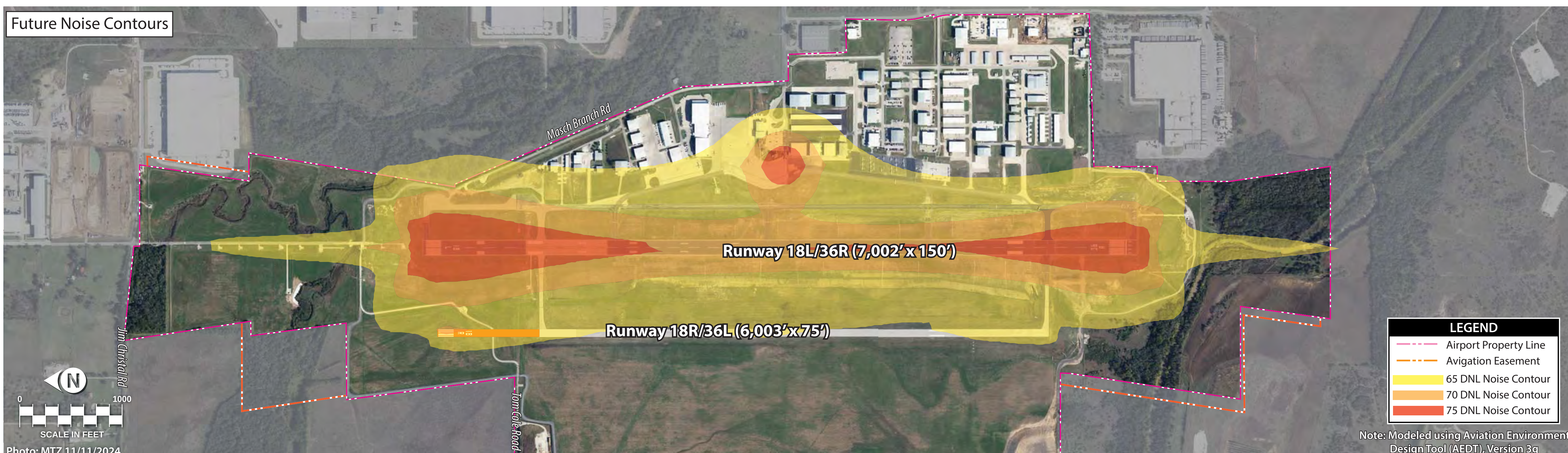
Special Exceptions/Conditional Uses | In its most recent advisory circular, the FAA advises in that if a community located near an airport allows some land use control through conditional uses, that community should ensure such uses do not create a hazard for the community, the airport, or the user of the subject property. The City of Denton could modify its change of zone requirements and/or conditional use requirements within the airport's vicinity to have a designation that triggers extraordinary review of these exceptions because of the property's location near an airport.

Adopt Fair Disclosure Requirements for Real Estate Transactions within the Vicinity of DTO | Fair disclosure regulations in real estate transactions are intended to ensure prospective buyers of property are informed that the property is or will be exposed to potentially disruptive aircraft noise or overflights. It is not uncommon, around even the busiest airports, for newcomers to report having bought property without having been informed about airport noise levels. At the most formal level, fair disclosure can be implemented through a city ordinance that requires a deed notice for property within the vicinity based on an existing boundary, such as the Part 77 horizontal imaginary surface. The following is an example of deed notice language that would notify a property owner of the proximity of an airport and expectations for living in the vicinity of the airport:

The subject property is within the vicinity of Denton Enterprise Airport, which is located at 5000 Airport Road, Denton, TX 76207. Properties within this area are routinely subject to overflights by aircraft using this public-use airport. As a result, residents may experience inconvenience, annoyance, or discomfort arising from the noise of such operations. Residents also should be aware that the current volume of aircraft activity may increase in response to population and economic growth within the vicinity of Denton Enterprise Airport. Any subsequent deed conveying this parcel or subdivisions thereof shall contain a statement in substantially this form.

Airport and FAA Participation in Local and Regional Planning | The authority to develop, implement, and enforce land use programs and decisions rests predominantly with local governments; therefore, it is recommended that airport operators be involved in the preparation of city, county, and regional comprehensive plans so they can advocate for airport interests and provide their specialized expertise to the planning team. Airport coordination with local governments ensures they are routinely provided with information about proposed development activity in the airport environs, allowing the airport operators the opportunity to review and comment on those proposals. This would include engagement with all jurisdictions in the airport vicinity.


Existing Noise Contours
Masch Branch Rd
Runway 18L/36R (7,002' x 150')
Runway 18R/36L (5,003' x 75')
Jim Christal Rd
Tom Cole Road


Future Noise Contours
Masch Branch Rd
Runway 18L/36R (7,002' x 150')
Runway 18R/36L (6,003' x 75')
Jim Christal Rd
Tom Cole Road
N
0
1000
SCALE IN FEET
Photo: MTZ 11/11/2024
LEGEND
Airport Property Line
Avigation Easement
65 DNL Noise Contour
70 DNL Noise Contour
75 DNL Noise Contour
Note: Modeled using Aviation Environmental Design Tool (AEDT), Version 3g

AIRPORT RECYCLING, REUSE, AND WASTE REDUCTION

The primary objective of this section is to provide the City of Denton and its airport administration with recommendations for future improvements and processes that promote sustainable principles in addressing airport operations and aviation demand. By making sustainability a priority in the planning process and identifying best management practices, the airport can become a more environmentally friendly economic hub.

REGULATORY GUIDELINES

FAA Modernization and Reform Act of 2012

The *FAA Modernization and Reform Act of 2012* (FMRA), which amended Title 49 United States Code (USC), included several changes to the *Airport Improvement Program* (AIP). Two of these changes are related to recycling, reuse, and waste reduction at airports:

- Section 132(b) of the FMRA expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable state and local recycling laws, including cost of a waste audit.”
- Section 133 of the FMRA added a provision requiring any airport that has or plans to prepare a master plan and receives AIP funding for an eligible project to ensure the new or updated master plan addresses issues related to solid waste recycling at the airport, including the following:
    - The feasibility of solid waste recycling at the airport
    - Minimization of the generation of solid waste at the airport
    - Operation and maintenance requirements
    - A review of waste management contracts
    - The potential for cost savings or generation of income

State of Texas Solid Waste Management

Title 30 of the *Texas Administrative Code*, Part 1, Chapter 330, *Municipal Solid Waste*,[10] was adopted to regulate waste management. This document provides policy and procedural guidance to state, substate, and local agencies on the proper management of solid waste and outlines sound methods of solid waste management and disposal for state, substate, and local agencies.

The Texas Commission on Environmental Quality (TCEQ) oversees the state’s solid waste management implementation.[11] The Office of Waste in the TCEQ overviews waste management, recycling, reduction, reuse, and cleanups and remediation. Duties assigned to the Office of Waste include oversight of the following:

[10] Texas Administrative Code (https://texas-sos.appianportalsgov.com/rules-and-meetings?$locale=en_US&interface=VIEW_TAC_SUMMARY &queryAsDate=06%2F10%2F2025&recordId=221713), accessed June 2025

[11] Texas Commission on Environmental Quality, Land, Permitting and Managing Waste Disposal, Cleanups, and Other Land-Based Activities (https://www.tceq.texas.gov/agency/land_main.html)

- Processing, storage, transportation, and disposal of waste
- Permits, registrations, and compliance
- Household, industrial, municipal, and radioactive waste
- Septic systems, sludge, dredge, and injection

Duties assigned to the recycling, reducing, and reusing office include overseeing the following:

- Recycling operations and composting
- Home and business resources
- Fats, oils, and grease, automotive waste, and electronic waste
- Exchange network for business and industry

City of Denton Solid Waste Management

The city's Solid Waste and Recycling Department oversees and manages the city's waste management.[12] This department offers a variety of scheduled pick-up services for commercial trash and recycling, with varying sizes and styles for receptacles. The city also provides services to recycle smaller household electronics, televisions, and computers at the City of Denton Landfill. In addition, the City of Denton has a commercial diversion program to limit the amount of solid waste that ends up in the landfill.[13]

SOLID WASTE

Airport sponsors typically have purview over waste-handling services in facilities they own and operate, such as passenger terminal buildings, hangars, ARFF stations, and maintenance facilities. Tenants of airport-owned buildings/hangars or tenants that own their facilities are typically responsible for coordinating their own waste-handling services.

For airports, waste can generally be divided into eight categories.[14]

- **Municipal solid waste** (MSW) is more commonly known as trash or garbage and consists of everyday items that are used and then discarded, such as product packaging.

- **Construction and demolition** (C&D) waste is considered non-hazardous trash resulting from land clearing, excavation, demolition, and renovation or repair of structures, roads, and utilities. C&D waste includes concrete, wood, metals, drywall, carpet, plastic, pipe, cardboard, and salvaged building components. C&D is also generally labeled MSW.

- **Green waste** is a form of MSW yard waste that consists of tree, shrub, and grass clippings, leaves, weeds, small branches, seeds, and pods.

- **Food waste** includes unconsumed food products or waste generated and discarded during food preparation and is also considered MSW.

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[12] City of Denton, Texas, Solid Waste Recycling (https://www.cityofdenton.com/353/Solid-Waste-Recycling), accessed June 2025
[13] City of Denton, Texas, Commercial Division (https://www.cityofdenton.com/1048/Commercial-Diversion), accessed June 2025
[14] FAA, Recycling, Reuse, and Waste Reduction at Airports, April 24, 2013

- **Deplaned waste** is waste removed from passenger aircraft. Deplaned waste includes bottles, cans, mixed paper (i.e., newspapers, napkins, and paper towels), plastic cups, service ware, food waste, and food-soiled paper/packaging.

- **Lavatory waste** is a special waste that is emptied through a hose and pumped into a lavatory service vehicle. The waste is then transported to a triturator[15] facility for pretreatment prior to discharge in a sanitary sewage system. Chemicals in lavatory waste can present environmental and human health risks if mishandled; therefore, caution must be taken to ensure lavatory waste is not released to the public sanitary sewage system prior to pretreatment.

- **Spill clean and remediation wastes** are special wastes that are generated during cleanup or spills and/or remediation of contamination from several types of sites on an airport.

- **Hazardous wastes** are governed by the *Resource Conservation and Recovery Act* (RCRA) and the regulations in Title 40 CFR Subtitle C, Parts 260 to 270. The U.S. EPA has developed less stringent regulations for certain hazardous waste (universal waste), which are described in 40 CFR Part 237, the *Universal Waste Rule.*

There are multiple areas where the airport potentially contributes to the waste stream, including the terminal (GA Administration Building), on-airport tenants (FBOs, and airport construction projects. To create a comprehensive waste reduction and recycling plan for the airport, all potential inputs must be considered.

SOLID WASTE MANAGEMENT SYSTEM

Airports generally utilize either centralized or a decentralized waste management systems. The differences between the two methods are described as follows.

- **Centralized waste management system |** With a centralized management system, the airport provides receptacles for the collection of waste, recyclable materials, and/or compostable materials and contracts for their removal by a single local provider.[16] A centralized waste management system allows for more participation from airport tenants who may not be incentivized to recycle on their own and can reduce the overall cost of service for all involved. A centralized strategy can be inefficient for some airports because it requires more effort and oversight on the part of airport management; however, the centralized system is advantageous because it involves fewer working components in the overall management system of solid waste and recycling efforts. This system also allows greater control by the airport sponsor over the type(s), placement, and maintenance of dumpsters, thereby saving space and eliminating the need for tenants to have individual containers.

- **Decentralized waste management |** Under a decentralized waste management system, the airport provides waste containers and contracts for the hauling of waste materials in airport-operated spaces only; however, airport tenants (such as FBOs, retail shops, and others) manage the waste from their leased spaces with separate contracts, billing, and hauling schedules. A decentralized waste management system can increase the number of receptacles on airport

[15] A triturator turns lavatory waste into fine particulates for further processing.

[16] National Academies of Science, Engineering, and Medicine, Airport Cooperative Research Program, Synthesis 92, Airport Waste Management and Recycling Practices, 2018)

property and the number of trips by a waste collection service provider if tenants' and the airport's collection schedules differ.

EXISTING SERVICES

The airport currently contracts solid waste and recycling services through the City of Denton. Common accepted items for recycling include carboard, paper products, cartons, plastic bottles, aluminum and steel cans, and glass. At present, the airport does not have on-site hazardous or electronic waste collection, but those services are available at the City's landfill.

DTO currently participates in a decentralized waste management system, as tenants are responsible for obtaining their respective waste/recycling services. Recycling services are available for each leasehold at DTO, and in most cases, recycling is required under the City of Denton's *Code of Ordinances* for those who enroll in a commercial waste service.

SOLID WASTE BEST PRACTICES

The following general best practices can be implemented to maximize waste reduction and enhance recycling efforts at the airport.

Reduce the amount of solid waste generated.

- *Create a centralized waste management system at the airport*. Currently, DTO participates in a decentralized waste management system because airport tenants are responsible for overseeing their own waste management. Airport staff could consider engaging tenants to create a centralized waste management system at the airport to streamline waste management efforts at DTO.
    - *Considerations*: Implementation of incentives for FBOs and other tenants to either enhance existing recycling practices or join the airport's recycling program should be considered.
- *Assign the responsibility of waste management to a dedicated individual or group*. Having one person oversee and manage solid waste and recycling at the airport would create efficient and cost-saving solid waste management solutions. People dedicated to this operational aspect of the airport would gain familiarity with waste processes and could help identify areas of improvement and cost-saving measures.
- *Audit the current waste management system*. The continuation of an effective program requires accurate data on current waste rates. An airport can gain insight into its waste stream in several ways, such as requesting weights from the hauler, tracking the volume, or reviewing the bills; however, managing the waste system starts with a waste audit, which is an analysis of the types of waste produced. A waste audit is the most comprehensive and intensive way to assess waste stream composition, opportunities for waste reduction, and capture of recyclables, and should include the following actions.

- Examination of records
    - Evaluate waste hauling and disposal records and contracts
    - Examine supply and equipment invoices
    - Identify other waste management costs (commodity rebates, container costs, etc.)
    - Track waste from the point of origin
    - Establish a baseline for metrics
- Facility walk-through conducted by the airport
    - Gather qualitative waste information to determine major waste components and waste-generating processes
    - Identify the locations on the airport that generate waste
    - Identify what types of waste are generated by the airport to determine what can be reduced, reused, or recycled
    - Improve understanding of waste pick-up and hauling practices
- Waste sort
    - Provides quantitative data on total airport waste generation

- *Create a tracking and reporting system*. Track solid waste created at the airport to allow DTO to identify areas where a significant amount of waste is generated, which will help the airport estimate annual waste volumes. Understanding the cyclical nature of waste generation will allow the airport to estimate costs and identify areas of improvement.

Increase Number of Materials Recycled at DTO

- *Enhance the recycling program at the airport*. To ensure the airport continues to reduce the amount of waste hauled to the landfill, materials that cannot be reused or avoided should be recycled, if possible. The city should review internal procedures to ensure there are no unacceptable items contaminating recycling containers or recyclables thrown in the trash. In addition, DTO can consider increasing the types of items that are recycled by including new types of waste (i.e., hazardous and electronic waste) into its existing recycling practices.

- *Reduce waste through controlled purchasing practices and the consumption of nonessential products*. The airport can control the amount of waste generated by prioritizing the purchase of items or supplies that are reusable, recyclable, compostable, or made from recycled materials.

Establish Construction and Demolition Goals

- *Implement construction waste requirements in contracts for construction projects*. Contracts should highlight ways to repurpose and reuse materials/salvage and explain how recyclable materials are defined in the construction process. Additionally, contracts should establish standards and specifications in the procurement process and contracting when starting new construction projects at DTO. Other action items to consider when drafting a contract for a construction project include preparing a construction waste management plan, assigning a waste management coordinator, and tracking and reporting requirements under a construction waste management (CWM) plan.

- *Create a CWM plan*. Have the airport and its contractors adopt a CWM plan when applicable. A typical CWM plan should encompass goals and strategies to manage a project's C&D waste. A CWM plan should also identify the types and quantities by weight for any proposed demolition, site-clearing, and/or construction waste that may be generated by the project.

  Other items to include in a CWM plan include the following:

  - Complete a materials handling estimate worksheet for all applicable project waste streams.
  - Identify where recyclable materials storage and collection points will be situated.
  - Create a plan to communicate recycling goals with employees and subcontractors.
  - Create a waste reduction work plan to identify what materials can be salvaged or recycled, how waste is disposed of, and the method for collecting and transporting waste streams.

  At the end of each project, as part of the CWM plan, documentation that includes tracking, reporting, and invoicing should be submitted to demonstrate which CWM plan goals were met.

The construction waste management plan should consider the following construction and demolition debris for recycling or reuse:	
Earth, soil, dirt	Wood
Concrete reclaimed asphalt pavement	Gypsum drywall
Bricks/masonry (cinder blocks, mortar, etc.)	Plastics
Rock, stone, gravel	Plaster
Ferrous metal (iron, steel, etc.)	Paint
Nonferrous metal (aluminum, copper, etc.)	Plumbing fixtures and piping
Roofing shingles and other roof materials	Land-clearing debris
Cardboard, paper, packaging	Non-asbestos insulation
Sand	

ENVIRONMENTAL OVERVIEW

An analysis of potential environmental impacts associated with proposed airport projects is an essential consideration in the airport master plan process. The primary purpose of this discussion is to review the recommended development concept (**Exhibit 5A**, **5B**, and **5C**) and the airport's capital program to determine whether projects identified in the airport master plan could, individually or collectively, significantly impact existing environmental resources. Information contained in this section was obtained from previous studies, official internet websites, and analysis by the consultant. This section provides an overview of potential impacts to existing resources that could result from the implementation of the planned improvements outlined on the recommended development concept.

If the FAA retains approval authority over a project, then the project is typically subject to the *National Environmental Policy Act* (NEPA). For projects not categorically excluded under FAA Order 1050.1G, *FAA National Environmental Policy Act Implementing Procedures*, compliance with NEPA is generally satisfied through the preparation of an environmental assessment (EA). In instances where significant environmental impacts are expected, an environmental impact statement (EIS) may be required.

The *FAA Reauthorization Act of 2024* introduced a variety of updated and new environmental guidelines. The primary environmental-related updates are outlined in Section 743 and Section 783.

- Section 743 details the FAA's authority to regulate uses of airport property for projects on land acquired without federal assistance and outlines limitations imposed on non-aeronautical review. Section 743 also states that a notice of intent for proposed projects outside FAA jurisdiction should be submitted to the FAA by an airport sponsor.

- Section 783 outlines that airport capacity enhancement projects, terminal development projects, and general aviation airport improvement projects will be subject to coordinated and expedited environmental review requirements. Section 783 also introduces a new process for determining which safety-related projects should be prioritized during the environmental review process.

The following portion of the master plan is not designed to satisfy NEPA requirements for a specific development project, but it provides a preliminary review of environmental issues that may need to be considered in more detail within the environmental review processes. It is important to note that the FAA is ultimately responsible for determining the level of environmental documentation required for airport actions.

Table 5D summarizes potential environmental concerns associated with implementation of the ultimate recommended development concept for DTO. Analysis under NEPA includes effects or impacts a proposed action or alternative may have on the human environment (see Title 40 CFR § 1508.1).

TABLE 5D | Summary of Potential Environmental Concerns

AVIATION EMISSIONS AND AIR QUALITY	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the U.S. EPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.***
Potential Environmental Concerns	**Potential Impact.** An increase in operations could occur over the 20+ year planning horizon of the master plan that would likely result in additional emissions. The airport is located in Denton County, which is in nonattainment for eight-hour ozone (severe-15, 2008 standard) and eight-house ozone (serious, 2015 standard). *Source: U.S. EPA, Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (https://www3.epa.gov/airquality/greenbook/anayo_tx.html), data current as of May 31, 2025*
BIOLOGICAL RESOURCES (INCLUDING FISH, WILDLIFE, AND PLANTS)	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species or would result in the destruction or adverse modification of federally designated critical habitat.*** *(Continues)*

TABLE 5D | Summary of Potential Environmental Concerns (continued)

FAA Order 1050.1G, *Significance Threshold/ Factors to Consider* (continued)	***The FAA has not established a significance threshold for non-listed species; however, factors to consider include whether an action would have the potential for:*** • ***Long-term or permanent loss of unlisted plant or wildlife species;*** • ***Adverse impacts to special status species or their habitats;*** • ***Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or populations; or*** • ***Adverse impacts on a species' reproductive rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance.***
Potential Environmental Concerns	Federally Protected Species **Potential Impact.** According to the USFWS *Information for Planning and Consultation* (IPaC) report, there is potential for five proposed threatened, threatened, and endangered species at DTO: • piping plover – federal threatened • rufa red knot – federal threatened • whooping crane – federal endangered • alligator snapping turtle – federal proposed threatened • monarch butterfly – federal proposed threatened Out of this list, there is potential suitable habitat for the whooping crane, alligator snapping turtle, and monarch butterfly. Designated Critical Habitat **No Impact.** There are no designated critical habitats with airport boundaries. Non-Listed Species **Potential Impact.** Non-listed species of concern include those protected by the *Migratory Bird Treaty Act* (MBTA) and the *Bald and Golden Eagle Protection Act*. Bird species protected by the MBTA could be adversely affected if construction occurs during the nesting and breeding seasons (February–October). Pre-construction surveys of vegetated areas at the airport are recommended for projects that involve ground-clearing unless such projects occur outside the nesting and breeding seasons. State Protected Species **Potential Impact.** According to a record search conducted on the Texas Parks & Wildlife Department's *Annotated County Lists of Rare Species*, the following species have been identified as state threatened in Denton County: • black rail – state threatened • piping plover – state threatened / federal threatened • rufa red knot – state threatened / federal threatened • white-faced ibis – state threatened • whooping crane – state endangered / federal endangered • Texas horned lizard – state threatened Impacts to these species should be assessed prior to development on a project-by-project basis. The recommended development concept depicts proposed development (such as proposed hangar development on the eastern and western portions of the airport) that would require tree removal. Airport activities that involve tree-maintenance or removal activities could impact these species.

(Continues)

TABLE 5D | Summary of Potential Environmental Concerns (continued)

COASTAL RESOURCES	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Coastal Resources. Factors to consider include whether an action would have the potential to:*** • ***Be inconsistent with the relevant state coastal zone management plan(s);*** • ***Impact a coastal barrier resources system unit;*** • ***Pose an impact on coral reef ecosystems;*** • ***Cause an unacceptable risk to human safety or property; or*** • ***Cause adverse impacts on the coastal environment that cannot be satisfactorily mitigated.***
Potential Environmental Concerns	**No Impact.** The airport is not located within a coastal zone; therefore, no impact to any coastal barriers would occur.
***DEPARTMENT OF TRANSPORTATION ACT*, SECTION 4(F) AND *LAND AND WATER CONSERVATION FUND,* SECTION 6(F)**	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately owned land from a historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.***
Potential Environmental Concerns	**No Impact.** There are no Section 4(f) resources within one mile of the airport (i.e., National Register of Historic Places [NRHP]-listed resources, wildlife/waterfowl refuges, wilderness areas, or national recreation areas). There are no Section 6(f) parcels at DTO.
FARMLANDS	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The total combined score on Form AD-1006, Farmland Conversion Impact Rating, ranges between 200 and 260. Form AD-1006 is used by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to assess impacts under the Farmland Protection Policy Act (FPPA).*** ***The FPPA applies when airport activities meet the following conditions:*** • ***Federal funds are involved;*** • ***The action involves the potential for the irreversible conversion of important farmlands to non-agricultural uses; important farmlands include pastureland, cropland, and forest considered to be prime, unique, or statewide or locally important land; or*** • ***None of the exemptions to the FPPA apply. These exemptions include:*** o ***Land that is not considered "farmland" under the FPPA, such as land that is already developed or already irreversibly converted (these instances include when land is designated as an urban area by the U.S. Census Bureau or the existing footprint includes rights-of-way);*** o ***Land that is already committed to urban development;*** o ***Land that is committed to water storage;*** o ***Construction of non-farm structures necessary to support farming operations; and*** o ***Construction/land development for national defense purposes.***
Potential Environmental Concerns	**Potential Impact.** According to the NRCS *Web Soil Survey*, portions of the airport are comprised of soils that have been identified as *all areas are prime farmland* or *farmland of statewide importance* (**Exhibit 1N**). Proposed changes to the airside and landside areas of the airport (i.e., 1,000-foot runway extension of Runway 18R, EMAS bed at each end of Runway 18L-36R, future pavement, roads, and buildings) could convert farmlands protected by the FPPA. Impacts should be evaluated on a project-by-project basis in consultation with the state soil conservationist and Form AD-1006 should be completed, when appropriate. *Source: USDA-NRCS, Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)*

(Continues)

TABLE 5D | Summary of Potential Environmental Concerns (continued)

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Hazardous Materials, Solid Waste, and Pollution Prevention; however, factors to consider include whether an action would have the potential to:*** • ***Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;*** • ***Involve a contaminated site;*** • ***Produce an appreciably different quantity or type of hazardous waste;*** • ***Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity;*** • ***Use a different method of waste collection, treatment, storage, or disposal that, as an action, would adversely impact the site, surrounding, or affected community, and/or would exceed extant state, tribal, or local capacity; or*** • ***Adversely affect human health and the environment.***
Potential Environmental Concerns	**No Impact.** There are no identified Superfund or brownfield sites within a one-mile buffer of the airport. Prior to any proposed land acquisition, a Phase I site assessment should be conducted to provide a more detailed understanding of what hazardous materials may be located on the land to be purchased. Due to existing regulatory environmental management regarding hazardous materials and waste and stormwater, no impacts related to ultimate airport development are anticipated. The construction of proposed hangars on the airport would increase solid waste. No long-term impacts related to solid waste disposal are expected. The recommended development concept does not include land uses that would produce an appreciably different quantity or type of hazardous waste; however, should this type of land use be proposed, further NEPA review and/or permitting would be required. There are no known hazardous material or active waste contamination sites on airport property. *Source: NEPAssist (https://nepassisttool.epa.gov/nepassist/nepamap.aspx), accessed July 2025*
HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. Factors to consider include whether an action would result in a finding of adverse effect through the Section 106 process; however, an adverse effect finding does not automatically trigger the preparation of an EIS (i.e., a significant impact).***
Potential Environmental Concerns	**Potential Impact.** There are no listed NRHP resources on airport property. At the time of this report, no systematic airport-wide cultural surveys have been conducted, and while much of the airport has been developed, there is still a chance intact cultural resources may be present on the ground surface.
LAND USE	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Land Use and there are no specific independent factors to consider. The determination that significant impacts exist is normally dependent on the significance of other impacts.***
Potential Environmental Concerns	**Potential Impact.** Proposed airport improvements include an extension of Runway 18R, the construction of an EMAS bed at each end of Runway 18L and 36R, construction of new taxilane pavements, rerouting of the perimeter road, proposed hangar development and associated infrastructure, and non-aeronautical, aeronautical, and AAM use reserves. As mentioned earlier in the text under *Farmlands*, the proposed development would occur in areas that are comprised of soils suitable for farming; thus, coordination may need to be undertaken with the FPPA on a project-by-project basis. In addition, portions of the perimeter road to be rerouted and the installation of an EMAS bed near Runway 18L would be located in a floodplain. *(Continues)*

TABLE 5D | Summary of Potential Environmental Concerns (continued)

Potential Environmental Concerns (continued)	**Exhibit 5A** depicts property to be protected via avigation easement within DTO's RPZs. These property avigation easements are recommended to give the airport control over what land uses may be permitted within the airport's RPZs.
NATURAL RESOURCES AND ENERGY SUPPLY	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Natural Resources and Energy Supply; however, factors to consider include whether the action would have the potential to cause demand to exceed available or future supplies of these resources or adversely impact extant federal, tribal, state, or local resource planning that is already in place.***
Potential Environmental Concerns	**No Impact.** Planned development projects at the airport could increase demands on energy utilities, water supplies and treatment, and other natural resources during construction; however, significant long-term impacts are not anticipated. If long-term impacts become a concern, coordination with local service providers is recommended.
NOISE AND NOISE-COMPATIBLE LAND USE	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The significance threshold applies to all civil aviation activities, including aircraft and airports; UAS and hubs; AAM and vertiports; and commercial space vehicles and launch/reentry sites.*** ***The action would result in noise exposure from impulsive noise sources that meet or exceed CDNL (equivalent to DNL 65 dBA [A-weighted decibels]).*** ***The action would increase noise by DNL 1.5 decibels (dB) or more for a noise-sensitive area that is exposed to noise at or above the 65-dB DNL noise exposure level, or that will be exposed at or above the 65-dB DNL level due to a 1.5-dB DNL or greater increase, when compared to the no-action alternative for the same timeframe.*** ***Another factor to consider is that special consideration should be given to the evaluation of the significance of noise impacts on noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in Title 14 CFR Part 150 are not relevant to the value, significance, and enjoyment of the area in question.***
Potential Environmental Concerns	**Potential Impact. Exhibit 5G** shows existing and future noise contours for the airport. As shown on the exhibit for existing conditions, the 65 DNL noise exposure (yellow contour) is slightly outside airport boundaries east of the Runway 18L threshold. In the future noise contours, the 65 DNL extends slightly farther out in the same area; however, in the existing and future conditions, the 65 DNL would not traverse over noise-sensitive land use. The future development at the airport is not expected to change the overall nose environment by more than the 1.5-dB threshold; however, this should be confirmed prior to implementing a runway extension on Runway 18R, as depicted on **Exhibit 5A**. There are noise-sensitive land uses (i.e., residential neighborhoods, a school, and a place of worship) within a one-mile radius (**Exhibit 1N**). It is important to note that operational growth will not result in noise impacts under FAA Order 1050.1G unless tied to a specific project. Impacts to noise-sensitive land uses are evaluated through NEPA documentation for specific projects or through the voluntary Part 150 process.
SOCIOECONOMICS AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS	
Socioeconomics	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Socioeconomics; however, factors to consider include whether an action would have the potential to:*** • ***Disrupt or divide the physical arrangement of an established community;*** • ***Cause extensive relocation when sufficient replacement housing is unavailable;*** • ***Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;*** • ***Disrupt local traffic patterns and substantially reduce the levels of service of roads serving the airport and its surrounding communities; or*** • ***Produce a substantial change in the community tax base.***

(Continues)

TABLE 5D | Summary of Potential Environmental Concerns (continued)

Potential Environmental Concerns	**Potential Impact.** The proposed development on airport property could encourage economic growth for Denton County. This growth could include new construction jobs, new jobs for the airport and other commercial uses, new housing, and increases to the local tax base. **Exhibit 5C** identifies an area on the western side of the airport that has been identified for a future aeronautical reserve. Development of this reserve could increase vehicle traffic and could change the levels of service for roads leading to and within the airport, such as Tom Cole Road. South of this proposed aeronautical use reserve, a highway is proposed (see **Exhibit 5C**) that could relieve traffic from local service roads. Ultimately, the long-term changes to the level of service on roads are determined by the type of use proposed, and it may be necessary to perform a traffic study to ensure service is not substantially impacted and/or identify mitigation measures to be addressed. In the short term, during the construction of improvements at the airport, there could be temporary disruptions to surface traffic patterns.
Children's Health and Safety Risks	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Children's Environmental Health and Safety Risks; however, factors to consider include whether an action would have the potential to lead to a disproportionate health or safety risk to children.***
Potential Environmental Concerns	**No Impact.** No disproportionately high or adverse impacts are anticipated to affect children living near DTO because of the proposed ultimate development. The closest residents live southeast of the airport along Underwood Road. No parks or other recreational facilities are located within a mile of the airport. The airport is an access-controlled facility and children are not allowed within the fenced portions of the airport without adult supervision. All construction areas should be controlled to prevent unauthorized access.
VISUAL EFFECTS	
Light Emissions	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Light Emissions; however, a factor to consider is the degree to which an action would have the potential to:*** • ***Create annoyance or interfere with normal activities from light emissions; or*** • ***Affect the nature of the visual character of the area due to light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.***
Potential Environmental Concerns	**No Impact.** Existing lighting at the airport includes medium intensity runway edge lights (MIRLs), medium intensity taxiway edge lights (MITL), and lighted guidance signs. Similar light fixtures are anticipated to be installed with the construction of the proposed airfield pavement improvements. A 1,000-foot runway extension is proposed on Runway 18R. Other airfield improvements include the construction of two new parallel taxiways, the expansion of holding aprons, and the construction of EMAS beds for Runway 18L-36R. Night lighting during construction phases within the runway environment is typically directed downward to the construction work area to prevent light spilling outside the airport boundaries. Other ultimate projects, such as proposed hangars on the west and east sides of the airport would include new light fixtures during the operation of the new facilities. Building security lights would be directed downward and would not create glare issues for users on nearby roadways. The closest residential neighborhood (i.e., light-sensitive land use) to DTO is located 0.44 miles southeast of the airport.
Visual Resources/Visual Character	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Visual Resources/Visual Character; however, a factor to consider is the extent to which an action would have the potential to:*** • ***Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;*** • ***Contrast with the visual resources and/or visual character in the study area; or*** • ***Block or obstruct the views of the visual resources, including whether these resources would still be viewable from other locations.***

(Continues)

TABLE 5D | Summary of Potential Environmental Concerns (continued)

Potential Environmental Concerns	**No Impact**. As depicted on **Exhibit 5C**, the construction of a highway is proposed on the west side of the airport, along with land slated for a non-aeronautical reserve and AAM use reserve. This area is primarily vacant and would not affect the nature of the visual character of the area, which has been identified as a public facility land use. Furthermore, there are no national scenic byways or state scenic byways within a one-mile radius of DTO.
WATER RESOURCES	
Wetlands	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The action would:*** • ***Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;*** • ***Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;*** • ***Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety, or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);*** • ***Adversely affect the maintenance of natural systems that support wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;*** • ***Promote the development of secondary activities or services that would cause the circumstances listed above to occur; or*** • ***Be inconsistent with applicable state wetland strategies.***
Potential Environmental Concerns	**Potential Impact.** Based on aerial mapping conducted by the National Wetlands Inventory, there are freshwater/forested shrub wetlands on the western portion of the airport, which are associated with Hickory Creek (**Exhibit 1R**). **Exhibit 5C** depicts the potential for a proposed non-aeronautical reserve and AAM use reserve, the latter of which would house a vertiport. Field surveys and wetland delineations may be required to determine the presence or absence of wetlands at the airport. Removal or relocation of wetlands may require a Section 404 permit under the *Clean Water Act*, which regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Additionally, these wetlands are associated with the city's mapped environmentally sensitive areas and field assessments may be required prior to development within these areas. *Source: National Wetlands Inventory (https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/), accessed July 2025*
Floodplains	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The action would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of Department of Transportation (DOT) Order 5650.2, Floodplain Management and Protection.***
Potential Environmental Concerns	**Potential Impact.** Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the majority of the airport is located in an area of minimal flood hazard; however, there are 100-year and 500-year floodplains along the northern, southern, and western boundaries, as depicted on **Exhibit 5A**. The following development would encroach on floodplains: • Construction of EMAS bed near Runway 18L • Reroute of perimeter road • Designation of non-aeronautical use reserve and AAM use reserve All development in areas that contain floodplains will need to comply with the city's Code of Ordinances, Chapter 30, *Flood Prevention and Protection*, and applicable building permits. *Source: FEMA, Flood Map Service Center (https://msc.fema.gov/portal/home), accessed July 2025*

(Continues)

TABLE 5D | Summary of Potential Environmental Concerns (continued)

Surface Waters	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The action would:*** • ***Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or*** • ***Contaminate public drinking water supply such that public health may be adversely affected.*** ***Factors to consider include whether the action would have the potential to:*** • ***Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values;*** • ***Adversely affect surface waters such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or*** • ***Present difficulties based on water quality impacts when obtaining a permit or authorization.***
Potential Environmental Concerns	**Potential Impact.** The proposed development depicted on **Exhibits 5A**, **5B**, and **5C** would increase impervious surfaces at DTO with the construction of additional pavement for taxiways, apron areas, holding aprons, and more. A National Pollutant Discharge Elimination System (NPDES) general construction permit would be required for all projects that involve ground disturbance over one acre. FAA AC 150/5370-10H, Item C-102, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, should also be implemented during construction projects at the airport.
Groundwater	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The action would:*** • ***Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies; or*** • ***Contaminate an aquifer used for public water supply such that public health may be adversely affected.*** ***Factors to consider include whether the action would have the potential to:*** • ***Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values;*** • ***Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or*** • ***Present difficulties based on water quality impacts when obtaining a permit or authorization.***
Potential Environmental Concerns	**No Impact.** Based on NEPAssist, there is one U.S. Geological Survey (USGS) groundwater well on the airport. Impacts to this well are not anticipated as a result of the recommended improvements at DTO. The closest sole source aquifer is the Arbuckle-Simpson Aquifer, which is located 80 miles from DTO. *Sources: U.S. EPA, Sole Source Aquifer Map (https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b), accessed July 2025; NEPAssist (https://nepassisttool.epa.gov/nepassist/nepamap.aspx), accessed July 2025*
Wild and Scenic Rivers	
FAA Order 1050.1G, *Significance Threshold/ Factors to Consider*	***The FAA has not established a significance threshold for Wild and Scenic Rivers. Factors to consider include whether an action would have an adverse impact on the values for which a river was designated (or considered for designation) through:*** • ***Destroying or altering a river's free-flowing nature;*** • ***A direct and adverse effect on the values for which a river was designated (or is under study for designation);*** *(Continues)*

TABLE 5D | Summary of Potential Environmental Concerns (continued)

FAA Order 1050.1G, *Significance Threshold/ Factors to Consider* (continued)	• ***Introducing a visual, audible, or another type of intrusion that is out of character with the river or would alter outstanding features of the river's setting;*** • ***Causing the river's water quality to deteriorate;*** • ***Allowing the transfer or sale of property interests without restrictions needed to protect the river or the river corridor; or*** • ***Any of the above impacts preventing a river on the Nationwide Rivers Inventory (NRI) or a Section 5(d) river that is not included in the NRI from being included in the Wild and Scenic River System or causing a downgrade in its classification (e.g., from wild to recreational).***
Potential Environmental Concerns	**No Impact.** There are no wild and scenic rivers or rivers listed on the NRI near the airport. The closest designated wild and scenic river identified is the Cossatot River, which is located more than 185 miles from the airport. The nearest NRI feature is a segment of Brazos River, which is located more than 55 miles away from the airport. *Source: National Wild and Scenic Rivers System (https://rivers.gov/), accessed July 2025; Nationwide Rivers Inventory (https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm), accessed July 2025*

SUMMARY

The best way to begin implementation of the recommendations in the master plan is to first recognize that planning is a continuous process that does not end with the completion and approval of this document. Rather, the ability to continuously monitor the existing and forecasted status of airport activity must be provided and maintained. The issues on which the master plan is based will remain valid for many years. The primary goal is for DTO to best serve the general aviation air transportation needs of the region while continuing to be economically self-sufficient.

The actual need for facilities is most appropriately established by DTO activity levels, rather than by a specified date. For example, projections have been made as to when additional hangars may be needed; however, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected or high levels of demand may establish the need to accelerate development. Although every effort has been made in this master planning process to conservatively estimate when facility development may be needed, actual aviation demand will dictate when facility improvements need to be delayed or accelerated.

The real value of a usable master plan is its ability to keep the issues and objectives in the minds of the airport's managers and decision-makers so they can better recognize changes and their effects. In addition to adjustments in aviation demand, decisions regarding when to undertake the improvements recommended in the master plan will impact the period for which the plan remains valid. The format used in this plan is intended to reduce the need for formal and costly updates by simply adjusting the timing. Updates can be performed by DTO staff, thereby improving the plan's effectiveness.

In summary, the planning process requires DTO management to consistently monitor progress in terms of aircraft operations and based aircraft. Analysis of aircraft demand is critical to the timing and need for certain airport facilities. The information obtained from continually monitoring activity will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

Chapter Six

Capital Improvement Program

Chapter Six

Capital Improvement Program

The analyses completed in previous chapters evaluated development needs at Denton Enterprise Airport (DTO) over the next 20 years and beyond, based on forecast activity, operational safety, efficiency, and sustainability. Using the development concept as a guide, this chapter will provide a description and overall cost for the projects identified in the capital improvement program (CIP) and development schedule. The program has been evaluated from a variety of perspectives and represents a comparative analysis of basic budget factors, demand, and priority assignments.

This chapter presents the description of the CIP and the resulting financial projections for DTO. The CIP is developed under the assumption that various demand-based indicators – such as annual operations and based aircraft – grow in line with the aviation activity forecasts presented in Chapter Two. The CIP was prepared for three planning levels: short term (fiscal year [FY] 2026 through FY 2030), intermediate term (FY 2031 through FY 2035), and long term (FY 2036 and beyond).

It should be noted that all new hangar facilities are assumed to be financed privately and are therefore excluded from the CIP. The party responsible for financing hangar-related support facilities (taxilanes, utilities, etc.) will be determined by the structure of the ground lease. In some structures, the private tenant bears full responsibility for financing, constructing, and maintaining improvements, with the airport incurring no direct costs. In other cases, the lease may include provisions where the airport contributes to infrastructure or utilities. While this CIP assumes sponsor involvement in taxilane and site preparation costs, responsibility for those costs will ultimately be determined during the lease negotiation process.

CAPITAL IMPROVEMENT PROGRAM

All airports receiving federal Airport Improvement Program (AIP) funding are required to maintain a current capital improvement program, which identifies projects to be undertaken at an airport over a specified period of time, with the Federal Aviation Administration (FAA). **Exhibit 6A** presents the recommended CIP and its corresponding cost estimates, which are based on planning level of detail. While accurate for master planning purposes, actual project costs will likely vary from these planning estimates once project design and engineering estimates are developed. The cost estimates presented in the exhibit are presented in 2025 dollars. As shown in the table, the CIP is estimated to cost approximately $421.4 million. **Exhibit 6B** graphically presents the master plan projects color-coded by planning period. A brief discussion of the key projects in each period follows.

SHORT-TERM IMPROVEMENTS

The short-term projects are those anticipated to be implemented in FY 2026 through FY 2030. The list of projects is divided into yearly timeframes, and the projects are prioritized based on the needs of the airport. The focus of short-term projects is on making improvements to airfield pavements via taxilane/taxiway design and reconstruction projects. The FY 2026 and FY 2027 taxilane design and reconstruction projects will assess and prioritize taxilane reconstruction/major maintenance. Taxiway A is planned for reconstruction in FY 2029, followed by Taxiway B in FY 2030. Remaining short-term projects include security enhancements and fleet vehicle acquisitions that had been previously planned.

The total estimated project cost for all short-term projects is $24.5 million, with approximately $21.8 million potentially eligible for FAA/TxDOT grant funding.

INTERMEDIATE-TERM IMPROVEMENTS

Intermediate-term projects are those that are anticipated to be necessary in FY 2031 through FY 2035. These projects are not tied to specific years for implementation; instead, they have been prioritized so that the city has the flexibility to determine when they need to be pursued based on the conditions at the time of implementation. It is not unusual for certain projects to be delayed or advanced based on changing conditions, such as funding availability or changes in the aviation industry.

Intermediate-term projects focus on higher priority airfield improvements, such as acquiring properties (fee simple/avigation easements) to protect the runway protection zones (RPZs) and the ultimate Runway 18R-36L primary surface, installation of runway end identifier lights (REILs) on Runways 36R, 36L, and 18R, adding two new exit taxiways to Runway 18L-36R to enhance runway efficiency, and constructing the engineering material arresting system (EMAS) beds on both ends of Runway 18L-36R.

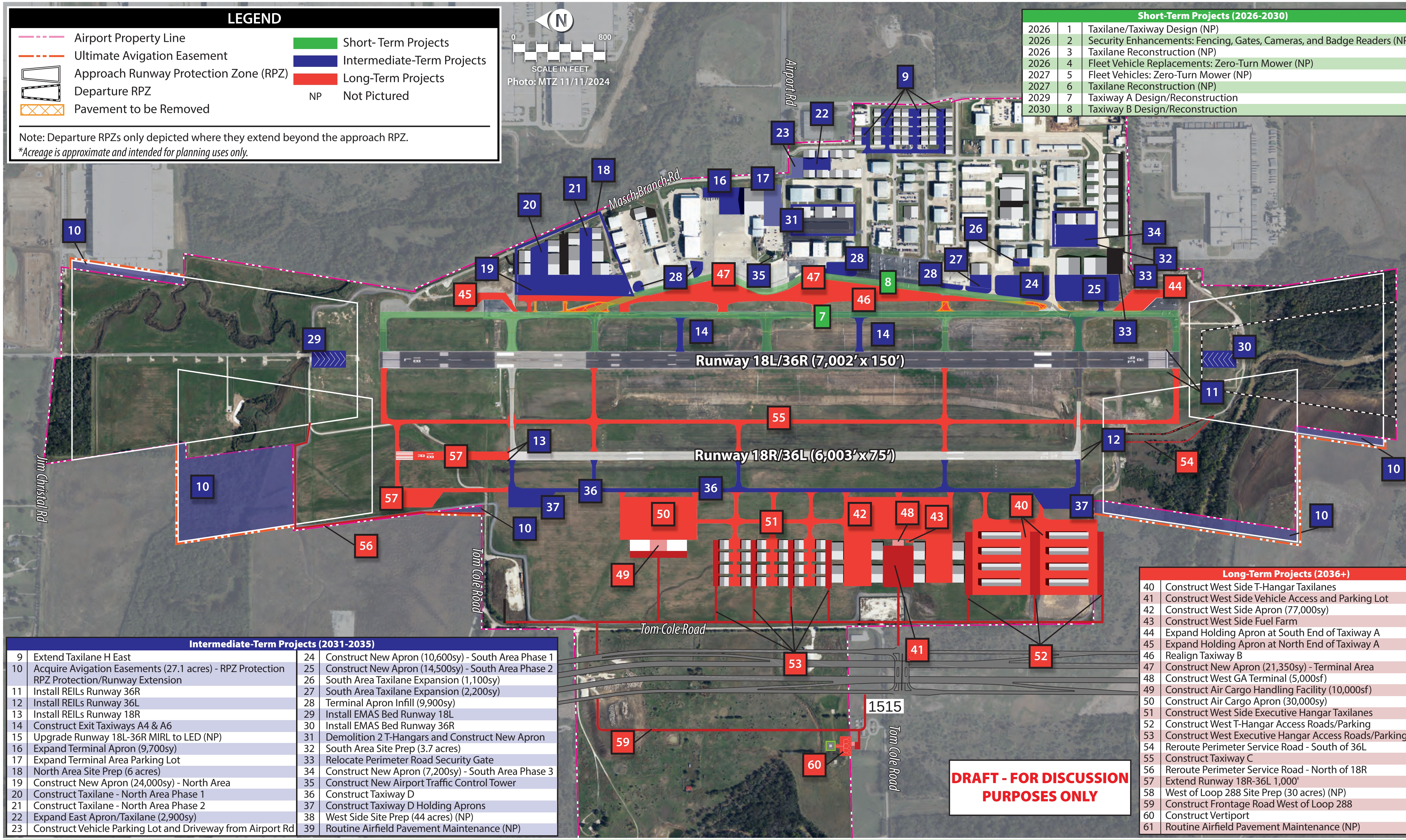
Remaining intermediate-term projects are focused on enhancements to the east side. These include the development of new taxilanes to support new hangar development, expansion of apron pavements, redevelopment of areas with a focus on larger hangar facilities and potential new specialty aviation service operators (SASOs), and the expansion of the existing airport traffic control tower (ATCT) or construction of a new ATCT. Finally, projects are included toward the end of the intermediate term to

Project #	Year	Project	Total Project Cost	Federal/TxDOT Eligible Funding	Sponsor Funding
			Funding Sources (in 2025 dollars)		
Short-Term Projects (2026-2030)					
1	2026	Taxilane/Taxiway Design	$950,000	$855,000	$95,000
2	2026	Security Enhancements: Fencing, Gates, Cameras, and Badge Readers	$200,000	$0	$200,000
3	2026	Taxilane Reconstruction	$1,000,000	$900,000	$100,000
4	2026	Fleet Vehicle Replacements: Zero-Turn Mower	$40,000	$0	$40,000
5	2027	Fleet Vehicles: Zero-Turn Mower	$40,000	$0	$40,000
6	2027	Taxilane Reconstruction	$2,275,000	$2,047,500	$227,500
7	2029	Taxiway A Design/Reconstruction	$12,000,000	$10,800,000	$1,200,000
8	2030	Taxiway B Design/Reconstruction	$8,000,000	$7,200,000	$800,000
		Short-Term Subtotal	**$24,505,000**	**$21,802,500**	**$2,702,500**
Intermediate-Term Projects (2031-2035)					
9	2031-2035	Extend Taxilane H East	$3,740,000	$3,366,000	$374,000
10	2031-2035	Acquire Avigation Easements (27.1 acres) - RPZ Protection/Runway Extension	$6,700,000	$6,030,000	$670,000
11	2031-2035	Install REILs Runway 36R	$60,000	$54,000	$6,000
12	2031-2035	Install REILs Runway 36L	$60,000	$54,000	$6,000
13	2031-2035	Install REILs Runway 18R	$60,000	$54,000	$6,000
14	2031-2035	Construct Exit Taxiways A4 & A6	$2,040,000	$1,836,000	$204,000
15	2031-2035	Upgrade Runway 18L-36R MIRL to LED	$310,000	$279,000	$31,000
16	2031-2035	Expand Terminal Apron (9,700sy)	$4,760,000	$4,284,000	$476,000
17	2031-2035	Expand Terminal Area Parking Lot	$2,740,000	$0	$2,740,000
18	2031-2035	North Area Site Prep (6 acres)	$2,980,000	$0	$2,980,000
19	2031-2035	Construct New Apron (24,000sy) - North Area	$11,610,000	$10,449,000	$1,161,000
20	2031-2035	Construct Taxilane - North Area Phase 1	$2,340,000	$2,106,000	$234,000
21	2031-2035	Construct Taxilane - North Area Phase 2	$2,310,000	$2,079,000	$231,000
22	2031-2035	Expand East Apron/Taxilane (2,900sy)	$2,020,000	$1,818,000	$202,000
23	2031-2035	Construct Vehicle Parking Lot and Driveway from Airport Road	$980,000	$0	$980,000
24	2031-2035	Construct New Apron (10,600sy) - South Area Phase 1	$5,190,000	$4,671,000	$519,000
25	2031-2035	Construct New Apron (14,500sy) - South Area Phase 2	$7,070,000	$6,363,000	$707,000
26	2031-2035	South Area Taxilane Expansion (1,100sy)	$630,000	$567,000	$63,000
27	2031-2035	South Area Taxilane Expansion (2,200sy)	$1,150,000	$1,035,000	$115,000
28	2031-2035	Terminal Apron Infill (9,900sy)	$4,860,000	$4,374,000	$486,000
29	2031-2035	Install EMAS Bed Runway 18L	$10,020,000	$9,018,000	$1,002,000
30	2031-2035	Install EMAS Bed Runway 36R	$10,020,000	$9,018,000	$1,002,000
31	2031-2035	Demolition 2 T-Hangars and Construct New Apron	$5,780,000	$5,202,000	$578,000
32	2031-2035	South Area Site Prep (3.7 acres)	$1,400,000	$0	$1,400,000
33	2031-2035	Relocate Perimeter Road Security Gate	$190,000	$0	$190,000
34	2031-2035	Construct New Apron (7,200sy) - South Area Phase 3	$3,560,000	$3,204,000	$356,000
35	2031-2035	Construct New Airport Traffic Control Tower	$3,300,000	$2,970,000	$330,000
36	2031-2035	Construct Taxiway D	$19,550,000	$17,595,000	$1,955,000
37	2031-2035	Construct Taxiway D Holding Aprons	$6,760,000	$6,084,000	$676,000
38	2031-2035	West Side Site Prep (44 acres)	$7,640,000	$0	$7,640,000
39	2031-2035	Routine Airfield Pavement Maintenance	$20,000,000	$18,000,000	$2,000,000
		Intermediate-Term Subtotal	**$149,830,000**	**$120,510,000**	**$29,320,000**

Project #	Year	Project	Total Project Cost	Federal/TxDOT Eligible Funding	Sponsor Funding
			Funding Sources (in 2025 dollars)		
Long-Term Projects (2036+)					
40	2036+	Construct West Side T-Hangar Taxilanes	$9,260,000	$8,334,000	$926,000
41	2036+	Construct West Side Vehicle Access and Parking Lot	$10,470,000	$0	$10,470,000
42	2036+	Construct West Side Apron (77,000sy)	$36,820,000	$33,138,000	$3,682,000
43	2036+	Construct West Side Fuel Farm	$9,900,000	$0	$9,900,000
44	2036+	Expand Holding Apron at South End of Taxiway A	$3,390,000	$3,051,000	$339,000
45	2036+	Expand Holding Apron at North End of Taxiway A	$1,680,000	$1,512,000	$168,000
46	2036+	Realign Taxiway B	$15,550,000	$13,995,000	$1,555,000
47	2036+	Construct New Apron (21,350sy) - Terminal Area	$10,340,000	$9,306,000	$1,034,000
48	2036+	Construct West GA Terminal (5,000sf)	$12,750,000	$0	$12,750,000
49	2036+	Construct Air Cargo Handling Facility (10,000sf)	$25,752,000	$0	$25,752,000
50	2036+	Construct Air Cargo Apron (30,000sy)	$14,450,000	$13,005,000	$1,445,000
51	2036+	Construct West Side Executive Hangar Taxilanes	$4,730,000	$4,257,000	$473,000
52	2036+	Construct West T-Hangar Access Roads/Parking	$2,350,000	$0	$2,350,000
53	2036+	Construct West Executive Hangar Access Roads/Parking	$2,780,000	$0	$2,780,000
54	2036+	Reroute Perimeter Service Road - South of 36L	$70,000	$63,000	$7,000
55	2036+	Construct Taxiway C	$23,330,000	$20,997,000	$2,333,000
56	2036+	Reroute Perimeter Service Road - North of 18R	$170,000	$153,000	$17,000
57	2036+	Extend Runway 18R-36L 1,000'	$6,030,000	$5,427,000	$603,000
58	2036+	West of Loop 288 Site Prep (30 acres)	$6,660,000	$0	$6,660,000
59	2036+	Construct Frontage Road West of Loop 288	$3,470,000	$0	$3,470,000
60	2036+	Construct Vertiport	$7,100,000	$0	$7,100,000
61	2036+	Routine Airfield Pavement Maintenance	$40,000,000	$36,000,000	$4,000,000
		Long-Term Subtotal	**$247,052,000**	**$149,238,000**	**$97,814,000**
		TOTAL PROGRAM	**$421,387,000**	**$291,550,500**	**$129,836,500**

Sources: Cost estimates prepared by Garver; Project staging prepared by Coffman Associates; Short-term projects from current DTO Airport Capital Improvement Program (ACIP)

Exhibit 6A
CAPITAL IMPROVEMENT PROGRAM



LEGEND

- Airport Property Line
- Ultimate Avigation Easement
- Approach Runway Protection Zone (RPZ)
- Departure RPZ
- Pavement to be Removed
- Short- Term Projects
- Intermediate-Term Projects
- Long-Term Projects
- NP Not Pictured

Note: Departure RPZs only depicted where they extend beyond the approach RPZ.
Acreage is approximate and intended for planning uses only.

Short-Term Projects (2026-2030)

2026	1	Taxilane/Taxiway Design (NP)
2026	2	Security Enhancements: Fencing, Gates, Cameras, and Badge Readers (NP)
2026	3	Taxilane Reconstruction (NP)
2026	4	Fleet Vehicle Replacements: Zero-Turn Mower (NP)
2027	5	Fleet Vehicles: Zero-Turn Mower (NP)
2027	6	Taxilane Reconstruction (NP)
2029	7	Taxiway A Design/Reconstruction
2030	8	Taxiway B Design/Reconstruction

Intermediate-Term Projects (2031-2035)

9	Extend Taxilane H East	24	Construct New Apron (10,600sy) - South Area Phase 1
10	Acquire Avigation Easements (27.1 acres) - RPZ Protection RPZ Protection/Runway Extension	25	Construct New Apron (14,500sy) - South Area Phase 2
		26	South Area Taxilane Expansion (1,100sy)
11	Install REILs Runway 36R	27	South Area Taxilane Expansion (2,200sy)
12	Install REILs Runway 36L	28	Terminal Apron Infill (9,900sy)
13	Install REILs Runway 18R	29	Install EMAS Bed Runway 18L
14	Construct Exit Taxiways A4 & A6	30	Install EMAS Bed Runway 36R
15	Upgrade Runway 18L-36R MIRL to LED (NP)	31	Demolition 2 T-Hangars and Construct New Apron
16	Expand Terminal Apron (9,700sy)	32	South Area Site Prep (3.7 acres)
17	Expand Terminal Area Parking Lot	33	Relocate Perimeter Road Security Gate
18	North Area Site Prep (6 acres)	34	Construct New Apron (7,200sy) - South Area Phase 3
19	Construct New Apron (24,000sy) - North Area	35	Construct New Airport Traffic Control Tower
20	Construct Taxilane - North Area Phase 1	36	Construct Taxiway D
21	Construct Taxilane - North Area Phase 2	37	Construct Taxiway D Holding Aprons
22	Expand East Apron/Taxilane (2,900sy)	38	West Side Site Prep (44 acres) (NP)
23	Construct Vehicle Parking Lot and Driveway from Airport Rd	39	Routine Airfield Pavement Maintenance (NP)

Long-Term Projects (2036+)

40	Construct West Side T-Hangar Taxilanes
41	Construct West Side Vehicle Access and Parking Lot
42	Construct West Side Apron (77,000sy)
43	Construct West Side Fuel Farm
44	Expand Holding Apron at South End of Taxiway A
45	Expand Holding Apron at North End of Taxiway A
46	Realign Taxiway B
47	Construct New Apron (21,350sy) - Terminal Area
48	Construct West GA Terminal (5,000sf)
49	Construct Air Cargo Handling Facility (10,000sf)
50	Construct Air Cargo Apron (30,000sy)
51	Construct West Side Executive Hangar Taxilanes
52	Construct West T-Hangar Access Roads/Parking
53	Construct West Executive Hangar Access Roads/Parking
54	Reroute Perimeter Service Road - South of 36L
55	Construct Taxiway C
56	Reroute Perimeter Service Road - North of 18R
57	Extend Runway 18R-36L 1,000'
58	West of Loop 288 Site Prep (30 acres) (NP)
59	Construct Frontage Road West of Loop 288
60	Construct Vertiport
61	Routine Airfield Pavement Maintenance (NP)

Exhibit 6B
RECOMMENDED DEVELOPMENT STAGING

support future development of the west side, including the construction of parallel Taxiway D and site preparation for approximately 44 acres on the west side, which includes grading and new utility infrastructure to support the development.

The total estimated project cost for all intermediate-term projects is $149.8 million, with approximately $120.5 million potentially eligible for FAA/TxDOT grant funding.

LONG-TERM IMPROVEMENTS

Long-term projects are those considered for FY 2036 and beyond. Projects in this period focus on the development of west-side facilities, including a new GA terminal and associated apron, fuel farm, and taxilanes to support new hangar development. A project is included for the development of a 10,000 square-foot (sf) air cargo handling facility and apron, which would not generally be eligible for FAA/TxDOT grant funding. In addition, new access roads and vehicle parking lots associated with the new west-side facilities are also not generally eligible for FAA/TxDOT grant finding. Airfield improvements include the extension of Runway 18R-36L, construction of a parallel taxiway between the runways, and realigning Taxiway B on the east side.

The total estimated project cost for all long-term projects is $247.1 million, with approximately $149.2 million potentially eligible for FAA/TxDOT grant funding.

FINANCIAL PLAN

This section outlines the methods for financing the sponsor's share of the CIP. The financial plan includes a forecast of revenues and expenses, which helps determine whether sufficient funds will be available to cover the local share of the capital development program throughout the planning period. This forecast assumes that current rates and charges will keep pace with inflation, and projects future revenues and expenses based on a combination of recent historical trends and city policy objectives.

HISTORICAL REVENUES AND EXPENSES

DTO is managed by the City of Denton through an Airport Enterprise Fund established in FY 2010 - FY 2011, and it is classified as a self-sustaining enterprise. This fund, which includes airport operations and airport gas wells, is dedicated to the acquisition, operation, and maintenance of governmental facilities and services that are primarily supported by user fees. The objective is to operate similarly to a private enterprise, reflecting profit or loss. This method ensures that no tax dollars are utilized for the airport's annual operating costs or future capital improvements.

The city's objective is to keep the airport self-sustaining. This means the revenue generated by the airport must cover all its current expenditures and financial obligations. These include operating costs, personnel expenses, equipment purchases, and routine maintenance and repairs. Additionally, the revenue must cover debt service for new or expanded facilities and pay the city’s General Fund for administrative support.

Table 6A presents the historical revenues and expenses for FY 2015 through FY 2024. This data is sourced from the statements of revenues and expenses for DTO, which are available on the City of Denton's budget documents posted on their website. The revenue and cost categories shown are aggregates of several accounting sub-categories.

TABLE 6A | Historical Revenues and Expenses

	FY 2015	FY2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	CAGR	Growth
Operating Revenue												
Airport Land Leases	402,004	449,114	492,106	778,054	641,725	645,469	679,339	699,608	777,021	870,328	9.0%	116.5%
Hangar Leases			92,594		98,041	143,525	142,057	148,588	157,544	157,065	7.8%	69.6%
FBO Fuel Commissions	232,881	178,086	208,931	291,467	209,927	202,887	217,979	271,666	306,706	288,979	2.4%	24.1%
FBO Hangar/Tiedown			95,470	111,111	119,727	109,430	119,352	118,884	243,145	328,238	19.3%	243.8%
Other Airport Income	60,695	78,564	22,447	3,730	15,252		163,752	5,361	31,818	12,721	-15.9%	-79.0%
Airport Gas Royalties	581,848	478,310	606,518	441,913	313,325	192,176	422,043	995,048	616,459	239,355	-9.4%	-58.9%
Interest Income	25,019	27,980	42,244	65,184	101,244	79,729	29,696	43,984	148,000	345,695	33.9%	1281.7%
Total Operating Revenue	**$1,302,447**	**$1,212,054**	**$1,560,310**	**$1,691,459**	**$1,499,241**	**$1,373,216**	**$1,774,218**	**$2,283,139**	**$2,280,693**	**$2,242,381**	**6.2%**	72.2%
Operating Expenses												
Personnel Services	$ 589,971	$ 633,513	$ 519,113	$ 485,569	$ 501,861	$ 431,399	$ 350,296	$ 402,758	$ 759,691	$ 848,082	4.1%	43.7%
Materials & Supplies	46,919	41,503	26,196	45,990	17,554	15,436	8,243	12,635	7,436	12,770	-13.5%	-72.8%
Maintenance & Repair	70,367	73,645	56,987	25,744	31,657	27,231	20,083	41,892	23,839	8,868	-20.6%	-87.4%
Insurance	21,359	22,358	7,025	21,823	43,792	24,376	41,237	40,915	36,509	44,579	8.5%	108.7%
Miscellaneous	1,462	1,068	23,412	449							-100.0%	-100.0%
Operations	222,043	220,814	190,267	161,653	176,035	133,745	142,494	177,125	114,648	127,998	-5.9%	-42.4%
Capital Outlay		169,835		225,000	300,021	300,000	50,000	49,772	50,000	11,070		
Operating Expenses	952,121	1,162,736	823,000	966,228	1,070,920	932,187	612,353	725,096	992,124	1,053,366	1.1%	10.6%
Cost of Service - Gen. Fd.	350,653	367,890	377,063	433,728	433,728	233,540	246,229	253,616	238,111	276,423	-2.6%	-21.2%
Cost of Service - Other	93,995	87,222	93,159	86,114	87,819	147,815	206,146	224,163	217,386	233,188	10.6%	148.1%
Allocated Costs	444,648	455,112	470,222	519,842	521,547	381,355	452,375	477,779	455,497	509,611	1.5%	14.6%
Total Operating Costs	**$1,396,769**	**$1,617,848**	**$1,293,222**	**$1,486,070**	**$1,592,467**	**$1,313,542**	**$1,064,728**	**$1,202,875**	**$1,447,621**	**$1,562,977**	**1.3%**	11.9%
Net Operating Revenues(Expenses)	**$ (94,322)**	**$ (405,794)**	**$ 267,088**	**$ 205,389**	**$ (93,226)**	**$ 59,674**	**$ 709,490**	**$1,080,264**	**$ 833,072**	**$ 679,404**		
Return on Investment	34,778											
Franchise Fees		35,268										
Fixed Assets	19,136											
Debt Service	474,454	475,790	-	-	-	-	762,923	722,892	717,980	806,779		
Transfer to Capital Fund	1,204,276											
Non-Operating Expenses	**1,732,644**	**511,058**	**-**	**-**	**-**	**-**	**762,923**	**722,892**	**717,980**	**806,779**		
Operating Position	**(1,826,966)**	**(916,852)**	**267,088**	**205,389**	**(93,226)**	**59,674**	**(53,433)**	**357,372**	**115,092**	**(127,375)**		

Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

The revenues from airport operations are derived from the following sources:

- Airport Land Leases: Airport land development leases encompass various agreements and considerations that align with federal regulations while maximizing the potential of airport property. DTO leases approximately 78.1 acres for aeronautical purposes, which includes a fixed-base operator (FBO) and several specialty aviation service operators (SASOs).
- Building Leases: In May 2025, four buildings reverted to the airport at the end of their lease term. The city has now entered into a new three-year agreement for these buildings, which includes a new building rent.
- Hangar Leases: The city owns twenty-seven (27) Quebec-type hangars constructed for aircraft storage and maintenance, including twelve (12) box hangars and fifteen (15) T-hangars of various sizes. Hangars are leased on a month-to-month basis through a permit. The monthly rent varies depending on one of the four-unit sizes.

- Fixed Base Operations: This category includes commercial activities fees and fuel flowage fees collected from the FBO.
- Airport Gas Royalties: Since 2009, the city has offered land for the drilling and production of gas and the development of gas well facilities at the airport. Today, there are six (6) wells located on the airport.
- Other Airport Income: This category captures all revenue that is not attributable to the other categories.

Airport operating expenses were made up of the following cost items:

- Personnel Services: This includes salary and benefits of airport workers.
- Materials and Supplies: Includes administrative and operational supplies, as well as small tools and equipment.
- Maintenance and Repair: Includes costs to repair and maintain airport facilities. Services may be performed by people other than airport or city employees.
- Insurance: Includes the commercial insurance premiums and self-insurance premiums for the airport.
- Operations: Day-to-day operating expenses, including utilities, vehicle maintenance, employee costs other than personnel costs, and other contracted services other than maintenance and repairs.
- Capital Outlay: Includes capital costs associated with the airport's five-year CIP.
- Cost of Service: Payment to the city's General Fund for administrative support (such as administration, payroll, purchasing, human resources) for the enterprise fund. Other costs of service include transfers for fleet services, materials management, technology services, facilities and customer service.

Current airport debt obligations are summarized in **Table 6B**.

TABLE 6B | Outstanding Debt

Debt Instrument	Outstanding Debt
2024 General Obligation Refunding and Improvement Bonds	$740,000
2023 General Obligation Refunding and Improvement Bonds	$840,000
2023 Certificates of Obligation	$865,000
2022 Certificates of Obligation	$100,000
2018A Certificates of Obligation	$910,000
2018 Certificates of Obligation	$2,565,000
2015 General Obligation Refunding and Improvement Bonds	$40,000
2014 Certificates of Obligation	$85,000
Total Outstanding Debt @ FYE 2025	**$6,145,000**

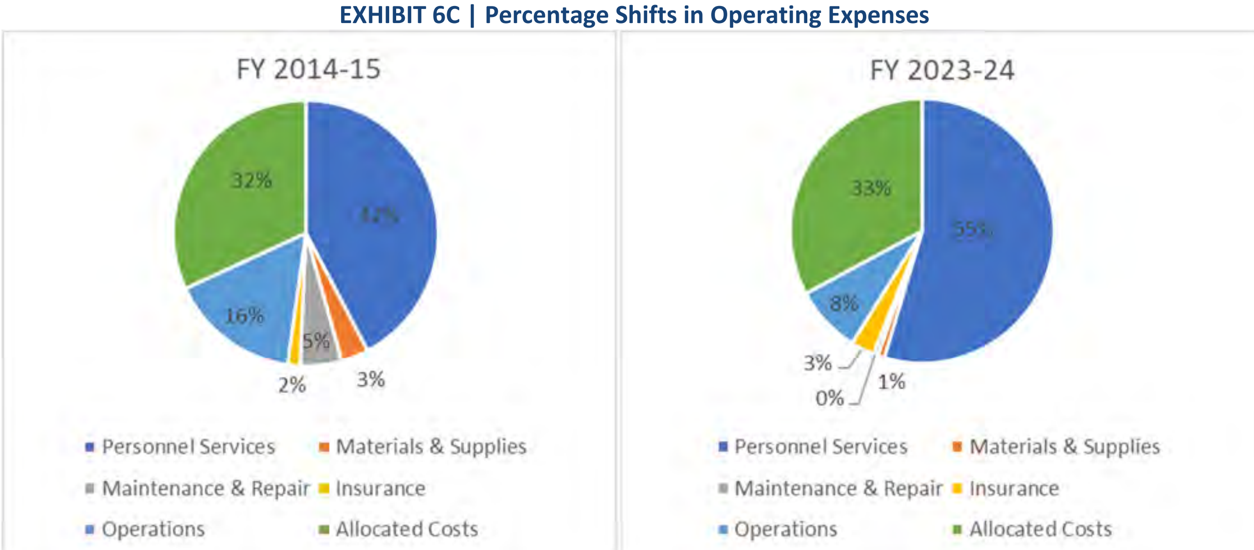
Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

The annual contributions to the airport from the FAA, TxDOT, or the city are not included in these operating revenue and expense statements. This analysis does not consider those contributions as operating revenues. Instead, the focus is on identifying the airport's actual revenue-generating ability and its real operating costs. Surplus operating revenues can be utilized to cover the local share of capital development or other non-operating costs.

From FY 2016 – FY 2017, airport debt service was paid by the city's General Debt Service Fund to ensure the long-term financial sustainability of the Airport Fund. However, starting in FY 2020 – FY 2021, the airport has funded the debt service by utilizing existing reserves.

The historical financial data indicates that operating expenses have varied annually, with an average growth rate of 1.3 percent per year. These increases primarily stem from higher personnel costs, allocated city service expenses, and insurance, as illustrated in **Exhibit 6C** below.

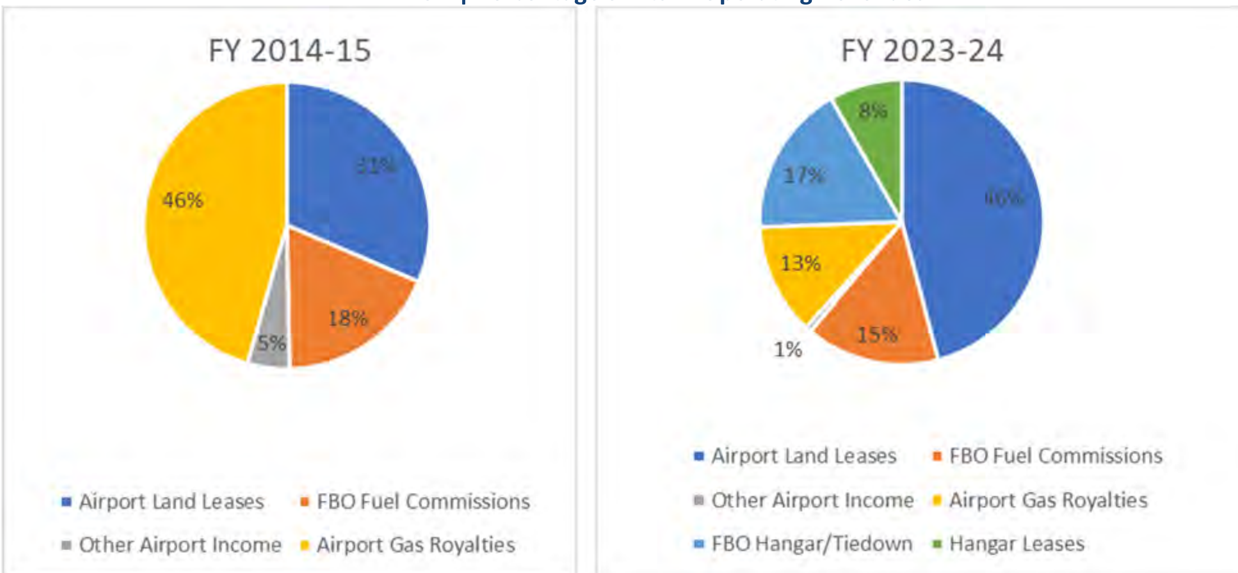
EXHIBIT 6C | Percentage Shifts in Operating Expenses



Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

Since FY 2014, operating revenues have experienced growth, driven by a greater diversification of revenue sources and a focus on land development. The changes in operating revenue categories can be seen in **Exhibit 6D**.

EXHIBIT 6D | Percentage Shifts in Operating Revenues



Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

In FY 2024 – FY 2025, the city conducted a General Aviation Fee Study to evaluate current industry practices for establishing general aviation fees. This study included identifying the types of fees typically charged at general aviation airports and the common measures used in the industry. Recommendations were made to establish fees based on a cost recovery basis and to implement fee increases.

Table 6C shows the comparison of historical operating revenues and expenses. The airport's current debt service obligations and past capital expenses are also included to show any funding shortfalls. As noted above, for the period of FY 2017 through FY 2020, airport debt service was paid by the city's General Debt Service Fund to ensure the long-term financial sustainability of the airport.

TABLE 6C | Comparison of Historical Operating Revenues and Expenses

Year	Operating Revenues	Operating Expenses	Non-Operating Expenses	Net Gain (Loss)
FY 2015	$1,302,447	$1,396,769	$1,732,644	($1,826,966)
FY 2016	$1,212,054	$1,617,848	$511,058	($916,852)
FY 2017	$1,560,310	$1,293,222	$0	$267,088
FY 2018	$1,691,459	$1,486,070	$0	$205,389
FY 2019	$1,499,241	$1,592,467	$0	($93,226)
FY 2020	$1,373,216	$1,313,542	$0	$59,674
FY 2021	$1,774,218	$1,064,728	$762,923	($53,433)
FY 2022	$2,283,139	$1,202,875	$722,892	$357,372
FY 2023	$2,280,693	$1,447,621	$717,980	$115,092
FY 2024	$2,242,381	$1,562,977	$806,779	($127,375)

Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

It is against this historical backdrop that the forecast of revenues and expenses for DTO is developed.

FORECAST REVENUES AND EXPENSES

The forecast for operating revenues and expenses presents a comprehensive overview, primarily influenced by historical activity and revenue-generating capital investments. A three-year historical period has been used to identify trends, factoring in post-pandemic operations. By focusing on average growth, the impact of any significant fluctuations has been mitigated in individual years based on the overall trend. The assumptions in developing this forecast prioritize maintaining airport financial sustainability and ensuring competitive rates, as outlined below.

General Aviation Fee Study: Following a study prepared to identify best industry practices for establishing general aviation fees at DTO, the following recommendations were implemented:

- Aeronautical Permit Fees: Starting April 1, 2025, fixed-base operators (FBO), specialized aviation service operators (SASO), and operators conducting temporary or special activities at the airport will be required to apply for and pay an annual Aeronautical Permit Fee for their business. These fees will be classified under "Other Airport Income", with a projected twenty percent (20%) increase every five years.
- Airport Access Fee: In FY 2020, the airport introduced a $25.00 fee for new or replacement access cards, with no renewal fee. However, starting April 1, 2025, this fee will transition to a two-year renewal basis. These fees are categorized under "Other Airport Income".
- Fuel Flowage Fee: Effective April 1, 2025, the fuel flowage fee for both Jet A and Avgas sales at the airport has been increased from $0.17 to $0.22 per gallon to maintain a competitive industry rate. Beginning FY 2027, gas sales (gallonage) are forecast to increase 1% annually, with a projected twenty percent (20%) increase in the fee every five years.

Rate of Inflation/Consumer Price Index (CPI): Historically, the rate of inflation/CPI has been used to escalate prices when making forecasts of revenues and expenses. For this forecast, an annual growth rate of 3.0 percent, consistent with the City's five-year financial proforma, has been applied throughout the planning period.

FY 2024 – FY 2025 Revenues and Expenses: The forecast utilized 11 months of revenues and expenses incurred in FY 2024 – FY 2025 in addition to the airport budget as input for revenues and expenses in FY 2024 – FY 2025. These were then increased by CPI throughout the planning period, as described below.

- Airport Leases: Subject to lease terms, existing airport leases were increased by CPI throughout the period.
- Hangar Leases: Rental rates are evaluated annually and forecast to increase by 15 percent every two years.
- Building Rents: In May 2025, four buildings reverted to the airport. The existing 3-year lease includes a bi-annual CPI increase. It is assumed the rents will continue in a similar fashion.
- Gas Wells: Gas well revenues are forecast based on the City's financial proforma and anticipated to decrease annually by 3.0 percent throughout the planning period.
- Salary and Benefits: Airport budget numbers were used to estimate FY 2024 – FY 2025 levels. This was then increased by 4.0 percent throughout the planning period.

- All Other Costs: All other expenses were increased by CPI.
- Debt Service: Both existing and future debt service have been added to the forecast of operating revenues and expenses, as shown in **Table 6D**. This was done intentionally to determine whether surplus net operating revenues (if available) would be available to help pay the anticipated debt service costs.

TABLE 6D | Forecast of Operating Revenues and Expenses

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Intermediate Term	Long Term
Operating Revenue								
Airport Leases	1,281,674	1,527,386	1,586,642	1,600,707	1,665,447	1,680,026	9,166,255	22,704,675
FBO Operations	514,398	688,200	695,082	702,033	709,053	787,571	4,147,661	10,397,518
Airport Gas Royalties	510,973	339,500	329,315	319,436	309,852	300,557	1,372,824	2,191,244
Other Airport Income	200,840	139,500	139,500	139,500	139,500	139,500	725,750	5,584,500
Total Operating Revenue	**$ 2,507,885**	**$ 2,694,586**	**$ 2,750,539**	**$ 2,761,675**	**$ 2,823,853**	**$ 2,907,653**	**$ 15,412,490**	**$40,877,938**
Operating Expenses								
Personnel Services	$ 859,384	893,759	929,560	966,790	1,005,500	1,045,760	5,891,490	15,893,380
Maintenance & Repair	56,408	66,339	67,834	69,363	70,928	73,055	399,497	1,000,016
Insurance	49,984	47,009	48,419	49,872	51,368	52,909	289,328	724,244
Operations	100,871	241,709	248,960	256,429	264,122	272,046	1,487,657	3,723,889
Capital Outlay	-	-	-	200,000	-	-	-	-
Operating Expenses	**$ 1,066,646**	**$ 1,248,817**	**$ 1,294,773**	**$ 1,542,454**	**$ 1,391,918**	**$ 1,443,770**	**$ 8,067,972**	**$21,341,529**
Cost of Service - General Fund	284,716	310,207	319,513	329,099	338,972	349,141	1,909,245	4,779,203
Cost of Service - Other	285,729	328,906	338,773	348,936	359,404	370,187	2,024,332	5,067,289
Allocated Costs	**570,445**	**639,113**	**658,286**	**678,035**	**698,376**	**719,327**	**3,933,577**	**9,846,491**
Total Operating Costs	**1,637,091**	**1,887,930**	**1,953,059**	**2,220,489**	**2,090,294**	**2,163,097**	**12,001,549**	**31,188,020**
Net Operating Revenues(Expenses)	**870,795**	**806,656**	**797,480**	**541,187**	**733,559**	**744,556**	**3,410,942**	**9,689,917**
Existing Debt Service	751,656	745,650	682,900	651,025	640,950	641,100	2,867,631	1,555,625
Future Debt Service		-	-	72,750	72,750	92,750	479,200	1,505,900
Non-Operating Expenses	**751,656**	**745,650**	**682,900**	**723,775**	**713,700**	**733,850**	**3,346,831**	**3,061,525**
Operating Position	**119,139**	**61,006**	**114,580**	**(182,588)**	**19,859**	**10,706**	**64,110**	**6,628,392**
Cash Balance @ Oct 1 2024	$ 1,674,719							
Cumulative	**$ 1,793,858**	**$ 1,854,865**	**$ 1,969,444**	**$ 1,786,856**	**$ 1,806,715**	**$ 1,817,421**	**$ 1,881,531**	**$15,138,316**

Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

Drawing on these assumptions, and taking a conservative approach to airport financial performance, a reasonable forecast was developed. The baseline projection of revenues and expenses was forecast through FY 2045. As shown in **Table 6E**, operating revenues are anticipated to grow from $2.5 million in FY 2025 to $4.5 million by FY 2045 - an average yearly increase of three percent and an overall increase of 80.2 percent for the period. Baseline operating expenses are expected to increase from $1.6 million in FY 2025 to $3.6 million by FY 2045 - an average yearly increase of 4.1 percent and an overall increase of 121.4 percent. **Table 6D** shows the summary forecast of net operating revenues. It should be noted that the assumptions do not include anticipated one-time TxDOT revenues associated with highway and land/right-of-way (ROW) projects.

TABLE 6E | Comparison of Forecast Operating Revenues and Expenses

Year	Operating Revenues	Operating Expenses	Non-Operating Expenses	Net Gain (Loss)
FY 2025	$2,507,885	$1,637,091	$751,656	$119,139
FY 2026	$2,694,586	$1,887,930	$745,650	$61,006
FY 2027	$2,750,539	$1,953,059	$682,900	$114,580
FY 2028	$2,761,675	$2,220,489	$723,775	($182,588)
FY 2029	$2,823,853	$2,090,294	$713,700	$19,859
FY 2030	$2,907,653	$2,163,097	$733,850	$10,706
FY 2031	$2,983,083	$2,238,497	$737,330	$7,256
FY 2032	$2,997,426	$2,316,563	$735,013	($54,150)
FY 2033	$3,074,896	$2,397,435	$741,390	($63,929)
FY 2034	$3,090,471	$2,481,173	$609,670	($372)
FY 2035	$3,266,613	$2,567,880	$523,428	$175,305
FY 2036	$3,692,144	$2,657,699	$518,188	$516,257
FY 2037	$3,794,032	$2,750,724	$567,288	$476,021
FY 2038	$3,807,721	$2,847,070	$553,575	$407,077
FY 2039	$3,920,609	$2,946,852	$225,250	$748,507
FY 2040	$4,049,020	$3,050,208	$217,700	$781,112
FY 2041	$4,186,454	$3,157,256	$215,350	$813,848
FY 2042	$4,203,505	$3,268,146	$207,900	$727,459
FY 2043	$4,343,938	$3,382,978	$205,350	$755,610
FY 2044	$4,362,125	$3,501,933	$179,100	$681,092
FY 2045	$4,518,389	$3,625,155	$171,825	$721,409
CAGR	3.0%	4.1%		
Growth	80.2%	121.4%		

Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

FINANCIAL ANALYSIS

A financial analysis was conducted to evaluate the airport's capability to fund the proposed development program, focusing on the short-term planning period. This analysis reviewed current operating revenues, operating expenses, debt service, and other relevant factors to estimate the airport's financial capacity. Additionally, it identified the eligibility and potential funding levels from federal and state grants, as well as the available airport reserves, to support the implementation of specific projects.

The following key funding assumptions have been incorporated into the CIP projections:

- The Texas Department of Transportation (TxDOT) will provide ninety percent (90%) funding for eligible capital projects through the projection period.
- The airport will maximize funding by utilizing restricted funds from historical bond issues and unrestricted reserves from both airport and gas well revenues.
- The airport will draw on cash funds as available to fund ongoing capital costs, and airport reserves will be available to fund any deficiencies in funding.

Note: The actual financing of capital expenditures will be a function of circumstances at the time of project implementation.

CAPITAL RESOURCES

Airport development projects typically do not depend solely on the sponsor's resources for funding. Instead, they utilize a range of development grants and financial resources, as detailed in **Exhibit 6A** and described below.

Federal Aviation Administration

Airport Improvement Program (AIP)

At the federal level, the FAA oversees the Airport Improvement Program (AIP), which has provided grants for eligible airport planning, environmental, and development projects since 1982. These funds are generated exclusively through taxes on airline tickets, fuel sales, cargo waybills, and other aviation-related fees. The distribution of these funds is determined by congressional appropriations and is allocated to all airports in the U.S. that are deemed significant to the national air transportation system, making them eligible for development grants. DTO can receive up to 90 percent of the funding for eligible projects through AIP grants.

Non-primary airports, such as general aviation airports, receive AIP entitlement funds at a set amount of $150,000 annually. These airports are not required to utilize their entire entitlement within a single year; however, they can carry over funds for up to three years, with a maximum entitlement grant of $450,000.

AIP discretionary funds are allocated to airports for specific projects that rank high in the national priority system. These high national priority projects generally focus on enhancing safety, security, and capacity, as well as reconstructing existing facilities. Discretionary funds are distributed on a priority basis by each FAA Regional Office, depending on the number and dollar amount of grant applications received. DTO competes for these discretionary grant funds with other airports both regionally and nationally.

While it is reasonable to assume that the airport will receive discretionary funding in the future to address critical needs, the availability of discretionary grants is never guaranteed. This is because annual funding levels are determined by congressional appropriations and distributed on a national basis. Consequently, any proposed projects in the implementation plan that might rely on discretionary funds would need to be delayed until the funds become available. Therefore, this analysis assumes that the AIP program will continue in its current form and that future authorizations and appropriations will provide similar funding levels.

Infrastructure Investment and Jobs Act (IIJA)

The Infrastructure Investment and Jobs Act (IIJA), enacted on November 15, 2021, provides substantial funding for airport infrastructure projects, including runways, taxiways, safety and sustainability projects, terminal improvements, and roadway projects. The Airport Infrastructure Grant (AIG), a component of the IIJA, allocates $14.5 billion over five years, with over $12 billion already disbursed to airports nationwide. Annually, the FAA allocates these funds for any project eligible under AIP or the Passenger Facility Charge (PFC) Program. Airports also have the option to combine their annual allocations to fund a single project.

As we anticipate the fifth and final year of AIG fund allocation, **Table 6F** summarizes the funds allocated and currently available to DTO under the FAA's AIG program. Utilizing these funds will allow non-primary airports, such as DTO, to achieve up to ninety-five percent (95%) eligibility.

TABLE 6F | Airport Improvement Grants (AIG)

Fiscal Year	Allocated	Approved	Balance	Expires
FY 2022	763,000	709,780	53,220	30-Sep-25
FY 2023	844,000	--	844,000	30-Sep-26
FY 2024	851,000	--	851,000	30-Sep-27
FY 2025	687,000	--	687,000	30-Sep-28
	$3,145,000	$709,780	$2,435,220	

Source: Jordan Aviation Strategies, LLC and Ambrogio Consulting Services, LLC

Texas Department of Transportation

Texas is a block grant state under the FAA's AIP program. As a block grant state, the Texas Department of Transportation - Aviation Division (TxDOT) is responsible for administering AIP grants to general aviation airports within the State of Texas. In Texas, AIP grant-funded capital projects at general aviation airports that are part of the National Plan of Integrated Airport Systems (NPIAS) are generally eligible for 90 percent federal funding with a 10 percent local match provided by the airport sponsor.

Sponsor Share

Certificates of Obligation – DTO operates as an enterprise fund, meaning its operations are supported by fees charged to its users, without any direct support from property taxes. Debt issued for airport projects can be financed either as a Certificate of Obligation (CO) or an Airport Revenue Bond, both of which are repaid from airport revenues, not property taxes. Historically, the city has issued COs to fund airport capital projects. The issuance of debt financing is anticipated to largely assist in funding the sponsor's share of the Taxiway A and Taxiway B reconstruction projects.

Cash Reserves – The airport has the potential to continue to generate significant revenue surpluses in future years, some of which can be used to help fund capital projects. Another financial resource available for funding projects is the airport's cash reserve funds. At the end of FY 2024, DTO had $1,674,719 in surplus cash.

Capital Account – The airport's capital project account is funded to support projects approved annually by the City Council. Currently, this account holds surplus funds of approximately $200,000. These unrestricted funds are expected to finance the Security Enhancement project in FY 2026.

Gas Well Revenues – Another unrestricted fund comprises approximately $147,000 from gas well revenues. These surplus funds are expected to finance fleet vehicles planned for FY 2026 and FY 2027, with the remaining balance allocated to the planned FY 2029 taxiway reconstruction.

Surplus Bond Funds – The city currently holds an unspent balance of approximately $924,000 in restricted airport bond funds. These funds are designated for specific uses as outlined in the issuance documents. Within this restricted fund balance, approximately $275,000 is allocated for specific landside projects, with the remainder available for particular airside projects, including the proposed reconstruction of taxilanes and taxiways.

DEVELOPMENT INCENTIVES

General aviation and reliever airports are crucial for regional connectivity and economic development, benefiting both local communities and the wider region. However, these airports often encounter challenges related to funding and growth, especially for development opportunities that lack full federal or state support. To encourage development, airports can utilize a combination of local strategies and innovative partnerships. Additionally, they can facilitate development by offering a transparent and well-defined process for construction and lease negotiations.

To promote growth, DTO can build on recent initiatives, such as its request for proposals (RFP) for airside parcels and a 44-hangar development project. Furthermore, by introducing targeted incentives for developers, operators, and aviation-related businesses, the airport can enhance its appeal.

As illustrated in **Exhibit 5C**, DTO has significant potential for both aeronautical and non-aeronautical development on its west side, particularly with the anticipated construction of the proposed Loop 288. The highway expansion and associated utilities will create substantial opportunities for the airport, including:

- **Collaborate with the Denton Office of Economic Development.** Coordinate airport projects to align with broader business recruitment marketing and city incentives, such as tax increment financing (TIF) districts or enterprise zones.

- **Tax Incentives for Under-Represented or Targeted Tenants.**
    - Chp. 380 Grant – Implement new programs or utilize existing incentives to recruit newly-based aircraft or targeted aviation activity that will add to the tax base, annual fuel consumption, and contribute to the strategic growth of the airport.
    - Tax Abatements - Provide property tax abatements for new business expansions to assist with improvements and upgrades to airport facilities.

- **Reduced Lease Rates.** For under-represented or targeted aviation-related businesses, reducing lease rates can attract long-term tenants. These businesses also present opportunities for growth in flight operations, fuel sales, ramp fees, and other revenue-generating activities.

- **Public-Private Partnerships (P3s).** Collaborating with private developers to construct hangars, fuel farms, and other strategic facilities can effectively reduce initial costs and distribute risk.

- **Engage the Denton Economic Development Partnership.** Coordinate airport projects to align with broader city incentives, such as tax increment financing (TIF) districts or enterprise zones.

- **Utilities.** Integrating airport-funded infrastructure needs such as water, sewer, and power into the lease package, or negotiating for tenant-developed infrastructure with lease rate reductions for a specified period (1-5 years), can be a viable approach to reimbursing these costs.

- **Streamline Processes.** Provide a step-by-step guide for the construction process. This ensures fair and equitable consideration for each developer and can streamline the site plan and permit review processes, demonstrating the ease of development.

- **Airport Development Documents.** Airports can enhance development by implementing clear and concise processes, such as standardized lease templates for different types of leases, a defined leasing policy, and a comprehensive land use plan. Lease templates ensure fair and equitable treatment, catering to specific lease conditions while maintaining standardized language and airport requirements. This approach can streamline the legal review process for airports.

- **Educational Partnerships.** Collaborate with Texas Woman's University (TWU), North Central Texas College, or UNT's aerospace programs to create initiatives that bolster the aerospace workforce pipeline.

- **Events & Outreach.** Hosting public events, STEM activities, or pilot meetups can significantly raise the airport's profile and foster community support for expansion. By organizing on-site "Developer Days", you can guide prospects through the leasing process, showcase available parcels through interactive maps, and address their questions in real time.

MASTER PLAN IMPLEMENTATION

To implement the master plan recommendations, it is key to recognize that planning is a continuous process and does not end with approval of this document. The airport should implement measures that allow it to track various demand indicators, such as based aircraft, hangar demand, and operations. The issues upon which this master plan is based will remain valid for several years. The primary goal is for DTO to best serve the air transportation needs of the region while achieving economic self-sufficiency.

The CIP and phasing program presented will change over time. An effort has been made to identify and prioritize all major capital projects that would require federal or state grant funding; nevertheless, the airport and TxDOT review the five-year CIP on an annual basis.

The primary value of this study lies in keeping the issues and objectives at the forefront of the minds of decision-makers. In addition to adjustments in aviation demand, decisions on when to undertake the improvements recommended in this master plan will impact how long the plan remains valid. The format of this plan reduces the need for formal and costly updates by allowing for simple adjustments to the timing of project implementation. Updates to the plan can be completed by airport management, thereby improving its effectiveness; nevertheless, airports are typically encouraged to update their master plans every seven to 10 years, or sooner if significant changes occur in the interim.

In summary, the planning process requires the City of Denton to consistently monitor the progress of the airport. The information obtained from continually monitoring activity will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

Appendix A

Glossary of Terms

GLOSSARY OF TERMS

A

Above Ground Level: The elevation of a point or surface above the ground.

Accelerate-Stop Distance Available (ASDA): See declared distances.

Advisory Circular: External publications issued by the FAA consisting of non-regulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

Air Carrier: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

Air Route Traffic Control Center (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

Air Taxi: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

Air Traffic Control: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

Air Traffic Control System Command Center: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

Air Traffic Hub: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

Air Transport Association Of America: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

Aircraft: A device that is used or intended to be used for flight in the air.

Aircraft Approach Category: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- **Category A:** Speed less than 91 knots.
- **Category B:** Speed 91 knots or more, but less than 121 knots.
- **Category C:** Speed 121 knots or more, but less than 141 knots.
- **Category D:** Speed 141 knots or more, but less than 166 knots.
- **Category E:** Speed greater than 166 knots

Aircraft Operation: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

Aircraft Operations Area (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

Aircraft Owners And Pilots Association: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

Aircraft Rescue And Fire Fighting: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

Airfield: The portion of an airport which contains the facilities necessary for the operation of aircraft.

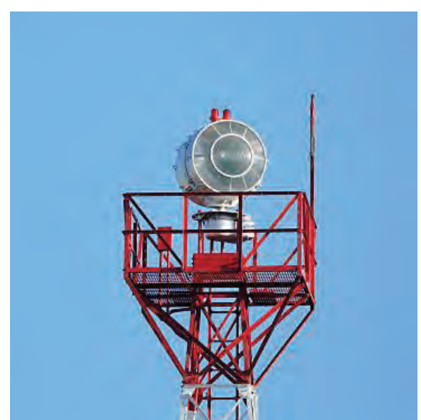
Airline Hub: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

Airplane Design Group (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- **Group I:** Up to but not including 49 feet.
- **Group II:** 49 feet up to but not including 79 feet.
- **Group III:** 79 feet up to but not including 118 feet.
- **Group IV:** 118 feet up to but not including 171 feet.
- **Group V:** 171 feet up to but not including 214 feet.
- **Group VI:** 214 feet or greater.

Airport Authority: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

Airport Beacon: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.


Airport Beacon

Airport Capital Improvement Plan: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

Airport Elevation: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

Airport Improvement Program: A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

Airport Layout Drawing (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

Airport Layout Plan (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

Airport Layout Plan Drawing Set: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

Airport Master Plan: A local planning document that serves as a guide for the long-term development of an airport.

Airport Movement Area Safety System:
A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

Airport Obstruction Chart: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

Airport Reference Code (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

Airport Reference Point (ARP): The latitude and longitude of the approximate center of the airport.

Airport Sponsor: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

Airport Surface Detection Equipment:
A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

Airport Surveillance Radar: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

Airport Traffic Control Tower (ATCT):
A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

Airside: The portion of an airport that contains the facilities necessary for the operation of aircraft.

Airspace: The volume of space above the surface of the ground that is provided for the operation of aircraft.

Alert Area: See special-use airspace.

Altitude: The vertical distance measured in feet above mean sea level.

Annual Instrument Approach (AIA):
An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

Approach Lighting System (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on final approach and landing.

Approach Lighting System

Approach Minimums: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

Approach Surface: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

Apron: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

Area Navigation: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

Automated Terminal Information Service (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

Automated Surface Observation System (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

Automated Weather Observation System (AWOS): Equipment used to automatically record weather conditions (i.e., cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

Automatic Dependent Surveillance–Broadcast (ADS–B): An advanced surveillance technology that combines an aircraft's positioning source, aircraft avionics, and a ground infrastructure to create an accurate surveillance interface between aircraft and ATC.

Automatic Direction Finder (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

Avigation Easement: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

Azimuth: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

B

Base Leg: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

Based Aircraft: The general aviation aircraft that use a specific airport as a home base.

Bearing: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

Blast Fence: A barrier used to divert or dissipate jet blast or propeller wash.


Blast Fence

Blast Pad: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

Building Restriction Line (BRL): A line which identifies suitable building area locations on the airport.

C

Capital Improvement Plan: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

Cargo Service Airport: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

Ceiling: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

Circling Approach: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.

Class A Airspace: See Controlled Airspace.

Class B Airspace: See Controlled Airspace.

Class C Airspace: See Controlled Airspace.

Class D Airspace: See Controlled Airspace.

Class E Airspace: See Controlled Airspace.

Class G Airspace: See Controlled Airspace.

Clear Zone: See Runway Protection Zone.

Commercial Service Airport: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

Common Traffic Advisory Frequency (CTAF): A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

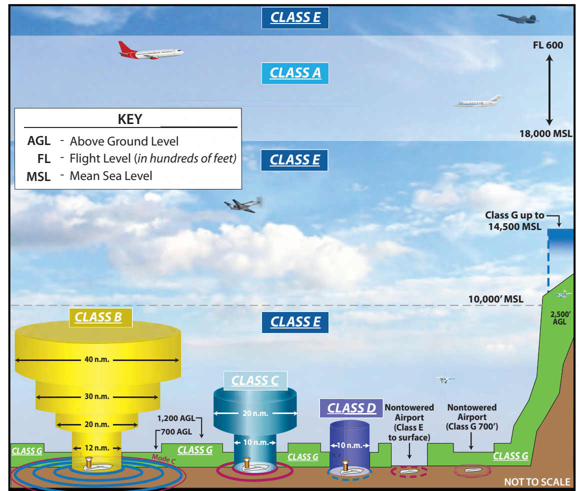
Compass Locator (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

Conical Surface: An imaginary obstruction- limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Controlled Airport: An airport that has an operating airport traffic control tower.

Controlled Airspace: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

CLASS A: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.



Airspace Classifications

CLASS B: Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

CLASS C: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

CLASS D: Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure. Unless otherwise authorized, all persons must establish two-way radio communication.

CLASS E: Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

CLASS G: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

Controlled Firing Area: See special-use airspace.

Crosswind: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

Crosswind Component: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

Crosswind Leg: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

Decibel: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

Decision Height/Decision Altitude: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

Declared Distances: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

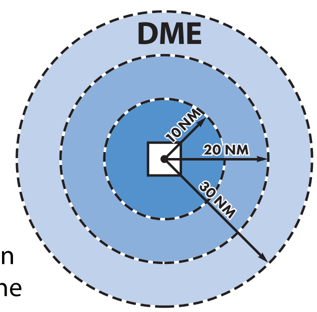
- **Takeoff Run Available (TORA):** The runway length declared available and suitable for the ground run of an airplane taking off.
- **Takeoff Distance Available (TODA):** The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **Accelerate-stop Distance Available (ASDA):** The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.
- **Landing Distance Available (LDA):** The runway length declared available and suitable for landing.

Department Of Transportation: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

Discretionary Funds: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

Displaced Threshold: A threshold that is located at a point on the runway other than the designated beginning of the runway.

Distance Measuring Equipment (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL: The 24-hour average sound level, in decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

Downwind Leg: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

Easement: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

Elevation: The vertical distance measured in feet above mean sea level.

Enplaned Passengers: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

Enplanement: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

Entitlement: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

Environmental Assessment (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

Environmental Audit: An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

Environmental Impact Statement (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects or legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

Essential Air Service: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

Federal Aviation Regulations: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

Federal Inspection Services: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

Final Approach: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

Final Approach and Takeoff Area (FATO): A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

Final Approach Fix: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

Finding Of No Significant Impact (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

Fixed Base Operator (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

Flight Level: A measure of altitude used by aircraft flying above 18,000 feet. Flight levels are indicated by three digits representing the pressure altitude in hundreds of feet. An airplane flying at flight level 360 is flying at a pressure altitude of 36,000 feet. This is expressed as FL 360.

Flight Service Station (FSS): An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides preflight and in-flight advisory services to pilots through air and ground based communication facilities.

Frangible Navaid: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

General Aviation: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

General Aviation Airport: An airport that provides air service to only general aviation.

Glideslope (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

- Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or
- Visual ground aids, such as PAPI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

Global Positioning System (GPS): A system of satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

Ground Access: The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

Ground Based Augmentation System (GBAS): A program that augments the existing GPS system by providing corrections to aircraft in the vicinity of an airport in order to improve the accuracy of these aircrafts' GPS navigational position

H

Helipad: A designated area for the takeoff, landing, and parking of helicopters.

High Intensity Runway Lights (HIRL): The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

High-speed Exit Taxiway: An acute-angled exit taxiway forming a 30 degree angle with the runway centerline, designed to allow an aircraft to exit a runway without having to decelerate to typical taxi speed.

Horizontal Surface: An imaginary obstruction-limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are **a** function of the types of approaches existing or planned for the runway.

Hot Spot: A location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.

I

Initial Approach Fix: The designated point at which the initial approach segment begins for an instrument approach to a runway.

Instrument Approach Procedure: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

Instrument Flight Rules (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions **and the type of flight plan under which an aircraft is operating.**

Instrument Landing System (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer	3. Outer Marker	5. Approach Lights
2. Glide Slope	4. Middle Marker	

Instrument Meteorological Conditions: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

Itinerant Operations: Operations by aircraft that are arriving from outside the traffic pattern or departing the airport traffic pattern.

K

Knots: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

Landside: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

Landing Distance Available (LDA): See declared distances.

Large Airplane: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

Local Operations: Aircraft operations performed by aircraft that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport. Typically, this includes touch and-go training operations.

Localizer: The component of an ILS which provides course guidance to the runway.

Localizer Type Directional Aid (LDA): A facility of comparable utility and accuracy to a localizer but is not part of a complete ILS and is not aligned with the runway.


Localizer

Low Intensity Runway Lights: The lowest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

Medium Intensity Runway Lights: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

Military Operations: Aircraft operations that are performed in military aircraft.

Military Operations Area (MOA): See special-use airspace

Military Training Route: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

Missed Approach Course (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

- When the aircraft has descended to the decision height and has not established visual contact; or
- When directed by air traffic control to pull up or to go around again.

Movement Area: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

National Airspace System (NAS): The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

National Plan Of Integrated Airport Systems (NPIAS): The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

National Transportation Safety Board: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

Nautical Mile: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

Navaid: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e., PAPI, VASI, ILS, etc.)

Navigational Aid: A facility used as, available for use as, or designed for use as an aid to air navigation.

Noise Contour: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

Non-directional Beacon (NDB): A beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine their bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.


NDB

Non-precision Approach Procedure: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

Notice To Air Missions (NOTAM): A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the timely knowledge of which is considered essential to personnel concerned with flight operations.

O

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

Obstacle Free Zone (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

Operation: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

Outer Marker (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

Pilot-controlled Lighting: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

Precision Approach: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I):** A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.
- **CATEGORY II (CAT II):** A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.
- **CATEGORY III (CAT III):** A precision approach which provides for approaches with minimal less than Category II.

Precision Approach Path Indicator (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. A PAPI normally consists of four light units but an abbreviated system of two lights is acceptable for some categories of aircraft.


Precision Approach Path Indicator

Precision Approach Radar: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

Precision Object Free Zone (POFZ): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFZ is a clearing standard which requires the POFZ to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA is only in effect when the approach includes vertical guidance, the reported ceiling is below 250 feet, and an aircraft is on final approach within two miles of the runway threshold.

Primary Airport: A commercial service airport that enplanes at least 10,000 annual passengers.

Primary Surface: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

Prohibited Area: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

Radial: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

Regression Analysis: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

Remote Communications Outlet (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering enroute clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

Remote Transmitter/receiver (RTR): See remote communications outlet. RTRs serve ARTCCs.

Remotely Piloted Unmanned Aircraft System (RPAS): A set of configurable elements consisting of a remotely-piloted aircraft, its associated remote pilot station(s), the required command and control links and any other system elements as may be required, at any point during flight operation.

Reliever Airport: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

Restricted Area: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used enroute and for approaches to an airport.

Runway: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

Runway Alignment Indicator Light (RAIL): A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.


REIL

Runway Design Code: A code signifying the FAA design standards to which the runway is to be built.

Runway End Identification Lighting (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

Runway Gradient: The average slope, measured in percent, between the two ends of a runway.

Runway Protection Zone (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minimal.

Runway Reference Code: A code signifying the current operational capabilities of a runway and taxiway.

Runway Safety Area (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Runway Visibility Zone (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of sight from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

Runway Visual Range (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

Scope: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

Segmented Circle: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers, often co-located with a wind cone.

Shoulder: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder Does Not Necessarily Need To Be Paved.

Slant-range Distance: The straight line distance between an aircraft and a point on the ground.

Small Aircraft: An aircraft that has a maximum certified takeoff weight of up to 12,500 pounds.

Special-use Airspace: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA:** Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- **CONTROLLED FIRING AREA:** Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.
- **MILITARY OPERATIONS AREA (MOA):** Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.
- **PROHIBITED AREA:** Designated airspace within which the flight of aircraft is prohibited.
- **RESTRICTED AREA:** Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.
- **WARNING AREA:** Airspace which may contain hazards to nonparticipating aircraft.

Standard Instrument Departure (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

Standard Instrument Departure Procedures: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or enroute airspace.

Standard Terminal Arrival Route (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

Stop-and-go: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

Stopway: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

Straight-in Landing/approach: A landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

T

Tactical Air Navigation (TACAN):
An ultrahigh frequency electronic air navigation system which provides suitably equipped aircraft a continuous indication of bearing and distance to the TACAN **station.**

Takeoff Runway Available (TORA):
See declared distances.

Takeoff Distance Available (TODA):
See declared distances.

Taxilane: A taxiway designed for low speed and precise taxiing. Taxilanes are usually, but not always, located outside the movement area and provide access to from taxiways to aircraft parking positions and other terminal areas.

Taxiway: A defined path established for the taxiing of aircraft from one part of an airport to another.

Taxiway Design Group: A classification of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance.

Taxiway Safety Area (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

Terminal Instrument Procedures: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

Terminal Radar Approach Control:
An element of the air traffic control system responsible for monitoring the enroute and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

Tetrahedron: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.


Tetrahedron

Threshold: The beginning of that portion of the runway available for landing. In some instances, the threshold may be displaced.

Touch-and-go: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

Touchdown: The point at which a landing aircraft makes contact with the runway surface.

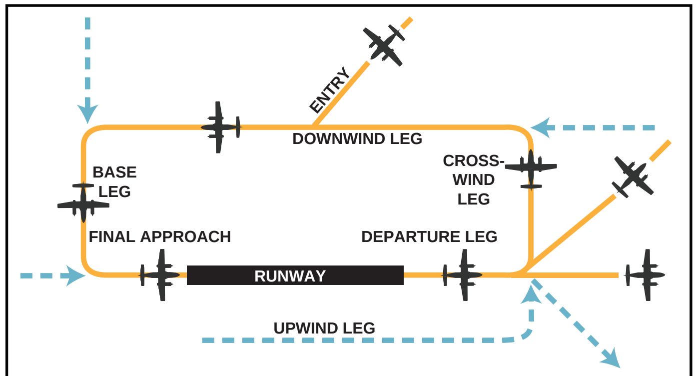
Touchdown and Lift-off Area (TLOF):
A load bearing, generally paved area, normally centered in the FATO, on which a helicopter lands or takes off.

Touchdown Zone (TDZ): The first 3,000 feet of the runway beginning at the threshold.

Touchdown Zone Elevation (TDZE):
The highest elevation in the touchdown zone.

Touchdown Zone Lighting: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100-foot intervals. The basic system extends 3,000 feet along the runway.

Traffic Pattern: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



Traffic Pattern

U

Uncontrolled Airport: An airport without an airport traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

Uncontrolled Airspace: Airspace within which aircraft are not subject to air traffic control.

Universal Communication (UNICOM): A non-government communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications.

Unmanned Aircraft System (UAS): An unmanned aircraft and the equipment necessary for the safe and efficient operation of that aircraft. An unmanned aircraft is a component of a UAS. It is defined by statute as an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft (Public Law 112-95, Section 331(8)).

Upwind Leg: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

V

Vector: A heading issued to an aircraft to provide navigational guidance by radar.

Very High Frequency Omni-directional Range (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

Very High Frequency Omni-directional Range/Tactical Air Navigation (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

Victor Airway: A system of established routes that run along specified VOR radials, from one VOR station to another.

Visual Approach: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

Visual Approach Slope Indicator (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing. The VASI is now obsolete and is being replaced with the PAPI.

Visual Flight Rules (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

Visual Meteorological Conditions: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

Visual Runway: A runway without an existing or planned instrument approach.

VOR: See "Very High Frequency Omni-directional Range."

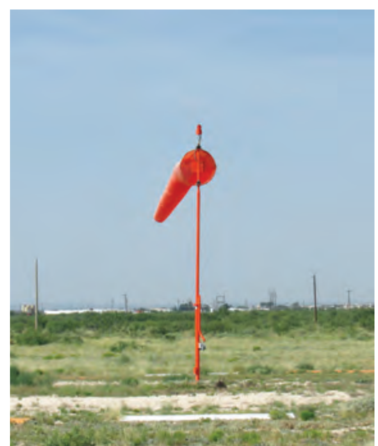
VORTAC: See "Very High Frequency Omni-directional Range/Tactical Air Navigation."

W

Warning Area: See special-use airspace.

Wide Area Augmentation System: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Windsock/Windcone: A visual aid that indicates the prevailing wind direction and intensity at a particular location.


Windsock/Windcone

Abbreviations

AAM: advanced air mobility

AC: advisory circular

ACIP: airport capital improvement program

ADF: automatic direction finder

ADG: airplane design group

ADS-B: automatic dependent surveillance-broadcast

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APRC: approach reference code

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ASV: annual service volume

ATC: airport traffic control

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DPRC: departure reference code

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

eVTOL: electric vertical takeoff and landing aircraft

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GA: general aviation

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LNAV: lateral navigation

LOC: localizer

LOM: compass locator at outer marker

LP: localizer performance

LPV: localizer performance with vertical guidance

MALS: medium intensity approach lighting system

MALSR: MALS with runway alignment indicator lights

MALSF: MALS with sequenced flashers

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

MTOW: maximum takeoff weight

NAVAID: navigational aid

NDB: non-directional radio beacon

NEPA: National Environmental Policy Act

NM: nautical mile (6,076.1 feet)

NPDES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omni-directional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCI: pavement condition index

PCL: pilot-controlled lighting

PIW: public information workshop

POFZ: precision object free zone

PVC: poor visibility and ceiling

RCO: remote communications outlet

RDC: runway design code

REIL: runway end identification lighting

RNAV: area navigation

RPAS: remotely piloted aircraft system

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TDG: taxiway design group

TLOF: Touchdown and lift-off

TDZ: touchdown zone

TDZE: touchdown zone elevation

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

UAS: unmanned aircraft system

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: very high frequency omni-directional range/tactical air navigation

WAAS: wide area augmentation system

Appendix B

Forecast Approval Letter

Texas Department of Transportation

6230 East Stassney Lane, Austin, Texas 78744| 512.694.1767 | WWW.TXDOT.GOV

March 3, 2025

Coffman Associate, Inc.
Mr. Eric Pfeifer, C.M., LEED
12920 Metcalf Ave., Suite 200
Overland Park, KS 66213

Airport Operations/Based Aircraft Forecast Approval

Mr. Pfeifer,

TxDOT Aviation has completed review of forecast information for Denton Enterprise Airport. We have found the forecast to be supported by reasonable planning assumptions and current data and developed using acceptable forecasting methodologies. Accordingly, this forecast is approved for the use in the Master Plan for Denton Enterprise Airport.

The acceptance or approval of the forecast does not automatically constitute a commitment on the part of TxDOT/FAA to participate in any development recommended in the Master Plan or shown on the ALP. TxDOT Aviation approval of the baseline scenario in this forecast does not constitute justification for future projects. Justification for future projects will be made based on activity levels at the time the project is requested for development, in accordance with criteria in FAA Orders 5090.5 and 5100.38. Documentation of actual activity levels meeting planning activity levels will be necessary to justify AIP funding for eligible projects. Further, the approved forecast may be subject to additional analyses if the fundamental rationale of the forecast or the critical aircraft changes materially.

If you have any questions concerning this matter, please contact me at (512) 496-8557 or christian.cox@txdot.gov

Sincerely,

CCOX3 Digitally signed by CCOX3
DN: E=Christian.Cox@txdot.gov, CN=CCOX3, OU=AVN, OU=Divisions, OU=Users, OU=TxDOT, DC=dot, DC=state, DC=tx, DC=us
Date: 2025.03.03 08:15:15-06'00'

Christian Cox
TxDOT Business Ops Project Manager

eCC: Ryan Adams, Director of Airport
Chase Patterson, Airport Operations Manager

Appendix C

Air Cargo Assessment

Draft

Denton Enterprise Airport
Master Plan - Air Cargo Assessment

DENTON ENTERPRISE AIRPORT

DFW ACCESS.
EXTRAORDINARY BUSINESS.

hubpoint STRATEGIC ADVISORS

April 2025

Contents

- Introduction 3
- Air Cargo Industry Trends 4
- DTO Current Situation and Air Cargo Capabilities 11
- Regional Air Cargo Market 16
- Synthesis 34
- DTO Air Cargo Forecasts 37

Introduction

- Hubpoint Strategic Advisors was engaged by Coffman Associates to lead the air cargo elements of the Denton Enterprise Airport ("DTO") Master Plan
- The primary objectives of this project are to:
  - Conduct an air cargo market analysis to determine outlook for DTO air cargo activities
  - Develop long-term 20-year air cargo forecasts for DTO in tonnage and all-cargo aircraft operations
  - Develop DTO air cargo revenue forecasts based on activity forecasts
- The approach to the project involved:
  - Primary research in the form of interviews with select Denton area companies/organizations
  - Secondary research and analysis relying on publicly available data and information
  - Synthesis of findings incorporating Hubpoint's institutional knowledge on relevant subject matter
- Hubpoint executed the defined Scope of Work and the major findings and output are summarized in this report

Air Cargo Industry Trends

Information on air cargo industry trends provides valuable perspective when considering DTO's air cargo development opportunities

To provide background and context for this report, it is helpful to review some trends in the air cargo industry that could influence the development of the Denton Enterprise Airport's air cargo business. Attention was given to those trends deemed to be most relevant to DTO's air cargo business. It is likely that many of these industry trends signify structural change that will continue well into the future and, therefore, have long-term implications on cargo activities at airports.

The air cargo industry is constantly evolving and adapting to macroeconomic factors. This is true for cargo activity in both the U.S. domestic market as well as international markets. The U.S. domestic air cargo market has long been viewed as mature and dominated by the duopoly of FedEx and UPS. After many years of uneventful, low growth, the market was energized by the e-commerce industry and the entry of Amazon Air. However, post-pandemic, the industry experienced a market correction and is now in a down cycle.

Separately, the roles of alternative cargo airports and the belly cargo of passenger operations have evolved in recent years. Currently, the impacts of tariffs and trade wars between the U.S. and foreign countries have the potential to cause sweeping changes to supply chains and, in turn, how air cargo is utilized in domestic and international markets. Understanding the potential impacts of these trends can enable airports to prepare for new air cargo environments from a planning perspective and, potentially, leverage the changes to their benefit.

Air cargo industry trends

Secondary Gateway Airports

- Secondary cargo gateway airports have proven their advantages and long-term value – lower costs, less airside/landside congestion, labor supply, proximity to important markets
- Typically, international freighter service begins on behalf of a large customer and then other customer shipments are added
- In recent years, international e-commerce companies have frequently utilized secondary gateways in the U.S.
- Sustainability of service relies on network development beyond the initial, primary route as well as sourcing backhaul cargo

E-commerce Evolution

- Pandemic-era high growth has now yielded to slower growth
- Cyclical environment and maturing industry naturally reduces demand
- Rapid addition of U.S. airport service points has been paused as regional fulfillment strategies have leveraged trucking more than air transportation
- International direct-to-consumer e-commerce businesses (e.g. Shein, Temu) have relied heavily on air cargo capacity to quickly fulfill U.S. orders

Air cargo industry trends

Public Policy Changes

- Tariffs and trade wars are impacting international trade outlook
- Uncertainty of trade policies between U.S. and foreign countries and added costs due to tariffs may have the effect of suppressing demand for international trade which, in turn, can reduce demand for air cargo
- Real-time situation with unknown outcomes
- Reshoring and related changes to global supply chains could alter use of air cargo over the long-term

Belly Cargo Importance

- Cargo can add meaningful revenue to passenger airlines and positively influence passenger route economics, particularly on international routes served with widebody aircraft
- Belly cargo capacity accounts for approximately 50% of total global cargo capacity
- Importance of cargo revenue revealed during pandemic
- Foreign-flag airlines are particularly focused on belly cargo, especially those airlines that also offer all-cargo freighter service

Air cargo industry trends

FedEx

- Current strategies focus on cost-cutting and service realignment
- Increasing use of trucking within the domestic U.S. network and reduced emphasis on costly air transportation
- Pilot layoffs and aircraft retirements (including older B757s)
- Recently noted interest in carrying general, heavyweight freight, utilizing MD-11s that had been scheduled for retirement
- Modernizing its feeder fleet with Cessna SkyCourier
- Increasing use of passenger belly capacity for some shipments
- USPS air mail contract ended September 2024

UPS

- Undergoing cost control and air network optimization measures
- Increasing use of trucking in the domestic U.S. network
- Pilot layoffs; retiring some aircraft
- Gained USPS air mail business from FedEx
- Prioritizing premium air freight, including pharmaceuticals, medical devices and electronics
- Continued moratorium on capital spending at U.S. airports
- Recently announced strategy to reduce Amazon volumes by 50%

Air cargo industry trends

Amazon Air

- Rationalizing air network and exiting some airports; slowing expansion to U.S. airports, including smaller airports
- Regional fulfillment strategies centered on locating inventory closer to customers and relying more on trucking and less on air transportation
- Offering excess capacity to third-party (non-Amazon) shippers
- Promoting Amazon Air Cargo in the U.S. domestic market aimed at general, heavyweight shipments and freight forwarders

Forwarder Charters

- All-cargo aircraft owned or chartered by freight forwarders leads to increased use of alternative cargo gateway airports in the U.S.
- Global forwarders controlling freighter aircraft include Maersk, Kuehne+Nagel, MSC, DB Schenker, DSV, and CMA CGM
- For these forwarders, adding aircraft enables premium services to key customers and differentiation from competitors
- Forwarders are growing aircraft fleets and expanding networks, creating opportunities for certain U.S. airports with the ability to serve widebody intercontinental freighter services

Air cargo industry trends

UAS/UAV Use in Air Cargo

- Current major commercial operators: Amazon Prime Air, UPS Flight Forward, Wing, Zipline
- Utilize Part 135 certified drones approved by FAA; larger equipment in development; outlook for rapid expansion
- Ameriflight (feeder for FedEx, UPS, DHL) announced an order of 20 large autonomous cargo airplanes
- Walmart currently offers deliveries via drones from multiple stores in the DFW metro area (incl. Fort Worth) and plans to aggressively expand the services throughout the region

Nearshoring

- Nearshoring to Mexico has grown as it offered a refuge from trade wars (esp. for Chinese companies), increased supply chain resiliency with proximity to the U.S. & competitive labor rates
- Model is now being threatened with the current volatility in international trade and U.S. public policy
- As long supply chains (Asia to U.S.) shorten, potential for transformative change, including for air cargo
- Possibilities of smaller aircraft service on short-haul international routes serving smaller U.S. airports

DTO Current Situation and Air Cargo Capabilities

Cargo charter flights represent a small portion of overall DTO activity, but they provide valuable services to Denton area manufacturers

Denton Enterprise Airport is a general aviation airport located in the City of Denton which is situated in the northern region of the Dallas-Fort Worth Metroplex. DTO has excellent access to the interstate highway system with the nearby junction of I-35E and I-35W forming I-35 towards Oklahoma City and other points north.

DTO ranks as the fifth busiest airport in Texas based on annual aircraft operations. A contract air traffic control tower is staffed daily and maintains regular operating hours. The Airport is home to six flight schools and Med-Trans, a leading provider of air ambulance services.

Currently, air cargo operations account for a small share of the overall flight activity at DTO. There are no scheduled cargo flights at the Airport, all cargo flights operate as on-demand charters. The Sheltair FBO performs ground handling services for cargo charters including loading/unloading freight, aircraft fueling and coordination with trucking companies for pick-up and delivery. Most cargo charters carry inbound freight to Denton and outbound shipments are rare.

Finally, Berry Aviation, an operator of on-demand cargo charters, has based aircraft at DTO. From DTO, Berry primarily operates cargo charters related to the automotive industry for shipments from Mexico as well as border airports like El Paso and Laredo. While many of Berry's DTO operations are for customers located in other cities and states, some of their DTO cargo charters serve Denton-based companies. In this manner, Berry plays a critical role for manufacturers in the Denton area.

Denton Enterprise Airport area

TWO RUNWAYS
18L/36R – 7,002' x 150' Max 100k lbs
18R/36L – 5,003' x 75' Max 30k lbs

MARKET ACCESS
DTO located at the junction of
I-35W (Fort Worth) / I-35E (Dallas)
I-35 (Oklahoma City)

FACILITIES
Full-service Maintenance and Repair
FBO - Refueling Center

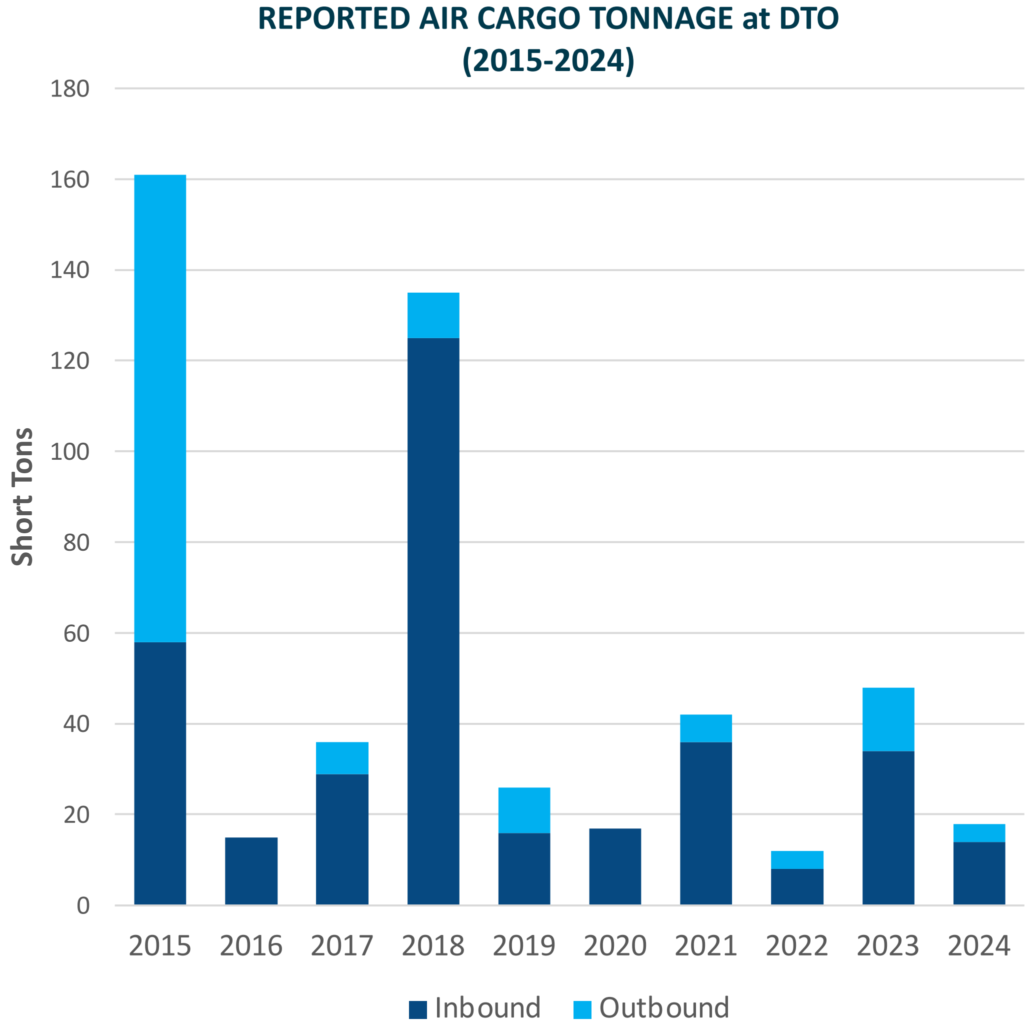
AIR CARGO SERVICES
On-Demand Cargo Charters
Cargo ground handling by Sheltair

ATC TOWER
Hours: 6:00 am – 10:00 pm

FTZ: In FTZ039 and adjacent to FTZ168

DTO air cargo data sourced from U.S. DOT shows wide variations in annual tonnage handled over the past 10 years

- Most cargo charters at DTO are operated by smaller, Part 135 air carriers which are not required to report data to the U.S. DOT
- Part 121 air carriers, which typically operate larger aircraft on a scheduled basis, are required to submit cargo data to U.S. DOT; this data enables certain observations about air cargo at DTO
- Due to the on-demand nature of charter operations, DTO cargo tonnage varies greatly on a year-to-year basis
- With the exception of 2015, DTO cargo flights primarily carry inbound tonnage; over the past 5 years, 80% of tonnage was inbound
- Common cargo airlines at DTO include: IFL Group, Ameristar, Royal Air Freight, Berry Aviation, Encore
- Cargo charters at DTO often utilize: EMB-120F, Dassault Falcons, Learjet 35, CRJ-200F



Source: Hubpoint analysis of U.S. DOT, T-100 Carrier Reports (CY 2024). Note: Includes only data reported to the U.S. DOT.

Air cargo operations at DTO face certain limitations related to facilities, infrastructure and available services

- DTO does not have dedicated air cargo facilities for freight storage before loading to and after unloading from aircraft. Cargo facilities also allow freight shipments to be built up / broken down efficiently and in a controlled, indoor environment.

- Without cargo facilities, freight must be handled on the ramp and ground transportation (i.e. trucking) must be carefully coordinated with the cargo flight operations due to lack of adequate areas to store the freight.

- DTO's runway length and strength limits the operations of larger jet aircraft carrying heavyweight freight. Although DC-9 cargo freighters sometimes operate at DTO, payloads are limited.

- As needed, Sheltair typically utilizes forklifts to load and unload cargo from cargo charters. Larger cargo aircraft often require use of a main deck loader which is not currently available at DTO.

- DTO does not have on-site U.S. Customs staff which limits cargo flight operations to domestic U.S. flights. For instance, cargo flights operating from Mexico to DTO, must first clear Customs at a U.S. airport (e.g. Laredo), before proceeding on to DTO.

Regional Air Cargo Market

While the regional air cargo market is large, the primary service area for DTO air cargo is limited

The regional air cargo market for DTO is driven by demand for air cargo services generated within the Dallas-Fort Worth Metroplex. Recognizing the influence of the region's three commercial airports and the characteristics of DTO's charter cargo services, the primary service area for DTO air cargo is likely defined as the area within approximately 20 minutes' drive time of the airport.

Given this limited service area, research focused on business activities in close proximity to DTO. Several companies in the immediate area were identified, with operations that include manufacturing, distribution, and logistics - activities that generally correlate with air cargo demand. A deeper review of the primary business functions at locations near DTO revealed that while some companies ship by air, many do not.

Several companies operate distribution centers for retail and grocery stores in the region, which largely rely on trucking rather than air transportation. Furthermore, these and other companies are not shipping air-eligible goods (e.g., low-weight, high-value items requiring expedited delivery). Other companies (e.g. those related to the automotive industry) do ship via air cargo.

Interviews were conducted with several companies and with other stakeholders familiar with major business activities in the local area. The overall conclusion from this effort was that, while a few local companies regularly utilize air cargo services (including at DTO), there is relatively little demand for air cargo within the immediate area. Profiles of various companies near DTO are provided in this section of the report.

The DTO area includes some companies known to utilize air cargo services, but many other companies do not ship air-eligible goods

Profiles of Select Local Companies

Sheltair: DTO's FBO provides ground support for passenger and all-cargo aircraft, hangar space & tie downs and other services. For cargo operations, Sheltair loads/unloads freight, fuels aircraft and coordinates with trucking services.

Peterbilt: Denton is HQ and only U.S. manufacturing plant. All Class 8 conventional heavy-duty commercial vehicles are produced in Denton, with a system of 450 North American suppliers. Uses DTO for just-in-time cargo charters using twin and single engine planes. Occasional larger charters (e.g. B727s, DC-9s) use AFW.

Enginetech: Makes cylinder and head covers and air filters for trucks, including Peterbilt and Caterpillar. The new U.S. headquarters and production is located in Denton, north of DTO.

Safran: The Denton plant produces electrical connection systems for military aircraft. All products are for U.S. use and made with U.S. materials. Utilizes integrators for small package air shipments.

Greenpoint: A subsidiary of the Safran parent company. The Denton plant produces VIP cabinetry and precision machinery for custom business jet interiors.

Berry Aviation: On-demand cargo with a base for all-cargo EMB-120s at DTO. Specializes in just-in-time cargo for manufacturers, industrial plants - especially automotive. Some of Berry's cargo charters at DTO are operated for shipments to/from Denton companies.

Tetra Pak: Manufactures packaging, and filling and processing machines for dairy, beverages, cheese, ice cream, and prepared foods.

Southwire: Manufactures copper wiring and metal-clad cables for residential and commercial buildings. The Denton facility is the recently expanded 500,000 sf campus acquired with the purchase of United Copper.

EMLS: Custom assembly services, and Just-in-Time logistics for manufacturing for heavy truck, automotive, distribution, and make-ready assembly.

ESAB: Manufactures light industrial products such as welders and automated cutting systems. Denton is a core manufacturing location, North American distribution center, and R&D facility.

The DTO area includes some companies known to utilize air cargo services, but many other companies do not ship air-eligible goods

Profiles of Select Local Companies

Stulz Air Technology Systems: Announced a new 200,000 sf plant in Denton County expected to open in 2025. It will make precision cooling technology for data centers.

Mayday: Part of the Esco Technologies Aerospace & Defense Division, Mayday is a build-to-print manufacturer of aerospace bushings, pins, sleeves, and turned metal parts.

Lowe's: Lowe's home improvement chain has a 650,000 sf direct fulfillment center focused on e-commerce sales, including Hazmat products such a lithium battery-powered outdoor power equipment.

Fastenal: Fastenal has a 200,000 sf regional distribution center near DTO for industrial supplies, fasteners such as bolts and threaded rods, and safety products.

Reader Link: 400,000 square foot media materials national distribution center

Target: Target has a 440,000 sf regional distribution center near DTO. It is the company's first robotics distribution facility.

WinCo Foods: 850,000 square foot regional distribution center for the WinCo Supermarket chain

Aldi: 474,000 square foot regional distribution center for the Aldi Supermarket chain adjacent to DTO

United States Cold Storage: 280,000 square foot regional distribution center near DTO cold stores and distributes products such as meats and flowers, as well as specialty products like aerospace parts

Chill Storage: 302,000 sf Class A freezer cooler facility, completed in 2023, serving the Denton food distribution centers.

Jostens: Manufactures custom class and sports rings, graduation hats/gowns, yearbooks, school apparel and gifts.

Regional demand for international air cargo services is robust, particularly for markets in Asia and Europe

The Dallas-Fort Worth Metroplex is a center for companies manufacturing air-eligible goods, including computers, chemicals, pharmaceuticals, medical devices, auto parts and perishables. These business activities generate demand for import and export shipments via international air cargo services.

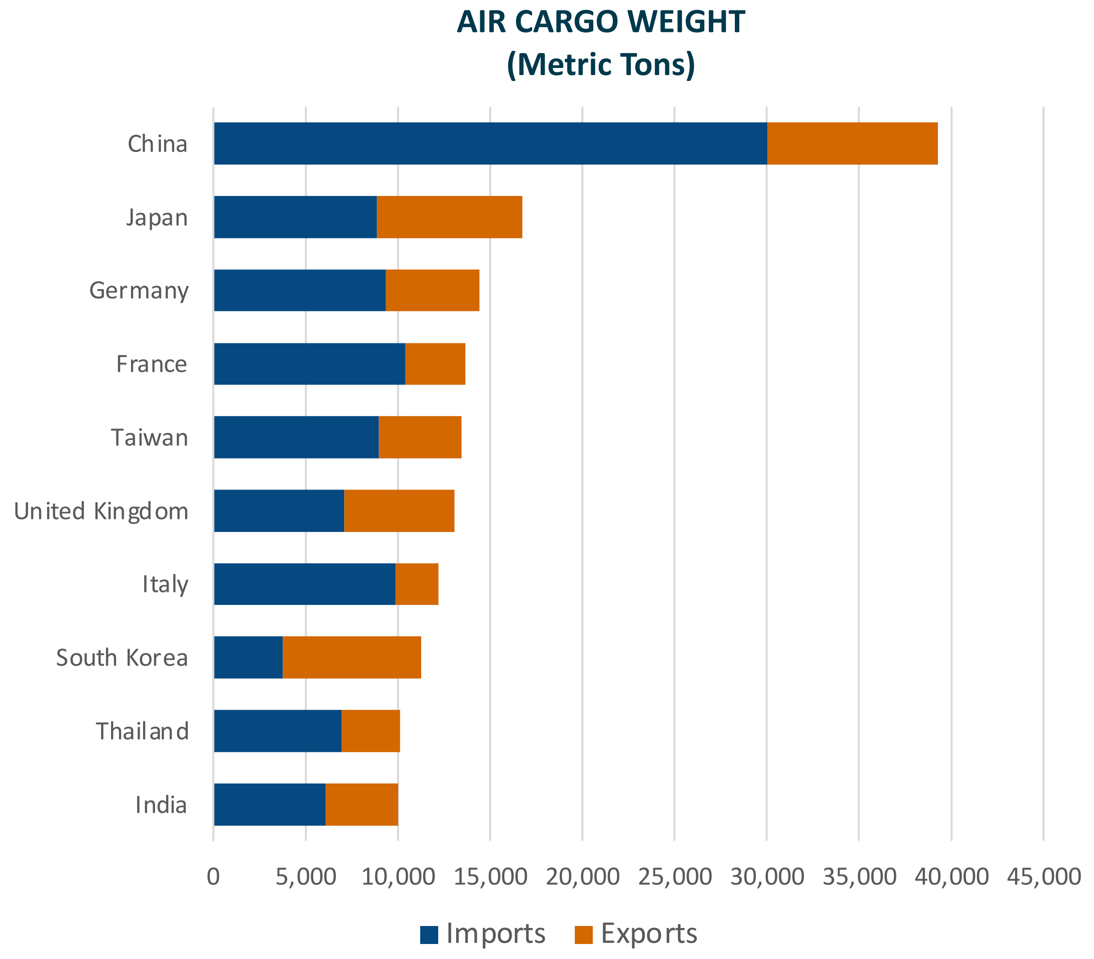
Geographically, Asia and Europe are the major international markets for air cargo shipments transiting the commercial airports in the Dallas-Fort Worth area. Leading country markets for international air trade include China, Japan, Taiwan, Germany, France and the United Kingdom.

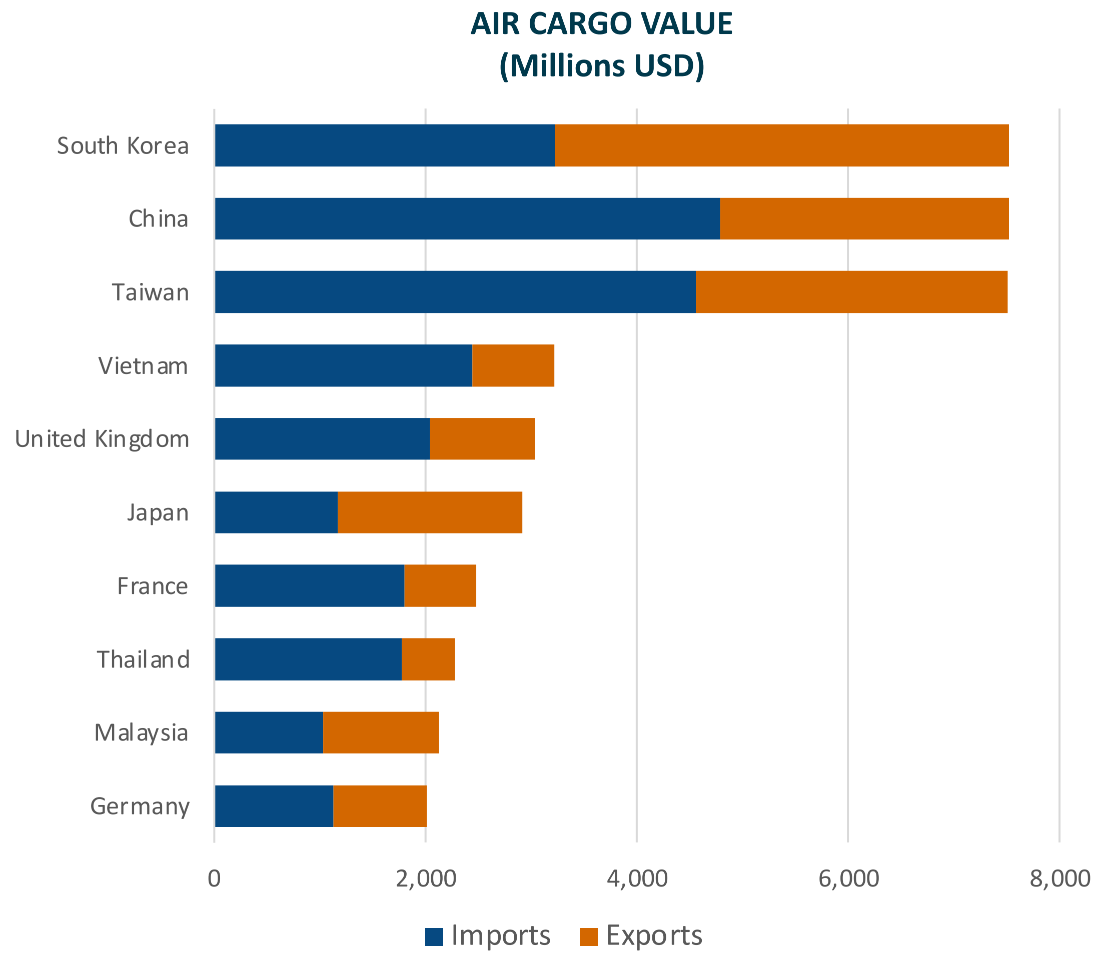
Major commodities moving between the U.S. and international markets via the Dallas-Fort Worth area airports include electric machinery, industrial machinery, medical equipment, aerospace parts, high value goods, plastics and chemicals.

The concentration of international air services available in the Dallas-Fort Worth area, particularly at DFW International Airport, attracts air cargo from Texas and many other states, including California, Oklahoma, Louisiana and Tennessee.

Details of these international air trade flows are provided in this section. While not necessarily directly relevant to DTO, the statistical information provides insights on the drivers of air cargo demand and the importance of regular, scheduled air services to supply the required air cargo capacity.

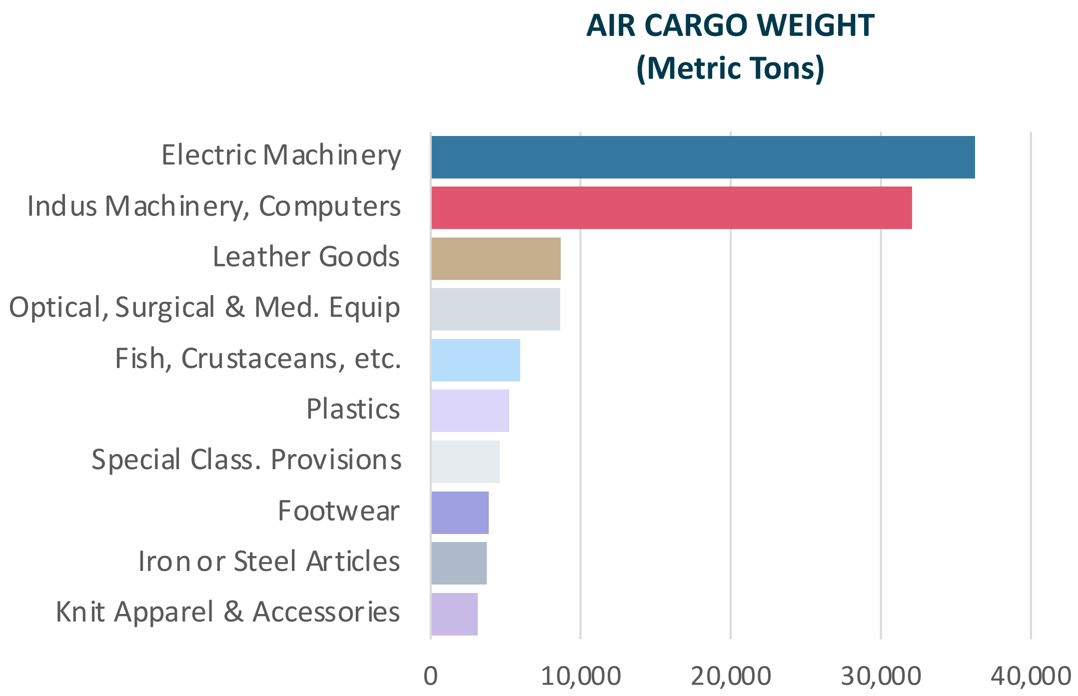
Top international country-markets for air trade shipped via the Dallas-Fort Worth area airports (2024)

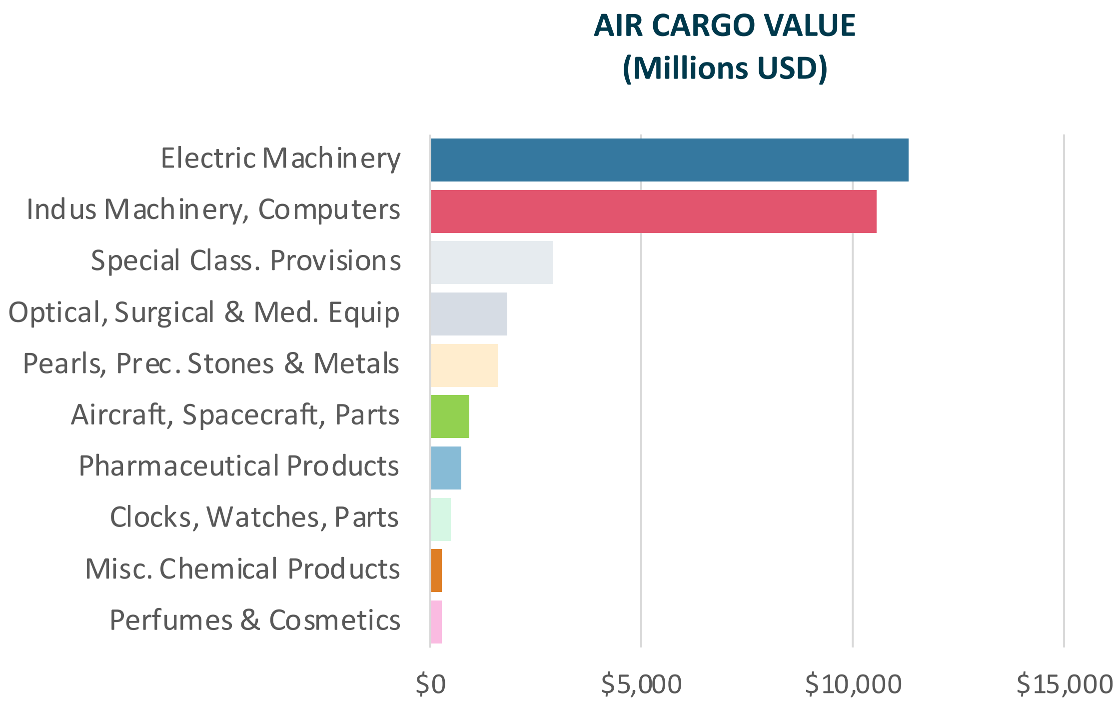




Source: U.S. Department of Commerce, Foreign Trade Statistics, CY 2024. Includes ports of Dallas-Fort Worth, TX, Forth Worth Alliance Airport, and Dallas Love Field User Fee Airport

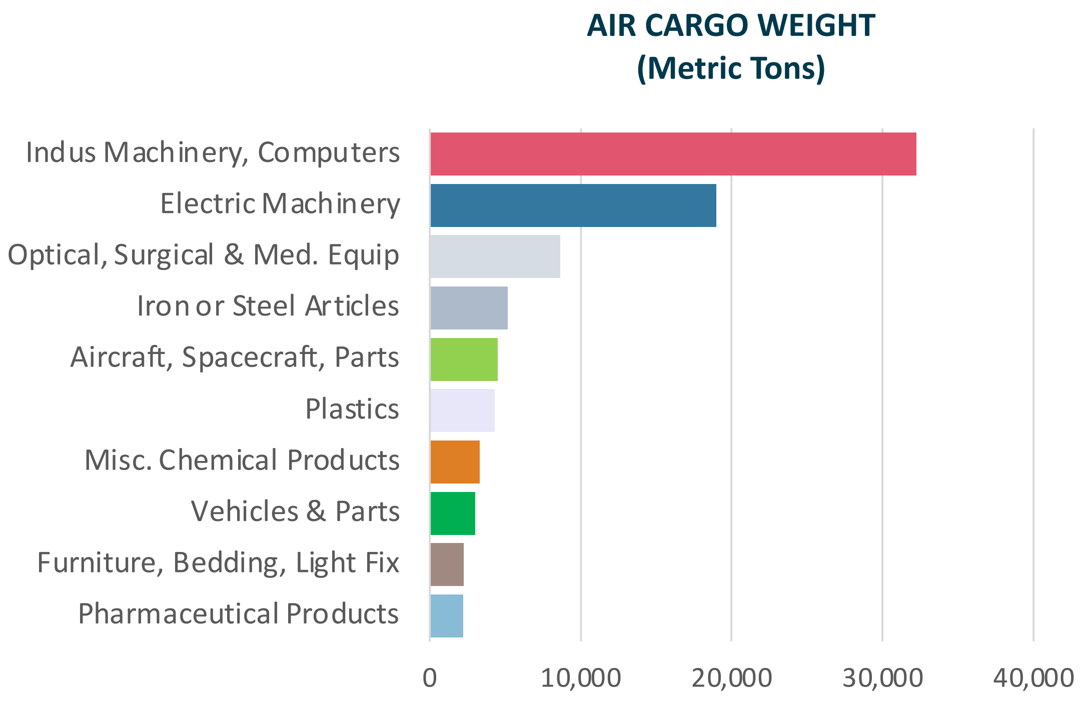
Top air import commodities shipped via the Dallas-Fort Worth area airports from the world (2024)

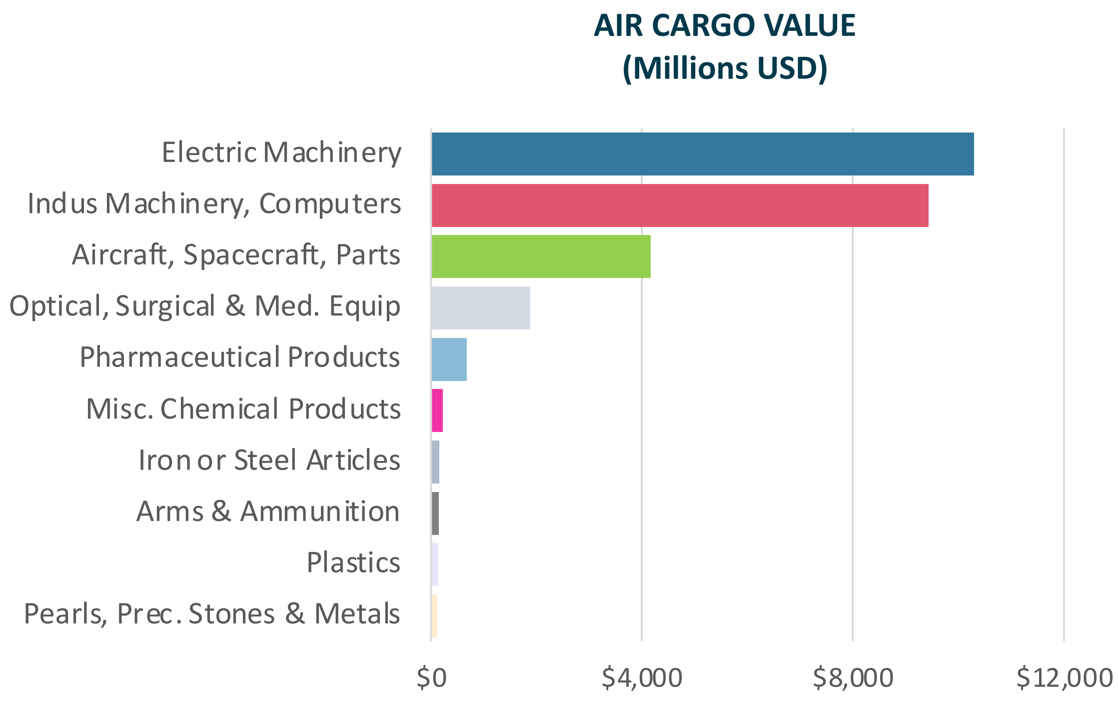


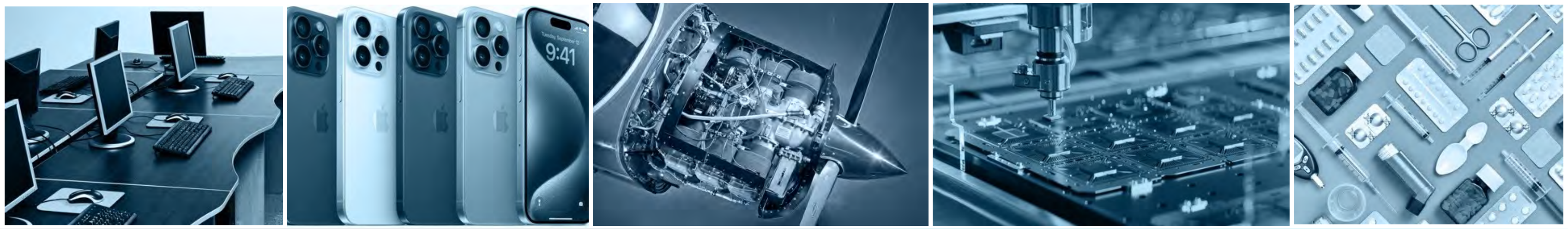


Source: U.S. Department of Commerce, Foreign Trade Statistics, CY 2024. Includes ports of Dallas-Fort Worth, TX, Forth Worth Alliance Airport, and Dallas Love Field User Fee Airport

Top air export commodities shipped via the Dallas-Fort Worth area airport to the world (2024)







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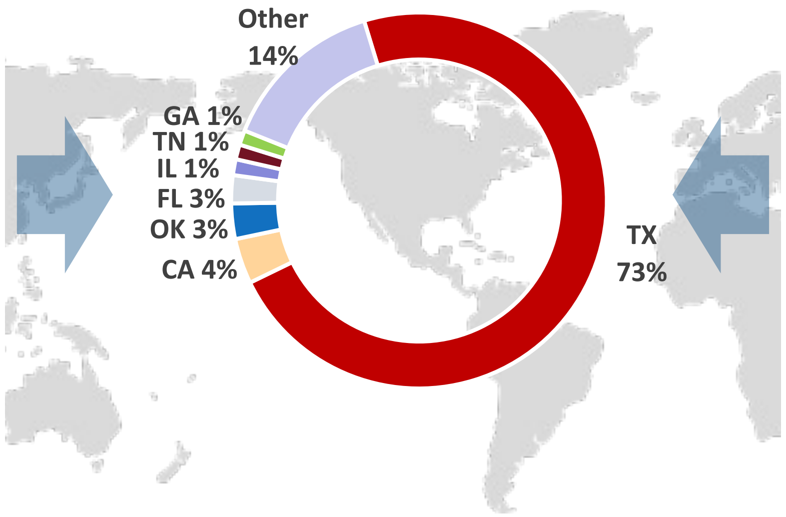
Source: U.S. Department of Commerce, Foreign Trade Statistics, CY 2024. Includes ports of Dallas-Fort Worth, TX, Forth Worth Alliance Airport, and Dallas Love Field User Fee Airport

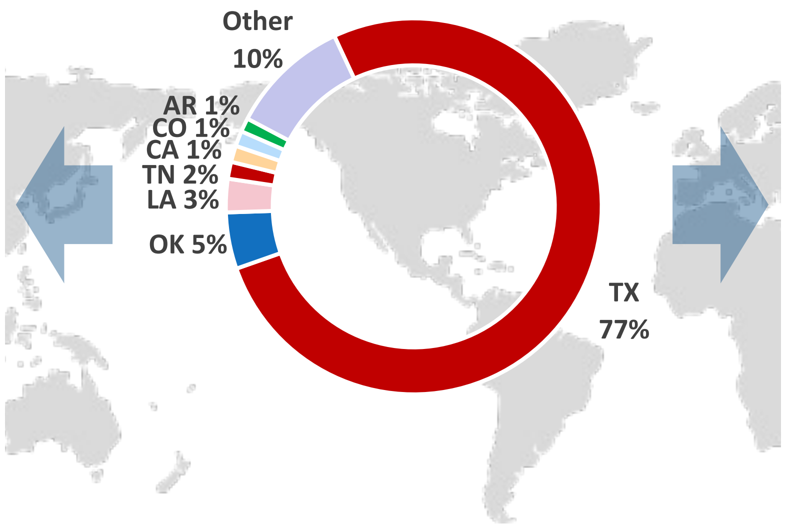
Air imports and exports by state shipped via the Dallas-Fort Worth area airports (2024)

INTERNATIONAL AIR **IMPORTS**
BY DESTINATION STATE
(Metric Tons)



IMPORTS TONNAGE
Texas = 108,508
California = 5,831
Oklahoma = 4,567
Florida = 3,613
Total = 149,618

INTERNATIONAL AIR **EXPORTS**
BY ORIGIN STATE
(Metric Tons)



EXPORTS TONNAGE
Texas = 81,333
Oklahoma = 5,165
Louisiana = 3,051
Tennessee = 1,541
Total = 106,225

Source: U.S. Department of Commerce, Foreign Trade Statistics, CY 2024. Includes ports of Dallas-Fort Worth, TX, Forth Worth Alliance Airport, and Dallas Love Field User Fee Airport

The DTO regional air cargo market is highly competitive and features three commercial airports offering a wide range of cargo services

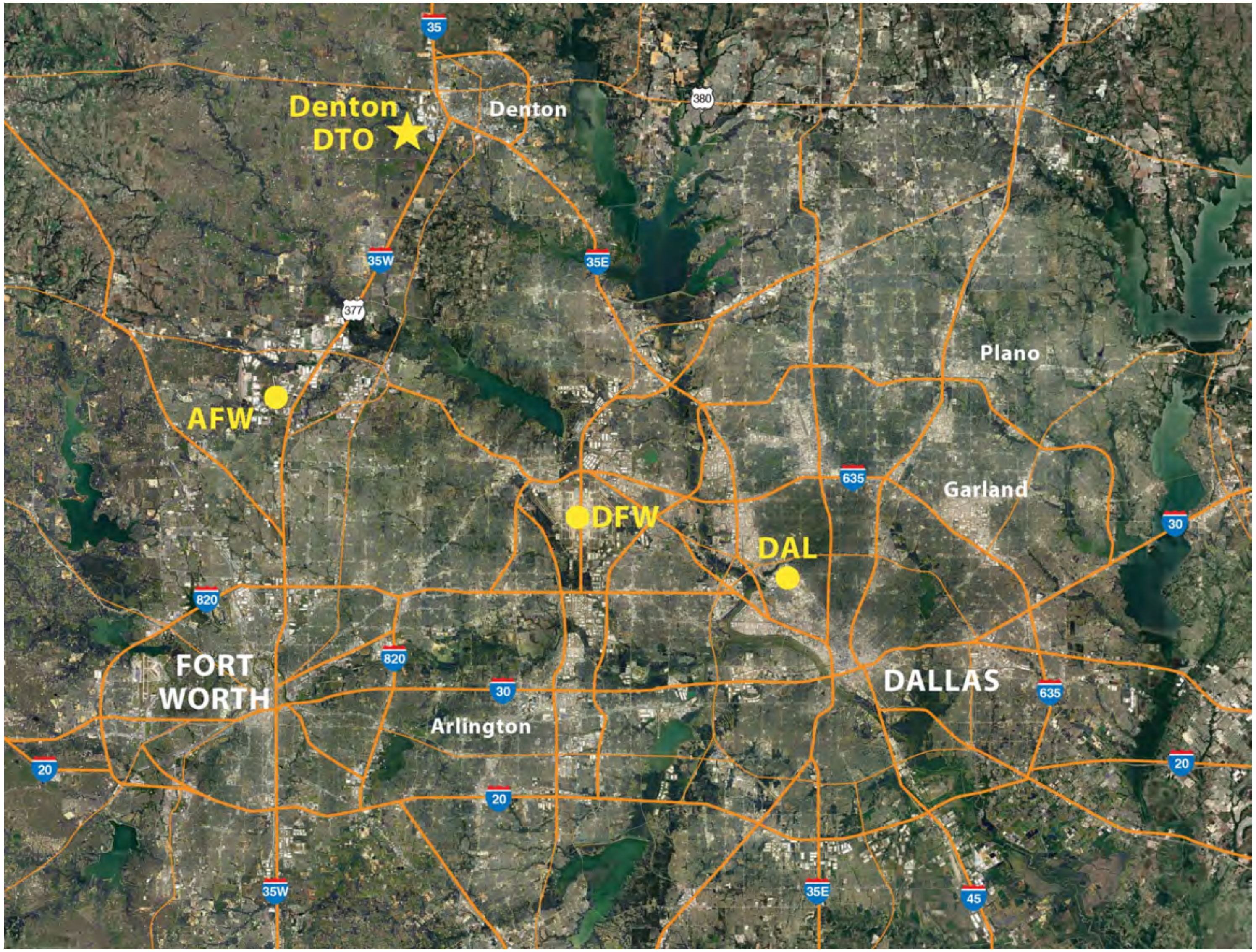
The Dallas-Fort Worth area is one of the largest metropolitan areas in the U.S. and it is also one of the most well-served air cargo markets. Three commercial airports – Dallas-Fort Worth International Airport (DFW), Fort Worth Alliance Airport (AFW) and Dallas Love Field (DAL) – offer a variety of air cargo services.

- DFW has the most diverse air cargo environment with all-cargo freighters serving multiple continents, belly cargo from its widebody and narrowbody passenger aircraft serving domestic and international markets, and integrated express carrier services. The airport has multiple cargo facilities, world-class cargo ground handlers, on-site government agencies for Customs and other inspections, a large freight forwarder base and related trucking operations.
- AFW hosts a FedEx regional hub as well as an Amazon Air regional hub. Additionally, cargo charters regularly operate at AFW.
- DAL is home to one of Southwest Airlines' largest operations for belly cargo with both domestic and international passenger air services. Southwest also consistently ranks among the top U.S. airlines for the quality of its cargo services.

Collectively, these three airports offer a depth and breadth of cargo services that effectively cover the needs of every shipper.

DTO is located within close proximity of the three commercial airports serving the region's air cargo demand

- Distance and drive time from DTO:
  - DFW – 30 miles / 35 min.
  - AFW – 20 miles / 30 min.
  - DAL – 40 miles / 50 min.
- All market segments are served by the three airports
  - International / Domestic
  - Heavy Freight / E-commerce / Small Package Express
  - All-cargo freighters with main deck capacity / Passenger aircraft with belly capacity
- Extensive trucking services support air cargo services



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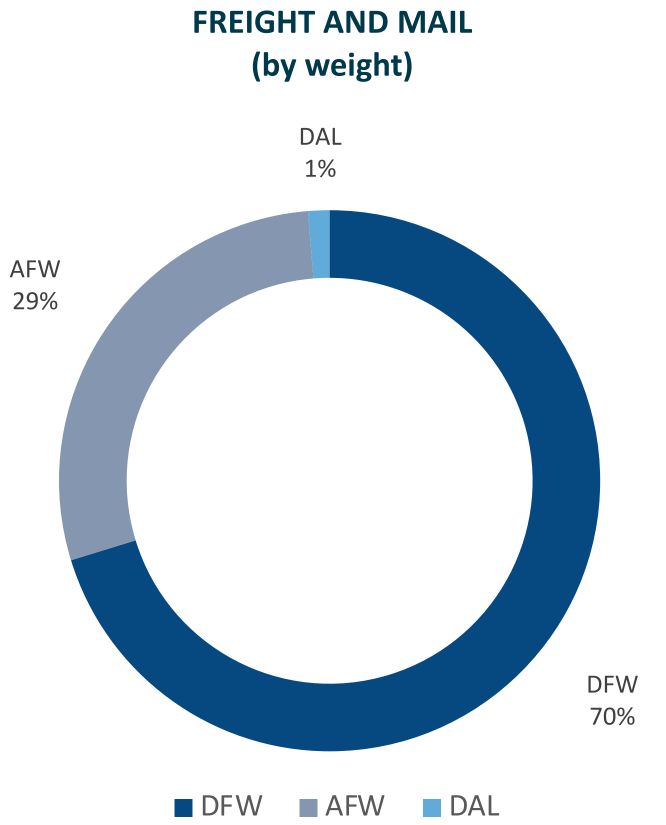
Each of the commercial airports have air cargo niches, with DFW's scale and capacity leading to a dominant share of cargo in the region

- In 2024, DFW handled 809,000 short tons of cargo representing 70% of total air cargo weight amongst the three airports
- AFW handled 328,000 short tons of cargo in 2024 which equates to 29% of total air cargo of the region's commercial airports
- DAL handled just under 15,000 short tons which accounts for 1% of the combined total for the three airports



Source: Hubpoint analysis of U.S. DOT, T-100 Carrier Reports (CY 2024).

Dallas-Fort Worth International Airport (DFW)

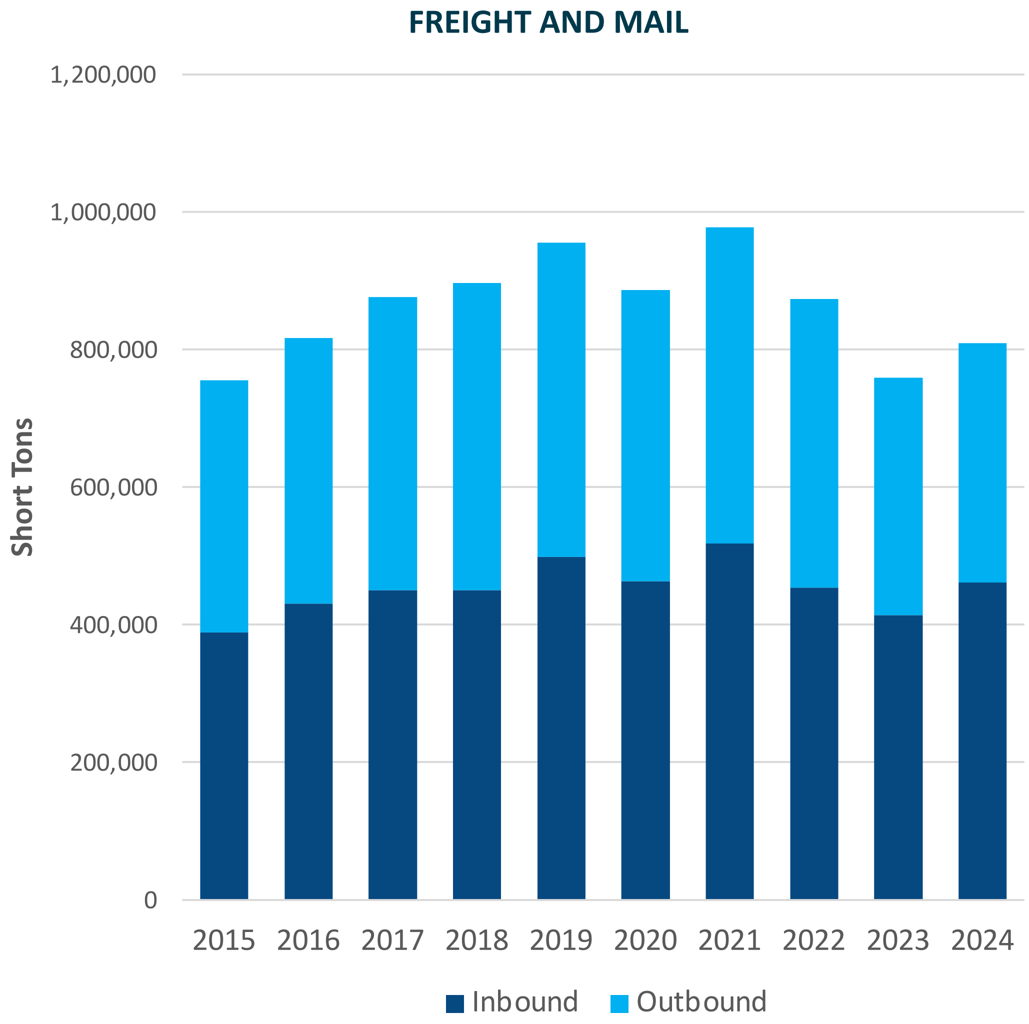
- Seven runways ranging from 8,500 ft to 13,400 ft
- Multiple dedicated cargo facilities, incl. cold chain facility for perishables and pharmaceuticals
- 14 passenger and all-cargo airlines offering cargo services
- 3 integrated express carriers: FedEx, UPS, DHL
- 6 cargo ground handlers
- Over 150 freight forwarders in the immediate area
- On-site U.S. Customs and Dept. of Agriculture
- Cargo redevelopment project to provide 350,000 sf of new facilities and nearly double the cargo aircraft parking area

DALLAS-FORT WORTH (DFW)

Source:

Dallas-Fort Worth International Airport (DFW)

- DFW air cargo tonnage over the past 10 years reflects changes in the macro-economy
  - Steady growth through 2015-2019 as international trade and e-commerce shipments increased
  - COVID-related decline in 2020, followed by increased cargo demand in 2021 with government stimulus and consumer spending
  - Post-pandemic down market in 2022-2023
- DFW air cargo tonnage consistently favors inbound shipments; for 2015-2024, inbound cargo accounted for 53% of tonnage
- Return to growth in 2024 will likely be challenged in 2025, due to tariffs and trade wars



Source: Hubpoint analysis of U.S. DOT, T-100 Carrier Reports (CY 2024)

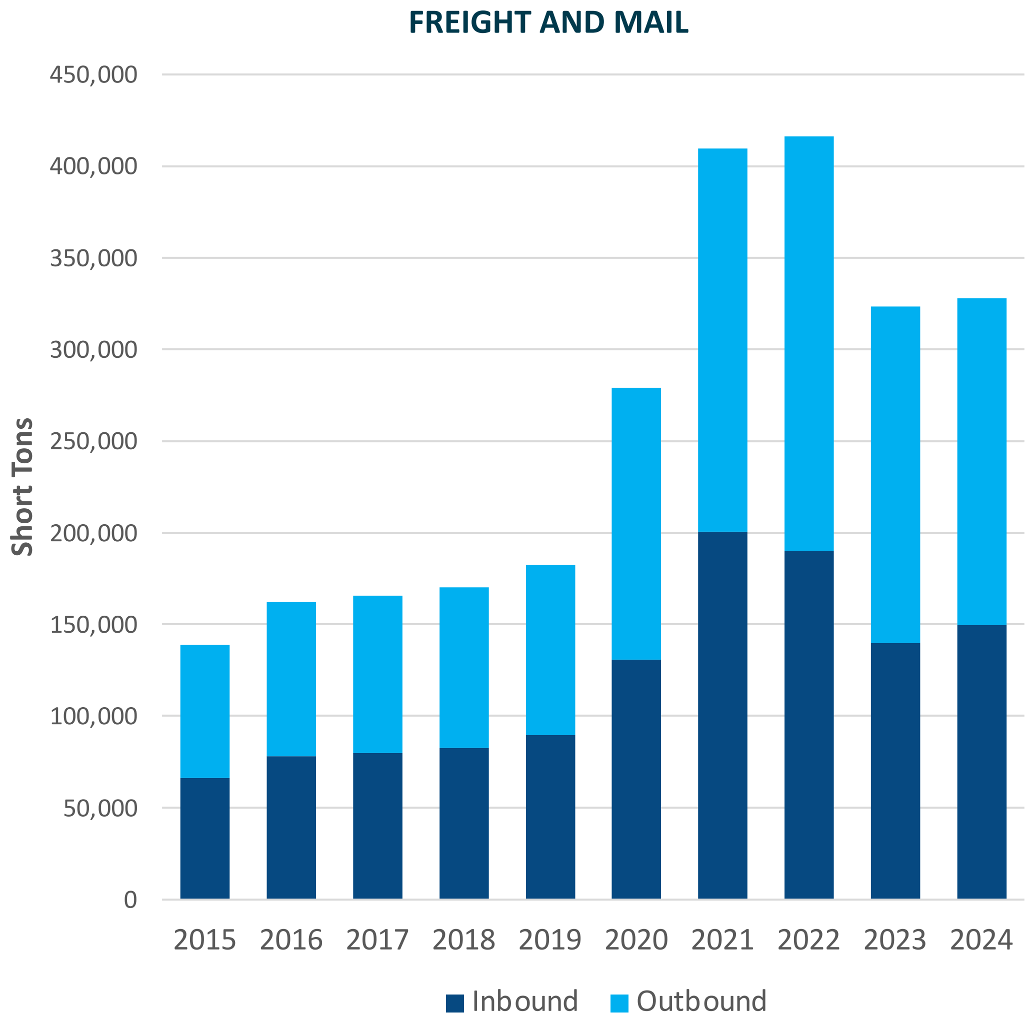
Fort Worth Alliance Airport (AFW)

- Two 11,000 ft runways
- Focused on air cargo with FedEx and Amazon Air
- Class IV Airport – no scheduled passenger flights allowed, only charters
- FAA Air Traffic Control tower - 24/7/365
- On-site U.S. Customs
- Full range of services - cargo ground handling, fueling, aircraft parking and maintenance
- 3PL, freight forwarder and broker services
- Amazon Air hub: 1.15 million sf, 28-acre ramp
- FedEx regional hub: 800,000 sf, 50-acre ramp

FORT WORTH ALLIANCE (AFW)

Fort Worth Alliance Airport (AFW)

- AFW cargo activity has experienced major changes since 2015
- FedEx has maintained a regional hub at AFW since 1997 which led to steady growth over time
- In late 2019, Amazon Air established its AFW regional hub, leading to an 80% increase in tonnage at the airport over the next 5 years
- As with DFW, AFW experienced peak years during the pandemic as e-commerce purchases spiked; this extraordinary growth has now normalized
- Given the heavy e-commerce profile of AFW's operations, directional tonnage skews toward outbound shipments; during the 10-year period shown, outbound shipments represent 53% of tonnage



Source: Hubpoint analysis of U.S. DOT, T-100 Carrier Reports (CY 2024)

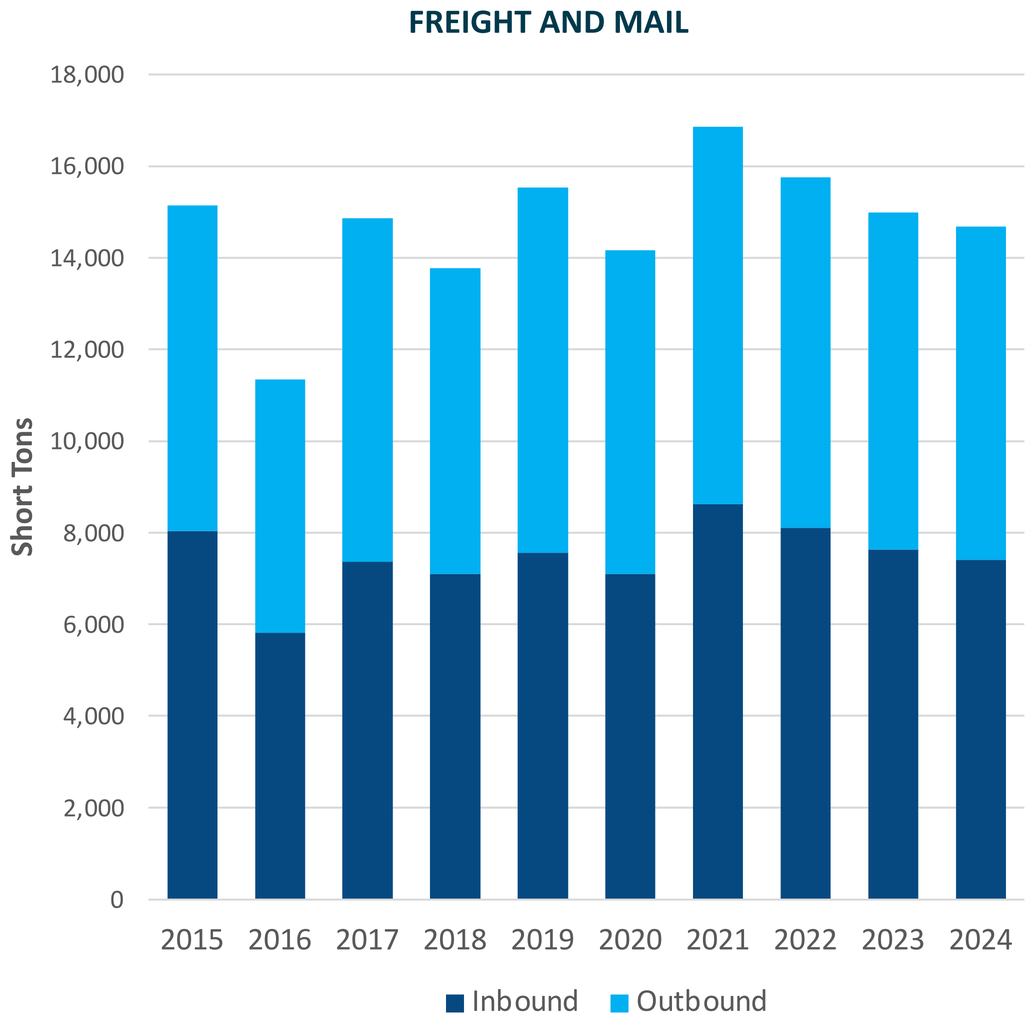
Dallas Love Field (DAL)

- Two active runways
  - 13L/31R – 7,752 ft
  - 13R/31L – 8,800 ft
- Southwest Airlines Cargo facility
  - 67,000 sf building, 4-acre ramp
  - 5th largest airport in Southwest Airlines' network with over 14,000 tons in 2024
  - Accounts for 99% of DAL cargo
- On-site U.S. Customs with after hours support available

DALLAS LOVE FIELD (DAL)

Dallas Love Field (DAL)

- DAL air cargo is dominated by the belly cargo tonnage of Southwest Airlines
- There are no all-cargo freighter services and no integrated express carriers at DAL
- Due to the scale of its operations at DAL, Southwest Airlines often transships cargo from aircraft to aircraft at the airport
- Southwest's cargo handling practices lead to an overall balanced inbound/outbound profile for DAL; during the 10-year period shown, inbound tonnage was 51% of total and outbound tonnage was 49%



Source: Hubpoint analysis of U.S. DOT, T-100 Carrier Reports (CY 2024)

Synthesis

SWOT analysis for DTO air cargo

STRENGTHS	WEAKNESSES
• Efficiencies from uncongested airport environment • Location in northern region of the DFW Metroplex with high growth profile and proximity to major companies • Nearby interstate highway system (I-35, I-35E and I-35W) provides convenient access to key markets • Local companies value DTO option for cargo charters • Sheltair capably handles cargo charters at DTO and is interested in growing business related to air cargo • Air cargo charter carrier Berry Aviation has based aircraft at DTO and operates on-demand cargo charters from the airport	• Existing runway lacks required length and strength to accommodate certain common all-cargo aircraft which, in turn, limits shipment weight and size at DTO • No dedicated cargo facilities for regular cargo operations • Limited revenue potential under current fee structure for DTO/City related to air cargo • No existing cargo ramp for freighter aircraft • Lack of belly cargo capacity on passenger aircraft serving DTO
OPPORTUNITIES	**THREATS**
• Growing businesses and population in northern DFW metro area likely to drive increased demand for air cargo services • Just-in-Time manufacturing processes rely on air cargo to mitigate risks of production line disruptions • Airside and landside congestion at commercial airports in the region make DTO a viable option for certain air cargo operations • Optimistic outlook for Advanced Air Mobility and UAS/UAV related to air cargo may benefit airports like DTO, potentially for middle-mile applications	• Robust air cargo services at competing airports in the region (DFW, AFW, DAL) • Few current manufacturers of air-eligible commodities in the immediate DTO region • Lack of concentrated and consistent demand for air cargo services • Tariffs and trade wars threaten overall trade and economic stability leading to reduced demand for air cargo services

Synthesis of Air Cargo Assessment findings

- DTO's air cargo business relies heavily on charter operations, and this is expected to remain the case over the next 20 years.
- Prevailing trends among scheduled cargo operators (e.g., FedEx, UPS, Amazon Air) do not indicate the addition of new airports like DTO to their networks.
- Competition from established commercial airports in the Dallas-Fort Worth Metroplex limits DTO's ability to capitalize on potential opportunities and grow its air cargo business.
- A substantial expansion of air cargo services at DTO would likely require significant investments in cargo facilities, infrastructure, and handling equipment - investments that may not be justifiable given the low revenue levels the Airport/City currently receives from cargo operations.
- Despite this, DTO's air cargo services provide substantial value to key companies in the Denton community, making the continuation of charter cargo operations a priority.
- Effective oversight of DTO's air cargo business should enhance services and help identify growth opportunities within its charter cargo niche.

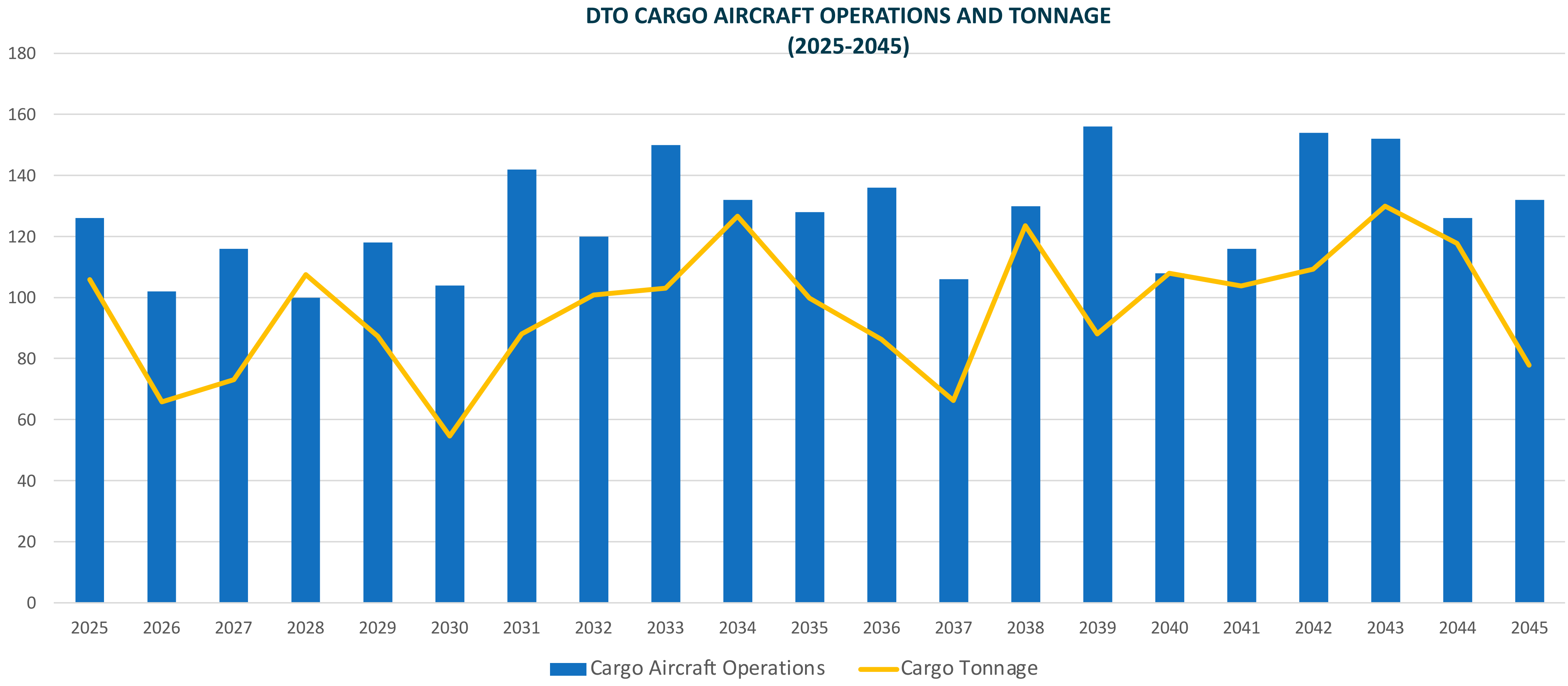
DTO Air Cargo Forecasts

- Aircraft Operations and Tonnage
- Revenue

DTO air cargo forecasts – methodology and assumptions

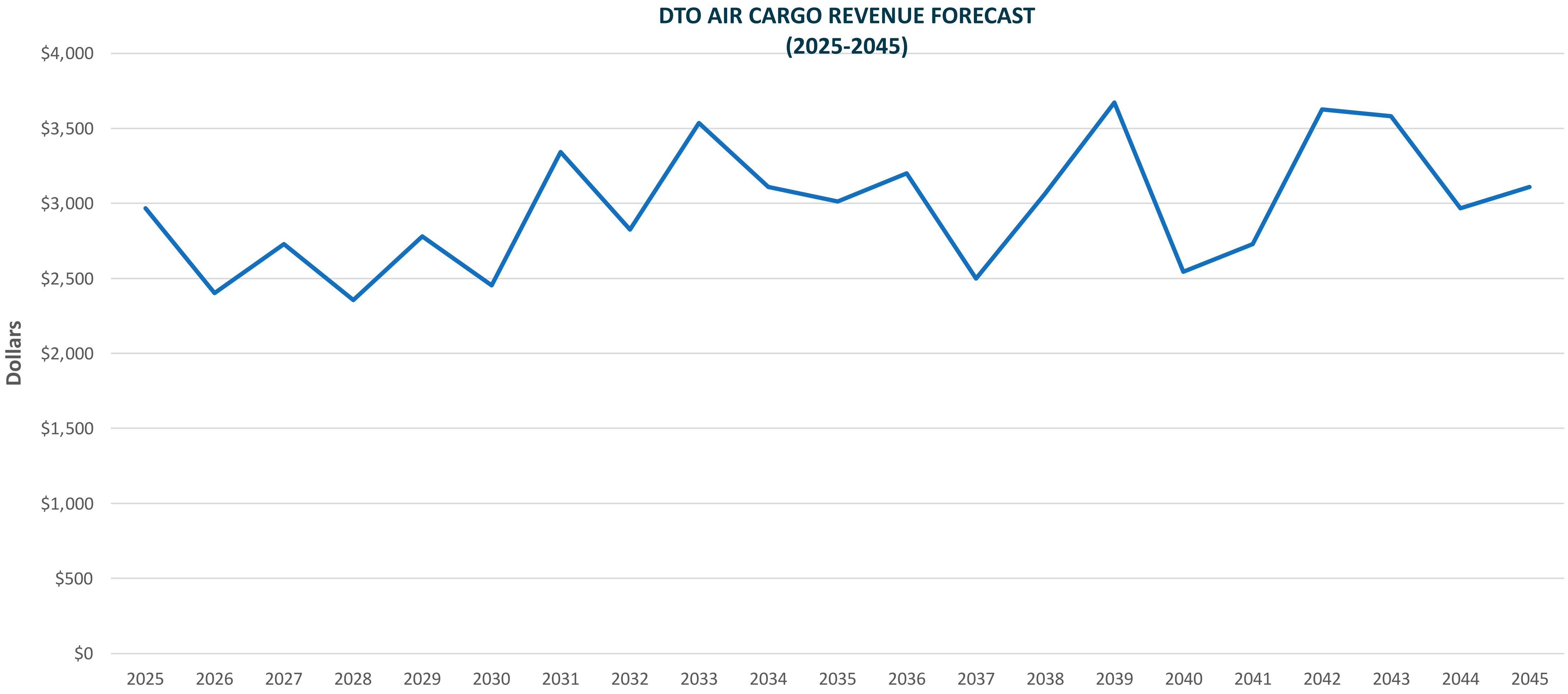
- Long-term 20-year forecasts were developed related to air cargo activity at DTO; these include annual forecasts for cargo aircraft operations (takeoffs/landings), tonnage, and cargo-related revenue generated for the Airport/City
- No historical data could be sourced specifically for DTO's air cargo operations, but inputs gathered through interviews with key stakeholders provided enough details to develop forecast methodologies and formulate informed assumptions
- DTO's cargo charters are heavily influenced by automotive industry activities
  - In Forecast Year 1, we assume that 80% of all cargo operations are related to the auto sector
  - By Forecast Year 20, we assume that 65% of cargo operations are associated with the auto industry, as auto industry usage remains at similar levels, but other users of cargo charters enter the DTO market
- Relationships between auto industry production levels and cargo charter operations were established and enabled estimations of total DTO annual cargo operations
- Given the profile of charter operations, we expect the continuation of highly variable aircraft operations and tonnage on a year-to-year basis at DTO where positive growth years are followed by negative growth years
- For forecast purposes, the EMB-120F was selected as the representative cargo aircraft; this aided in assumptions of average payload for the tonnage forecast as well as for the revenue line items
  - Based on research of typical payloads for cargo charters we established a range of tons per flight to apply to the forecast cargo operations
  - Average hourly fuel burn for the EMB-120F was also determined and an average flight time to DTO was assumed to be 2 hours
- Forecasts of revenue from cargo charters that revert to the Airport/City relate to two main elements: 1) Fuel flowage fees and 2) Overnight aircraft parking fees
  - The fuel flowage fees for the Airport/City are assumed to remain constant at $0.22 per gallon for the forecast period
  - The overnight parking fees are assumed at a rate of $50 per aircraft, with 30% of all cargo charters remaining overnight and incurring the fee
  - The Airport/City earns a 12% share of the parking fees and that share is assumed to remain constant during the forecast period

DTO air cargo operations and tonnage forecast



Source: Hubpoint analysis

DTO air cargo revenue forecast



Source: Hubpoint analysis

DTO air cargo forecast observations

- During the forecast period, DTO cargo aircraft operations and tonnage levels do not show consistent trends due to the on-demand nature of cargo charter operations.
    - Over the 20-year forecast, cargo aircraft operations range from 100 to 156 movements annually while cargo tonnage reaches a low of 55 tons and a high of 130 tons.
    - As a primary influencer of cargo charter activity, the automotive industry is known for its volatility which impacts demand for air cargo services. This is especially true at the individual OEM level where supply chain issues are unpredictable and must be actively managed. The volatility and unpredictability of the industry are reflected in the forecast output.
- The revenue impacts of air cargo for the Airport/City are shown to be minimal in the forecast output. Based on the inputs and assumptions of the forecast model, revenue related to cargo that reverts to the Airport/City totals between $2,300 and $3,700 annually during the 20-year period.
    - The low revenue figures are a function of multiple factors, including relatively low levels of annual cargo charter operations, the use of smaller cargo aircraft with low annual fueling requirements, and the limited number of revenue generating sources at DTO.

Appendix D

Airport Layout Plan

AIRPORT LAYOUT PLAN

for the

DENTON ENTERPRISE AIRPORT

Denton, Texas

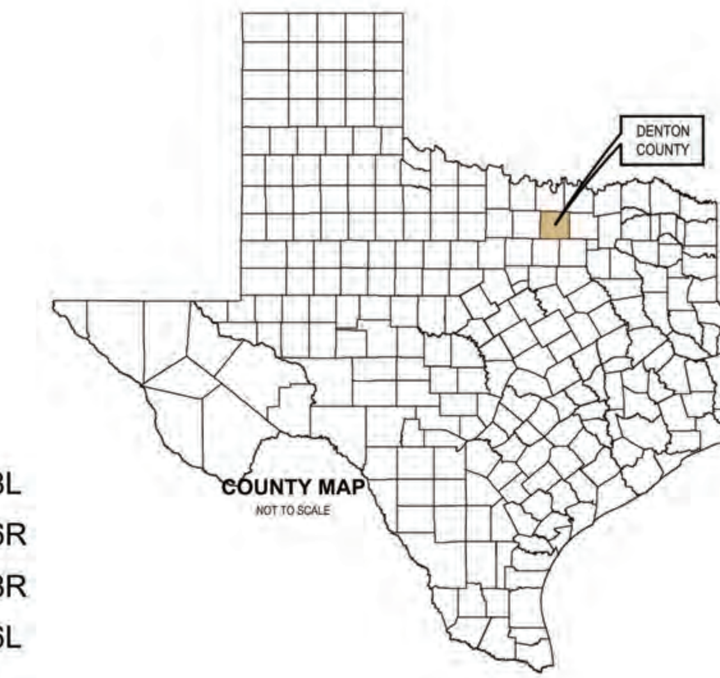
Prepared for
the City of Denton, Texas

LOCATION MAP

VICINITY MAP

DRAWING INDEX

1. TITLE SHEET
2. AIRPORT DATA SHEET
3. AIRPORT LAYOUT PLAN DRAWING
4. AIRPORT AIRSPACE DRAWING I
5. AIRPORT AIRSPACE DRAWING II
6. AIRPORT AIRSPACE PROFILE RUNWAY 18L-36R
7. AIRPORT AIRSPACE PROFILE RUNWAY 18L
8. AIRPORT AIRSPACE PROFILE RUNWAY 18R-36L
9. INNER PORTION OF THE APPROACH SURFACE DRAWING, RUNWAY 18L
10. INNER PORTION OF THE APPROACH SURFACE DRAWING, RUNWAY 36R
11. INNER PORTION OF THE APPROACH SURFACE DRAWING, RUNWAY 18R
12. INNER PORTION OF THE APPROACH SURFACE DRAWING, RUNWAY 36L
13. INNER PORTION OF THE APPROACH SURFACE DRAWING
    RUNWAY 18R-36L OBSTRUCTION & SIGNIFICANT OBJECT TABLES
14. RUNWAY DEPARTURE SURFACE DRAWING 18L-36R
15. RUNWAY DEPARTURE SURFACE DRAWING 18R-36L
16. TERMINAL AREA DRAWING I
17. TERMINAL AREA DRAWING II
18. TERMINAL AREA DRAWING III
19. TERMINAL AREA DRAWING IV
20. TERMINAL AREA DRAWING V
21. LAND USE DRAWING
22. EXHIBIT "A" AIRPORT PROPERTY INVENTORY MAP



COUNTY MAP
NOT TO SCALE

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

DENTON ENTERPRISE AIRPORT
TITLE SHEET
DENTON, TEXAS

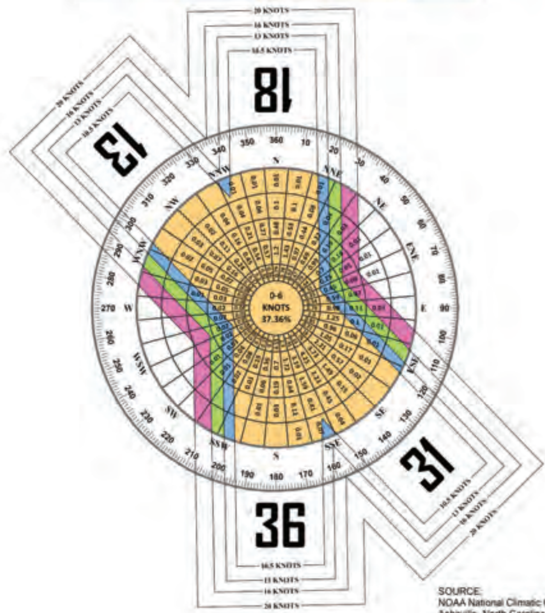
PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 1 OF 22

Coffman Associates Airport Consultants www.coffmanassociates.com

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	89.31%	94.37%	98.03%	99.55%
Runway 18-36	88.33%	94.67%	98.70%	99.76%
All Runways	97.05%	98.95%	99.73%	99.95%

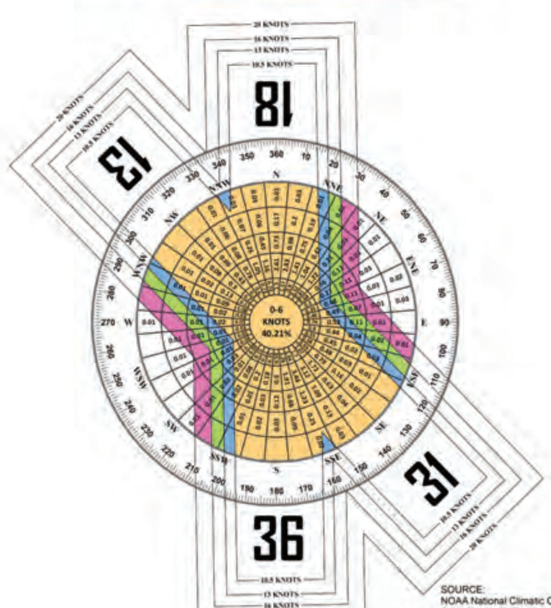


SOURCE:
NOAA National Climatic Center
Asheville, North Carolina Corpus Christi Intl.
Corpus Christi, TX

OBSERVATIONS:
124,661 All Weather Observations
Jan. 1, 2014 - Dec. 31 2023

IFR WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	85.82%	92.16%	96.89%	99.18%
Runway 18-36	92.74%	96.54%	98.89%	99.61%
All Runways	96.87%	98.67%	99.48%	99.82%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Corpus Christi Intl.
Corpus Christi, TX

OBSERVATIONS:
15,845 IFR Observations
Jan. 1, 2014 - Dec. 31 2023

AIRPORT DATA

City: Denton		County: Denton	Owner: City of Denton
Airport Name & ID: Denton Enterprise Airport (DTO)		EXISTING	ULTIMATE
Airport Reference Code (ARC)		C-II	D-III
Mean Maximum Temperature of Hottest Month		95.7°F (July)	
Airport Elevation (NAVD 88)		642.82'	Same
Airport Navigational Aids		GPS, Localizer, Glideslope, MALSR, PAPI, Rotating Beacon	Same
Airport Reference Point (ARP) Coordinates	Latitude	33° 12' 07.27" N	33° 12' 09.560" N
	Longitude	97° 11' 57.20" W	97° 11' 57.150" W
Miscellaneous Facilities		ATCT Segmented Circle Lighted Wind Indicator ASOS, MIRL, MITL Threshold Lights	Same
Design Critical Aircraft		Challenger 600	Gulfstream G550/G650
Wingspan of Design Aircraft (Feet)		64.3'	99.7'
Approach Speed of Design Aircraft (Knots)		140 Knots	137 Knots
Undercarriage Width of Design Aircraft (Feet)		13'	17.5'
Magnetic Declination (Degrees)		2° 52' E	
Declination Date		Jul-25	
Declination Source		NOAA	
NPIAS Code		R - Reliever	
State System Plan Role		RL - Reliever	

RUNWAY DECLARED DISTANCE

RUNWAY DECLARED DISTANCE	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
	18L	36R	18L	36R	18R	36L	18R	36L
Takeoff Run Available (TORA)	7,002'	7,002'	Same	Same	5,003'	5,003'	6,003'	6,003'
Takeoff Distance Available (TODA)	7,002'	7,002'	Same	Same	5,003'	5,003'	6,003'	6,003'
Accelerate-Stop Distance Available (ASDA)	6,502'	6,602'	6,902'	7,002'	5,003'	5,003'	6,003'	6,003'
Landing Distance Available (LDA)	6,502'	6,502'	6,902'	6,902'	5,003'	5,003'	6,003'	6,003'

Taxiway Data Table

Existing/Ultimate Taxiway/Taxilane Designation	Width	Taxiway Design Group	Taxiway/Taxilane Safety Area Dimension	Taxiway Object Free Area	Taxilane Object Free Area	Taxiway/Taxilane Lighting	Taxiway Edge Safety Margin (TESM)	Taxiway & Taxilane Separation[1]
A	50'	3	118'	171'	N/A	MITL	10'	85.5'
A1	50'	3	118'	171'	N/A	MITL	10'	85.5'
A2 (becomes C2 West of 18L)	50'	3	118'	171'	N/A	MITL	10'	85.5'
A3	50'	3	118'	171'	N/A	MITL	10'	85.5'
A4/A5	50'	3	118'	171'	N/A	MITL	10'	85.5'
A5/A7	50'	3	118'	171'	N/A	MITL	10'	85.5'
A6/A8 (becomes C15 west of C)	50'	3	118'	171'	N/A	MITL	10'	85.5'
A7/A9	50'	3	118'	171'	N/A	MITL	10'	85.5'
B (becomes apron)	50'	3	118'	171'	N/A	MITL	10'	85.5'
B	50'	3	118'	171'	N/A	MITL	10'	85.5'
B1-B4	50'	3	118'	171'	N/A	MITL	10'	85.5'
C (to be removed)	18'	1A	49'	N/A	79'	None	5'	39.5'
C	35'	2A	79'	124'	N/A	MITL	7.5'	62'
C1, C3, C7, C9	35'	2A	79'	124'	N/A	MITL	7.5'	62'
C10, C12-C14	35'	2A	79'	124'	N/A	MITL	7.5'	62'
D (to be removed)	30'	1A	49'	N/A	79'	None	5'	39.5'
D	35'	2A	79'	124'	N/A	MITL	7.5'	62'
D1-D4, D7-D8	35'	2A	79'	124'	N/A	MITL	7.5'	62'
E (to be removed)	20'	1A	49'	N/A	79'	None	5'	39.5'
F/B6	30'	1B	49'	N/A	79'	None	5'	39.5'
G/B7	50'	3	118'	N/A	158'	None	10'	79'
H/B8	45'	2A	79'	N/A	110'	None	7.5'	55'
J/B9	28'	1A	49'	N/A	79'	None	5'	39.5'
K/B10	30'	1A	49'	N/A	79'	None	5'	39.5'
L/B5	50'	3	118'	N/A	158'	None	10'	79'
M	30'	1A	49'	N/A	79'	None	5'	39.5'
N (to be removed)	23'	1A	49'	N/A	79'	None	5'	39.5'
O (to be removed)	20'	1A	49'	N/A	79'	None	5'	39.5'
P/E	35'	2A	79'	N/A	110'	None	7.5'	55'
Q/E	35'	2A	79'	N/A	110'	None	7.5'	55'

[1] Objects located inside the TSA & TOFA/Distance from object to taxiway/taxilane centerline. See Table 4-1 in AC 150/5300-13B, Change 1

RUNWAY DATA TABLE

RUNWAY DATA TABLE		RUNWAY 18L/36R				RUNWAY 18R/36L			
		EXISTING		ULTIMATE		EXISTING		ULTIMATE	
Runway Identification		18L	36R	18L	36R	18R	36L	18R	36L
Runway Design Code (RDC)		C-II-2400		C/D-III-2400		B-II-4000		Same	
Approach Reference Code (APRC)		D/IV/2400 & D/V/2400		Same		N/A		B/III/4000 & D/II/4000	
Departure Reference Code (DPRC)		D/IV & D/V		Same		N/A		B/III & D/II	
Runway Surface Material		Asphalt		Same		Asphalt		Same	
Runway Pavement Strength By Wheel Loading (in thousands of lbs.)		SW 70, DW 100		Same		SW 30		Same	
Runway Pavement Strength by PCN		N/A		Same		N/A		Same	
Runway Surface Treatment		None		Same		None		Same	
Runway Effective Gradient		0.18%		Same		0.31%		0.24%	
Runway Percent Wind Coverage	10.5 knots	96.35%		Same		96.35%		Same	
	13 knots	98.27%		Same		98.27%		Same	
	16 knots	99.46%		Same		99.46%		Same	
	20 knots	99.85%		Same		99.85%		Same	
Runway Dimensions (L x W)		7,002' x 150'		Same		5,003' x 75'		6,003' x 75'	
Runway End Coordinates	Latitude	33° 12' 42.183" N	33° 11' 32.922" N	Same	Same	33° 12' 31.109" N	33° 11' 41.623" N	33° 12' 41.002" N	Same
	Longitude	97° 11' 51.856" W	97° 11' 53.385" W	Same	Same	97° 12' 01.996" W	97° 12' 03.069" W	97° 12' 1.778" W	Same
Runway End Elevation		639.31'	627.01'	Same	Same	642.81'	627.37'	642.00'	Same
Runway Displaced Threshold Coordinates	Latitude	N/A	33° 11' 33.912" N	Same	Same	N/A	N/A	Same	Same
	Longitude	N/A	97° 11' 53.363" W	Same	Same	N/A	N/A	Same	Same
Runway Displaced Threshold Distance		N/A	100'	Same	Same	N/A	N/A	Same	Same
Runway Displaced Threshold Elevation		N/A	627.33'	Same	Same	N/A	N/A	Same	Same
Runway Safety Area Dimensions (width x length beyond end) - Design Std.**		500' x 1,000'	500' x 1,000'	500' x 600'	500' x 600'	150' x 300'	150' x 300'	Same	Same
Runway Safety Area Dimensions (width x length beyond end) - Actual		500' x 600'	500' x 500'	Same	Same	150' x 300'	150' x 300'	Same	Same
Runway Lighting Type		MIRL		Same		MIRL		Same	
Approach Runway Protection Zone Dimensions		1,000' x 1,750' x 2,500'	1,000' x 1,700' x 1,510'	Same	Same	1,000' x 1,700' x 1,510'	1,000' x 1,700' x 1,510'	Same	Same
Departure Runway Protection Zone Dimensions		500' x 1,700' x 1,010'	500' x 1,700' x 1,510'	Same	Same	500' x 1,000' x 700'	500' x 1,000' x 700'	Same	Same
Runway Marking Type		Precision		Same		Non-Precision		Same	
14 CFR Part 77 Approach Slope		50:1/40:1	34:1	Same	Same	34:1	34:1	Same	Same
14 CFR Part 77 Approach Type		Precision	Non-Precision	Same	Same	Non-Precision	Non-Precision	Same	Same
Approach Visibility Minimums		1/2 Mile	3/4 Mile	Same	Same	3/4 Mile	3/4 Mile	Same	Same
Type of Aeronautical Survey Required for Approach		Vertically Guided	Vertically Guided	Same	Same	Vertically Guided	Vertically Guided	Same	Same
Departure Surface (Yes or N/A)		Yes	Yes	Same	Same	Yes	Yes	Same	Same
Runway Object Free Area Dimensions (width x length beyond end) - Design Std.		800' x 1,000'	800' x 1,000'	Same	Same	500' x 300'	500' x 300'	Same	Same
Runway Object Free Area Dimensions (width x length beyond end) - Design Actual		800' x 600'	800' x 500'	Same	Same	500' x 300'	500' x 300'	Same	Same
Runway Obstacle Free Zone Dimension (width x length beyond end)		400' x 200'	400' x 200'	Same	Same	400' x 200'	400' x 200'	Same	Same
13B Approach Surfaces*		5 & 6	5 & 6	Same	Same	5 & 6	5 & 6	Same	Same
Runway Visual and Instrument Navaids		ILS (18L) GPS, PAPI-4, MALSR (18L), Threshold Lights (18L, 36R)		ILS (18L) GPS, PAPI-4, MALSR (18L), Threshold Lights (18L, 36R), REILs		GPS, PAPI-4, Threshold Lights (18R, 36L)		GPS, PAPI-4, Threshold Lights (18R, 36L) REILs	
Touchdown Zone Elevation (TDZE)		641.37'	638.92'	Same	Same	642.82'	641.42'	Same	Same
Vertical Datum		NAVD88							
Horizontal Datum		NAD83							

*Tables 3-2, 3-3, & 3-4 in AC 150/5300-13B, Change 1

**The Installation of an Engineered Materials Arresting System (EMAS) Extending 600' Beyond the Ultimate Thresholds of 18L-36R is Proposed in Order to Achieve the Equivalent Level of Safety as a Full RSA Built to the Dimensional Standards in Chapter 3, of AC 150/5300-13b, Change 1.

Airport Navaid Ownership

Navaid	Owner
ATCT	DTO
Localizer	FAA
Glideslope	FAA
MALSR	FAA
MIRL	DTO
MITL	DTO
PAPI-4	DTO
Rotating Beacon	DTO
Segmented Circle	DTO
Threshold Lights	DTO
Wind Indicators - Lighted	DTO
REIL	FAA

MODIFICATIONS TO STANDARDS APPROVAL TABLE

APPROVAL DATE	AIRSPACE CASE NUMBER	STANDARD MODIFIED	DESCRIPTION
NONE			

NON-STANDARD CONDITIONS TABLE

DESCRIPTION	STANDARD	EXISTING DISPOSITION	ULTIMATE DISPOSITION
RSA and ROFA Lengths beyond Runway Ends 18L and 36R not met.	RSA 500'x1000'; ROFA 800'x1000'	DECLARED DISTANCES APPLIED	INSTALL EMAS AND ADJUST DECLARED DISTANCES
Localizer within RSA beyond Runway 36R End	RSA 500'x1000'	NONE	RELOCATE LOCALIZER ANTENNA OUTSIDE OF RSA

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

DENTON ENTERPRISE AIRPORT

AIRPORT DATA SHEET

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 2 OF 22

Coffman Associates
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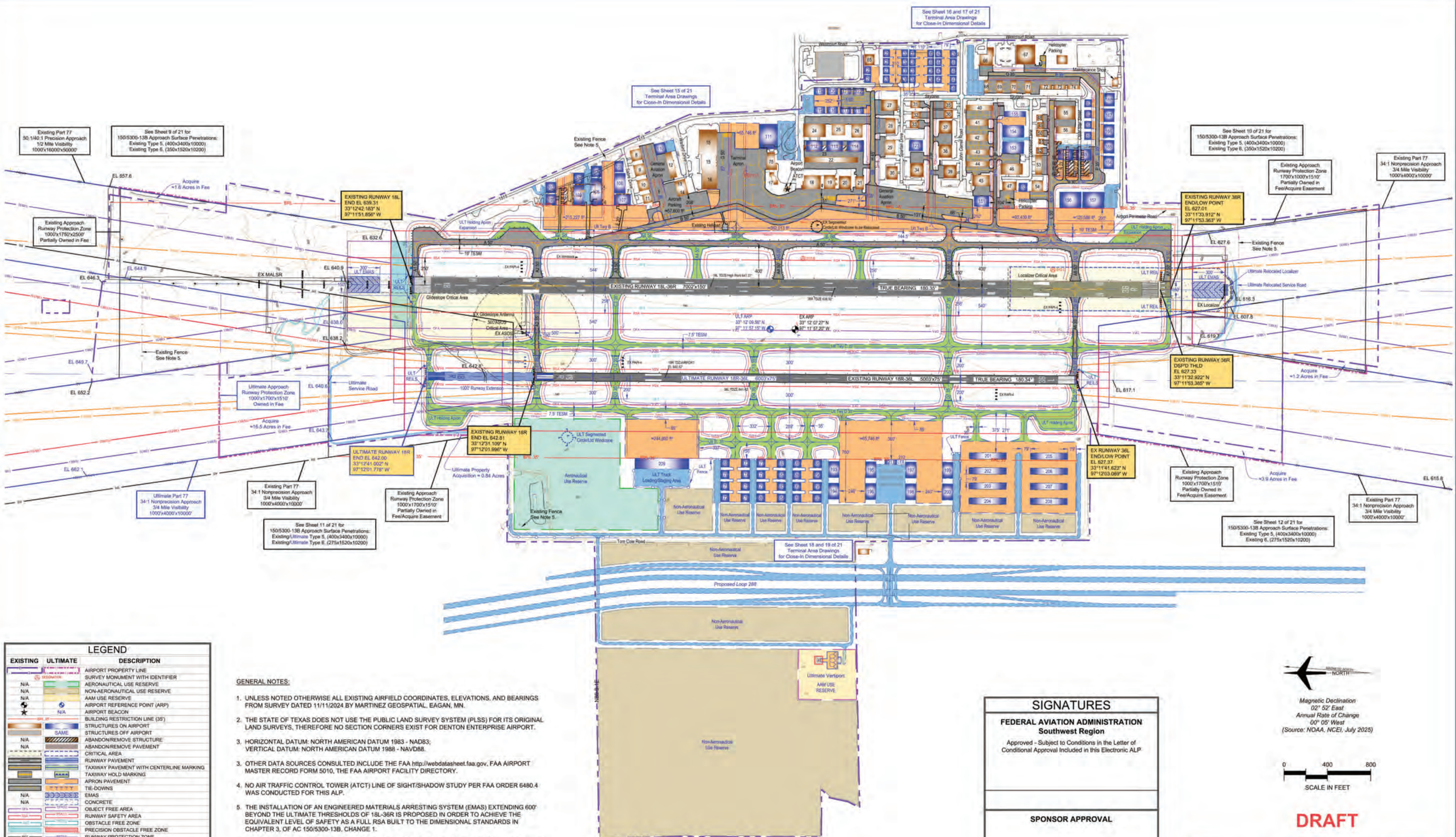

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
DESIGNATION		SURVEY MONUMENT WITH IDENTIFIER
N/A		AERONAUTICAL USE RESERVE
N/A		NON-AERONAUTICAL USE RESERVE
N/A		AAM USE RESERVE
		AIRPORT REFERENCE POINT (ARP)
	N/A	AIRPORT BEACON
BRL 35'		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
	SAME	STRUCTURES OFF AIRPORT
N/A		ABANDON/REMOVE STRUCTURE
N/A		ABANDON/REMOVE PAVEMENT
		CRITICAL AREA
		RUNWAY PAVEMENT
		TAXIWAY PAVEMENT WITH CENTERLINE MARKING
		TAXIWAY HOLD MARKING
		APRON PAVEMENT
		TIE-DOWNS
N/A		EMAS
N/A		CONCRETE
OFA	OFA (U)	OBJECT FREE AREA
RSA	RSA (U)	RUNWAY SAFETY AREA
OFZ		OBSTACLE FREE ZONE
		PRECISION OBSTACLE FREE ZONE
RPZ	RPZ (U)	RUNWAY PROTECTION ZONE
	TOFA (U)	TAXIWAY OBJECT FREE AREA
	TSA (U)	TAXIWAY SAFETY AREA
		PAPI-4
N/A		RUNWAY END IDENTIFIER LIGHTS (REIL)
	SAME	THRESHOLD LIGHTS
	N/A	LOCALIZER
		WINDSOCK
AS	AS (U)	PT77 APPROACH SURFACE
		13B 5 APPROACH
		13B 6 APPROACH
		ROADS AND PARKING PAVEMENT
		FENCE LINE
	N/A	CULVERT
		VEGETATION
		TOPOGRAPHIC CONTOURS

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING AIRFIELD COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. THE STATE OF TEXAS DOES NOT USE THE PUBLIC LAND SURVEY SYSTEM (PLSS) FOR ITS ORIGINAL LAND SURVEYS, THEREFORE NO SECTION CORNERS EXIST FOR DENTON ENTERPRISE AIRPORT.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA http://webdatasheet.faa.gov, FAA AIRPORT MASTER RECORD FORM 5010, THE FAA AIRPORT FACILITY DIRECTORY.
4. NO AIR TRAFFIC CONTROL TOWER (ATCT) LINE OF SIGHT/SHADOW STUDY PER FAA ORDER 6480.4 WAS CONDUCTED FOR THIS ALP.
5. THE INSTALLATION OF AN ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) EXTENDING 600' BEYOND THE ULTIMATE THRESHOLDS OF 18L-36R IS PROPOSED IN ORDER TO ACHIEVE THE EQUIVALENT LEVEL OF SAFETY AS A FULL RSA BUILT TO THE DIMENSIONAL STANDARDS IN CHAPTER 3, OF AC 150/5300-13B, CHANGE 1.
6. THE PERIMETER OF THE AIRPORT IS ENCLOSED WITH 6-FOOT SECURITY FENCING WITH 3-STRAND BARBED WIRE. THE NORTH AND SOUTH ENDS OF THE AIRFIELD ARE SUPPLEMENTED WITH 10-FOOT HIGH WILDLIFE FENCING.
7. FOR CLARITY, ONLY THE ULTIMATE TAXIWAY OBJECT FREE AREA (TOFA) AND TAXIWAY OBJECT FREE AREA (TSA) ARE SHOWN.
8. SEE DEPARTURE SURFACE DRAWINGS, SHEETS 13 AND 14 FOR AC 150/5300-13B, CHANGE 1, SURFACE 7 PENETRATIONS AND SIGNIFICANT OBJECTS.
9. SEE TERMINAL AREA DRAWINGS, SHEETS 15 THROUGH 19 FOR BUILDING LISTS AND LANDSIDE DIMENSIONAL DETAILS.
10. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR CLOSE-IN OBJECT PENETRATIONS AND SIGNIFICANT OBJECTS.

SIGNATURES

FEDERAL AVIATION ADMINISTRATION
Southwest Region

Approved - Subject to Conditions in the Letter of Conditional Approval Included in this Electronic ALP

SPONSOR APPROVAL

NORTH

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 400 800
SCALE IN FEET

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

AIRPORT LAYOUT DRAWING

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 3 OF 22

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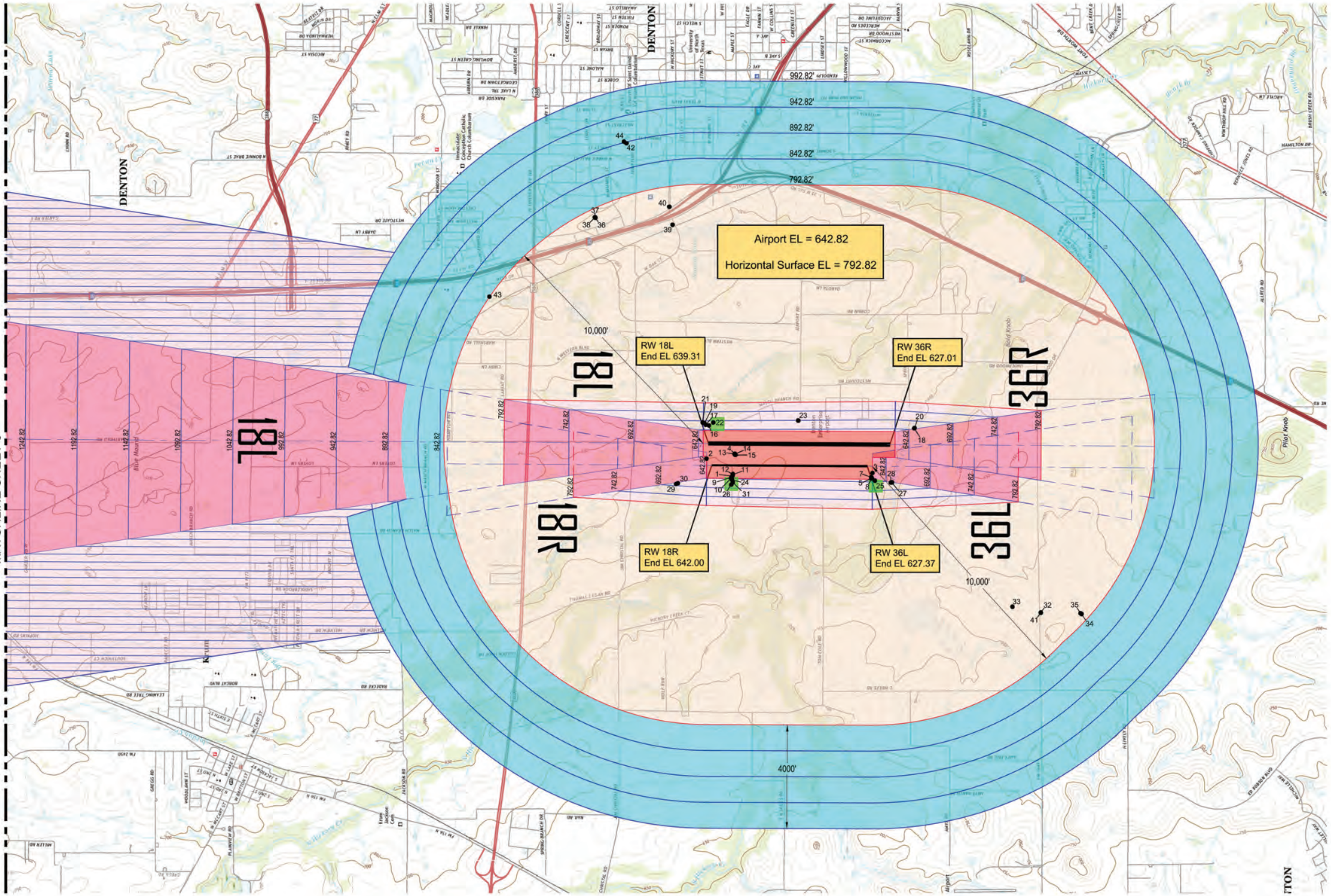
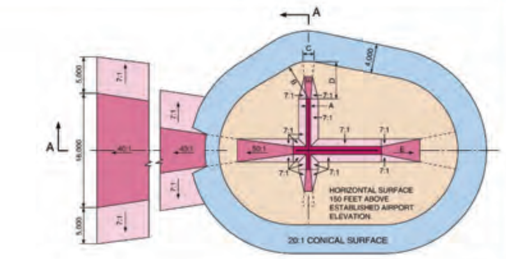
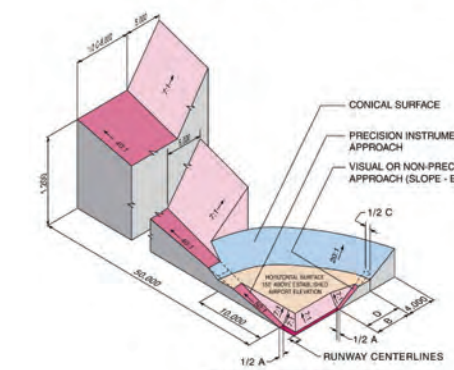




DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	B D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B C	B D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

SOURCE: FAA Order JO 7400.2J, Figure 6-3-3

LEGEND

- OBSTRUCTION IDENTIFIER
- OBSTRUCTION AREA GROUPING

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 2000 4000
SCALE IN FEET

DRAFT

GENERAL NOTES:

1. THE PART 77 AIRSPACE SURFACES SHOWN ARE BASED ON ULTIMATE CONDITIONS PER FAA SOP NO. 2, A.5. AIRPORT AIRSPACE DRAWING, ITEM B.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM PLANIMETRIC DATA SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
4. SUPPLEMENTAL DATA INCLUDES THE FAA SOUTHWEST REGION OBSTRUCTION EVALUATION DATED 1990 AND 2021.
5. OBSTRUCTIONS IDENTIFIED WITHIN GRIDS REPRESENT THE TALLEST NATURAL AND/OR MANMADE FEATURE.
6. SEE SHEET 5 FOR OBSTRUCTION TABLE.
7. SEE THE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR CLOSE-IN APPROACH DETAILS.
8. THE FOLLOWING USGS 7.5 QUAD MAPS OF THE STATE OF TEXAS WERE APPLIED AS BACKGROUND: DENTON WEST, ERA SE, PONDER, AND SANGER.
9. THE AIRPORT HEIGHT HAZARD DISTRICT (AHHD) FOR THE DENTON ENTERPRISE AIRPORT IS ESTABLISHED IN SECTION 4.5.8 - HHD - AIRPORT HEIGHT HAZARD DISTRICT OF THE DENTON, TEXAS DEVELOPMENT CODE, WHICH APPLIES TO THE AREA LYING BENEATH THE APPROACH SURFACES, TRANSITIONAL SURFACES, HORIZONTAL SURFACE AND CONICAL SURFACE OF DTO.
10. ALL ELEVATIONS IN FEET MSL.

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

AIRPORT AIRSPACE DRAWING I

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 4 OF 22

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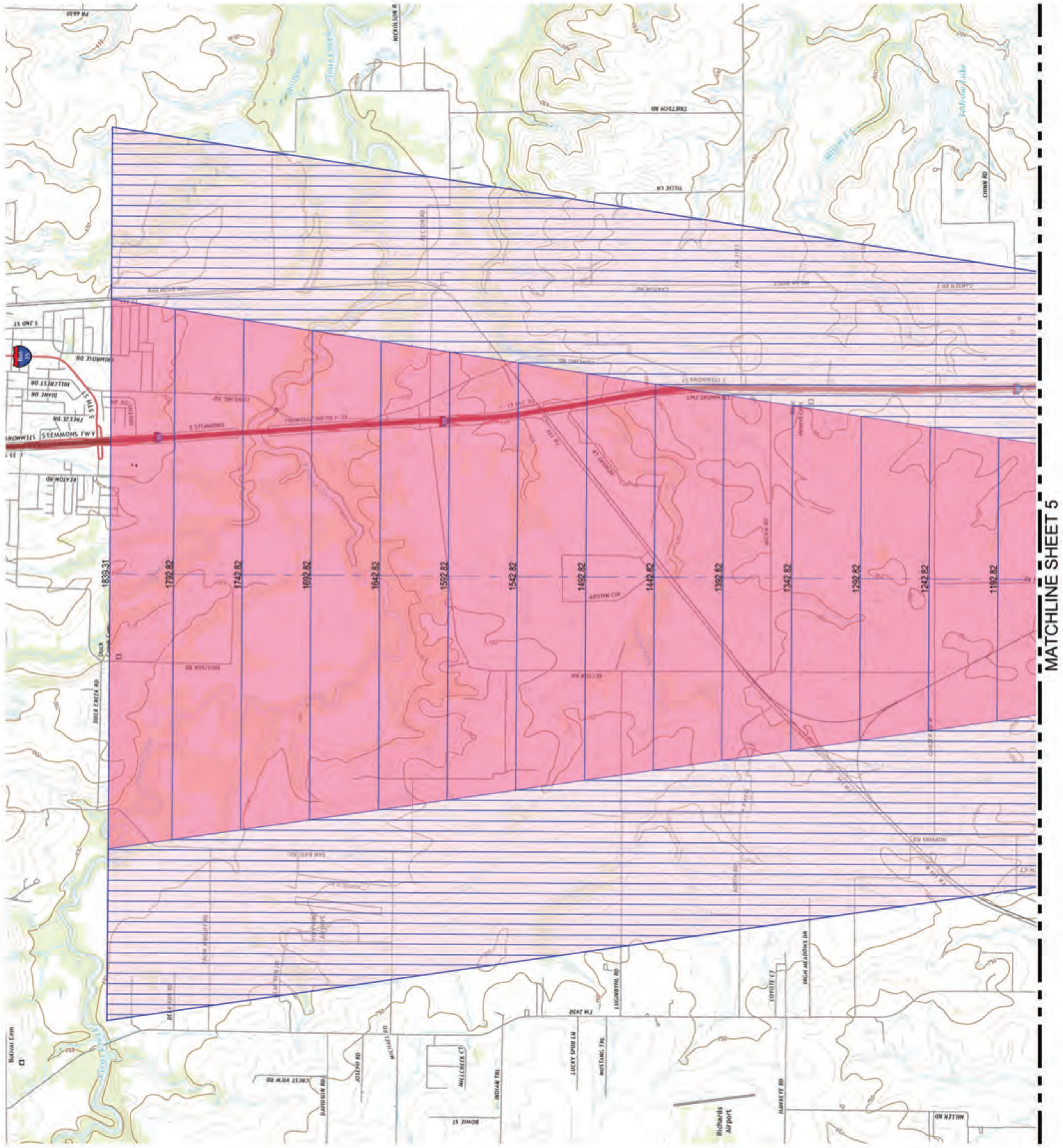

ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Airport Service Rd.	1	USGS DEM	N/A	N/A	641.72	10.00	651.72	18R/36L Primary	8.91	To Remain
2	Airport Service Rd.	2	USGS DEM	N/A	N/A	633.65	10.00	643.65	18R/36L Primary	1.65	To Remain
3	Airport Service Rd.	3	USGS DEM	N/A	N/A	618.56	10.00	628.56	18R/36L Primary	1.19	To Remain
4	Glideslope Equipment	1229	Martinez Survey (11/11/2024)	H20/V3	N/A	635.70	10.59	646.29	18R/36L Primary	3.48	To Remain
5	Tree	15142	Martinez Survey (11/11/2024)	H20/V3	N/A	619.91	12.12	632.03	18R/36L Primary	4.65	Remove Tree
6	Tree	15518	Martinez Survey (11/11/2024)	H20/V3	N/A	621.40	12.24	633.64	18R/36L Primary	6.27	Remove Tree
7	Tree	15999	Martinez Survey (11/11/2024)	H20/V3	N/A	622.06	12.39	634.45	18R/36L Primary	7.08	Remove Tree
8	Tree	16249	Martinez Survey (11/11/2024)	H20/V3	N/A	619.50	12.47	631.97	18R/36L Primary	4.60	Remove Tree
9	Tree	42173	Martinez Survey (11/11/2024)	H20/V3	N/A	641.09	19.74	660.83	18R/36L Primary	18.03	Remove Tree
10	Tree	48260	Martinez Survey (11/11/2024)	H20/V3	N/A	641.39	21.75	663.14	18R/36L Primary	20.34	Remove Tree
11	Utility Pole	91937	Martinez Survey (11/11/2024)	H20/V3	N/A	641.18	38.94	680.12	18R/36L Primary	37.31	Lower/Relocate
12	Utility Pole	91942	Martinez Survey (11/11/2024)	H20/V3	N/A	641.55	38.97	680.52	18R/36L Primary	37.71	Lower/Relocate
13	Glideslope Equipment	1211	Martinez Survey (11/11/2024)	H20/V3	N/A	635.92	45.41	681.33	18L/36R Primary	41.38	To Remain
14	Glideslope Equipment	1229	Martinez Survey (11/11/2024)	H20/V3	N/A	635.70	10.59	646.29	18L/36R Primary	6.32	To Remain
15	Utility Equipment	91314	Martinez Survey (11/11/2024)	H20/V3	N/A	635.87	31.33	667.20	18L/36R Primary	27.22	To Remain
16	Tree	87721	Martinez Survey (11/11/2024)	H20/V3	N/A	621.39	46.54	667.93	Transitional	1.06	Remove Tree
17	Tree	89766	Martinez Survey (11/11/2024)	H20/V3	N/A	621.38	54.06	675.44	Transitional	4.34	Remove Tree
18	Tree	90619	Martinez Survey (11/11/2024)	H20/V3	N/A	595.57	64.03	659.60	Transitional	7.62	Remove Tree
19	Tree	90656	Martinez Survey (11/11/2024)	H20/V3	N/A	622.58	64.93	687.51	Transitional	7.40	Remove Tree
20	Tree	90695	Martinez Survey (11/11/2024)	H20/V3	N/A	595.54	66.32	661.86	Transitional	7.93	Remove Tree
21	Tree	90740	Martinez Survey (11/11/2024)	H20/V3	N/A	621.90	67.97	689.87	Transitional	6.35	Remove Tree
22	Tree	90810	Martinez Survey (11/11/2024)	H20/V3	N/A	618.98	74.54	693.52	Transitional	10.84	Remove Tree
23	Control Tower	90912	Martinez Survey (11/11/2024)	H20/V3	N/A	636.52	60.82	697.34	Transitional	5.91	To Remain
24	Tom Cole Road	3685	Martinez Survey (11/11/2024)	H20/V3	N/A	642.66	15.00	657.66	Transitional	9.57	To Remain
25	Tree	67586	Martinez Survey (11/11/2024)	H20/V3	N/A	613.29	29.54	642.83	Transitional	6.31	Remove Tree
26	Tree	74362	Martinez Survey (11/11/2024)	H20/V3	N/A	643.62	33.21	676.83	Transitional	2.41	Remove Tree
27	Tree	89884	Martinez Survey (11/11/2024)	H20/V3	N/A	596.68	54.85	651.53	Transitional	0.94	Remove Tree
28	Tree	90074	Martinez Survey (11/11/2024)	H20/V3	N/A	596.76	56.44	653.20	Transitional	1.50	Remove Tree
29	Tree	90513	Martinez Survey (11/11/2024)	H20/V3	N/A	628.86	62.05	690.91	Transitional	6.62	Remove Tree
30	Tree	90808	Martinez Survey (11/11/2024)	H20/V3	N/A	631.58	74.29	705.87	Transitional	26.06	Remove Tree
31	Utility Pole	91911	Martinez Survey (11/11/2024)	H20/V3	N/A	643.90	38.59	682.49	Transitional	21.25	To Remain
32	Pole	40	adip.faa.gov	1-B	N/A	798.00	0.00	798.00	Horizontal	5.18	To Remain
33	Pole	43	adip.faa.gov	1-B	N/A	793.00	0.00	793.00	Horizontal	0.18	To Remain
34	Pole	63	adip.faa.gov	1-B	N/A	675.00	131.00	806.00	Horizontal	13.18	To Remain
35	Transmission Line	64	adip.faa.gov	1-A	N/A	670.00	137.00	807.00	Horizontal	14.18	To Remain
36	Building	1127	adip.faa.gov	1-B	N/A	704.00	135.00	839.00	Horizontal	46.18	To Remain
37	Building	1129	adip.faa.gov	1-B	N/A	704.00	135.00	839.00	Horizontal	46.18	To Remain
38	Building	102892	Martinez Survey (11/11/2024)	H20/V3	N/A	753.61	84.69	838.30	Horizontal	45.48	To Remain
39	Transmission Line	102893	Martinez Survey (11/11/2024)	H20/V3	N/A	671.57	133.80	805.37	Horizontal	12.55	To Remain
40	Transmission Line	102894	Martinez Survey (11/11/2024)	H20/V3	N/A	678.07	131.64	809.71	Horizontal	16.89	To Remain
41	Transmission Line	102895	Martinez Survey (11/11/2024)	H20/V3	N/A	664.96	132.97	797.93	Horizontal	5.11	To Remain
42	Tower	1093	adip.faa.gov	1-A	N/A	757.00	186.00	943.00	Conical	52.29	To Remain
43	Tower	1102	adip.faa.gov	1-A	N/A	721.00	150.00	871.00	Conical	78.14	To Remain
44	Antenna	102891	Martinez Survey (11/11/2024)	H20/V3	N/A	755.62	159.09	914.71	Conical	19.76	To Remain

Obstruction Table

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 2000 4000
SCALE IN FEET

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

AIRPORT AIRSPACE DRAWING II

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 5 OF 22

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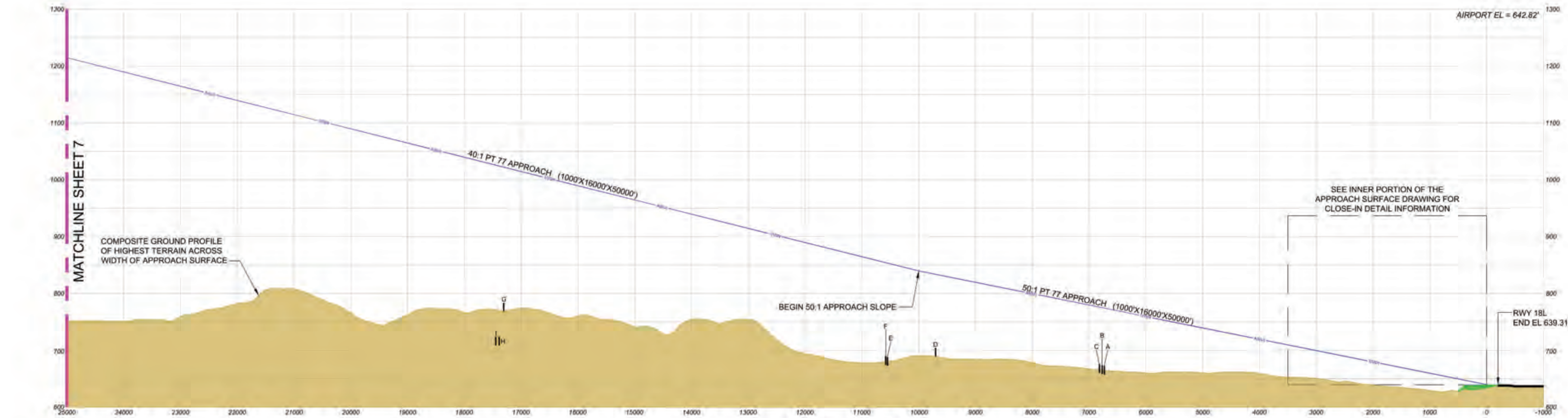


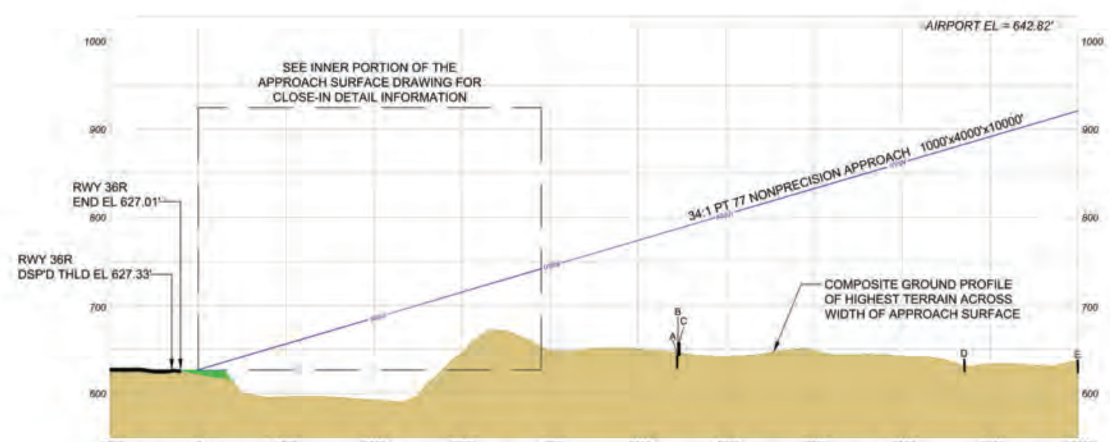
0 1000 2000
HORIZONTAL SCALE IN FEET

0 100 200
VERTICAL SCALE IN FEET

RUNWAY 18L APPROACH PROFILE

Runway 18L Obstructions							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
No Obstructions							

Runway 18L Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	W University Dr	USGS DEM	657.46	15.00	672.46	Ex./Ult 18L Part 77 Approach	101.49
B	Us Hwy 380	USGS DEM	658.23	15.00	673.23	Ex./Ult 18L Part 77 Approach	101.50
C	W University Dr	USGS DEM	660.08	15.00	675.08	Ex./Ult 18L Part 77 Approach	100.59
D	Hampton Rd	USGS DEM	688.86	15.00	703.86	Ex./Ult 18L Part 77 Approach	129.55
E	Masch Branch Rd	USGS DEM	672.73	15.00	687.73	Ex./Ult 18L Part 77 Approach	165.37
F	N Masch Branch Rd	USGS DEM	674.26	15.00	689.26	Ex./Ult 18L Part 77 Approach	164.59
G	Fm 1173	USGS DEM	768.34	15.00	783.34	Ex./Ult 18L Part 77 Approach	238.62
H	Fm 1173	USGS DEM	708.72	15.00	723.72	Ex./Ult 18L Part 77 Approach	300.27
I	Fm 1173	USGS DEM	708.70	15.00	723.70	Ex./Ult 18L Part 77 Approach	301.76
J	Ganzer Rd W	USGS DEM	717.45	15.00	732.45	Ex./Ult 18L Part 77 Approach	505.29
K	Ganzar Rd W	USGS DEM	740.75	15.00	755.75	Ex./Ult 18L Part 77 Approach	482.48
L	Ganzar Rd W	USGS DEM	686.43	15.00	701.43	Ex./Ult 18L Part 77 Approach	537.18
M	Rector Rd	USGS DEM	693.37	15.00	708.37	Ex./Ult 18L Part 77 Approach	883.64
N	Rector Rd	USGS DEM	648.93	15.00	663.93	Ex./Ult 18L Part 77 Approach	942.00
O	Sam Bass Rd	USGS DEM	691.58	15.00	706.58	Ex./Ult 18L Part 77 Approach	910.46
P	I 35	USGS DEM	676.68	17.00	693.68	Ex./Ult 18L Part 77 Approach	1,145.62



0 500 1000
HORIZONTAL SCALE IN FEET

0 50 100 100
VERTICAL SCALE IN FEET

RUNWAY 36R APPROACH PROFILE

Runway 36R Obstructions							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
No Obstructions							

Runway 36R Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Fm 2449	USGS DEM	628.47	15.00	643.47	Ex./Ult 36R Part 77 Approach	143.71
B	Fm 2449	USGS DEM	642.98	15.00	657.98	Ex./Ult 36R Part 77 Approach	129.53
C	Fm 2449	USGS DEM	643.58	15.00	658.58	Ex./Ult 36R Part 77 Approach	129.35
D	John Paine Rd	USGS DEM	624.44	15.00	639.44	Ex./Ult 36R Part 77 Approach	243.71
E	John Paine Rd	USGS DEM	623.38	15.00	638.38	Ex./Ult 36R Part 77 Approach	282.75

DRAFT

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DENTON ENTERPRISE AIRPORT

AIRPORT AIRSPACE
APPROACH PROFILE RUNWAY 18L-36R

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 6 OF 22

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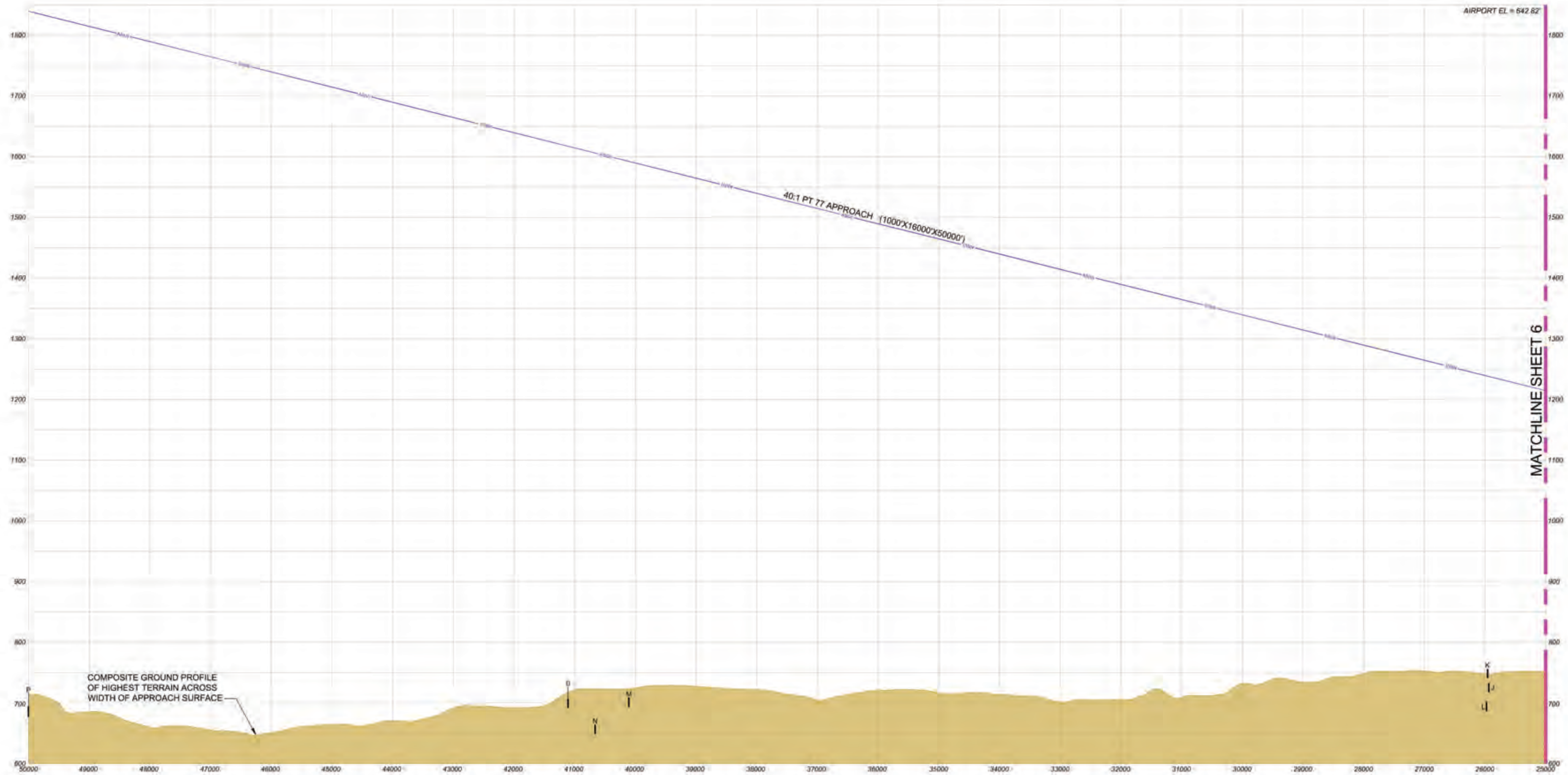
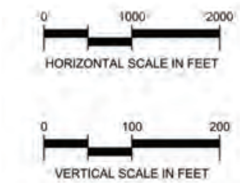
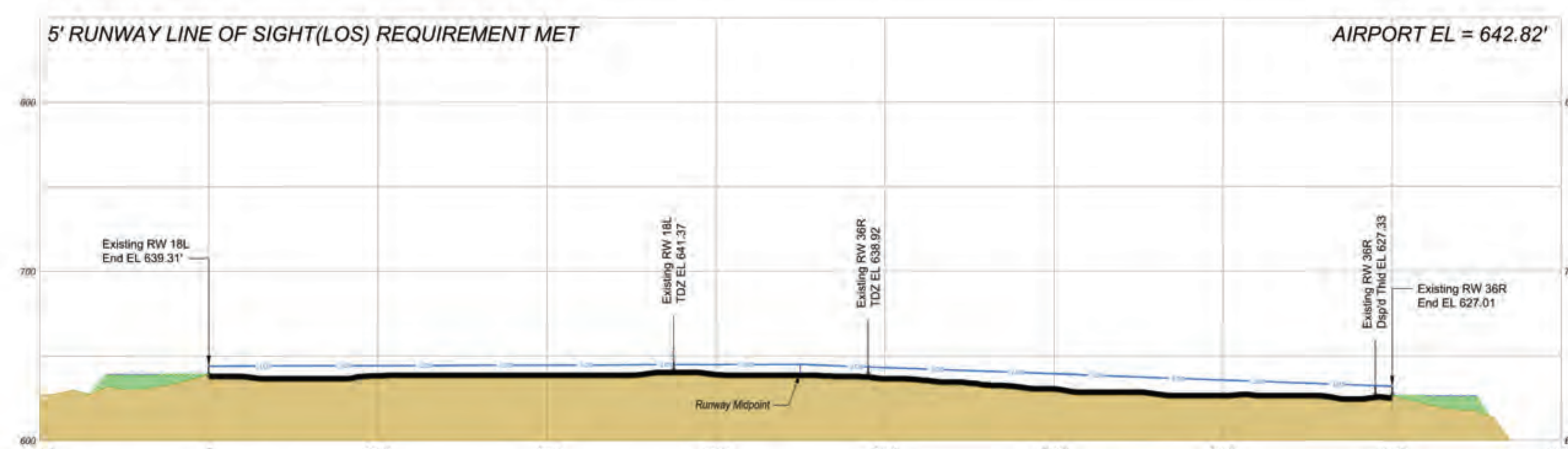
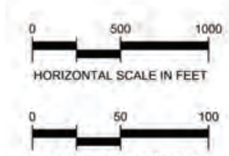




RUNWAY 18L APPROACH PROFILE





RUNWAY 18L-36R PROFILE

DRAFT

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DENTON ENTERPRISE AIRPORT

AIRPORT AIRSPACE
APPROACH PROFILE RUNWAY 18L

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 7 OF 22

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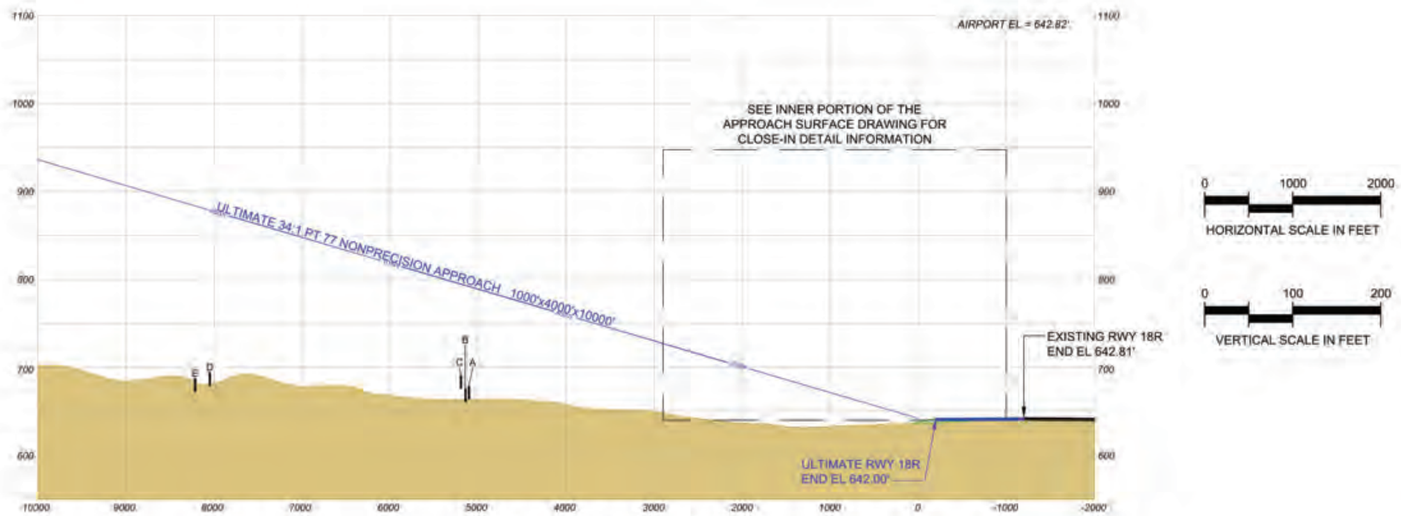
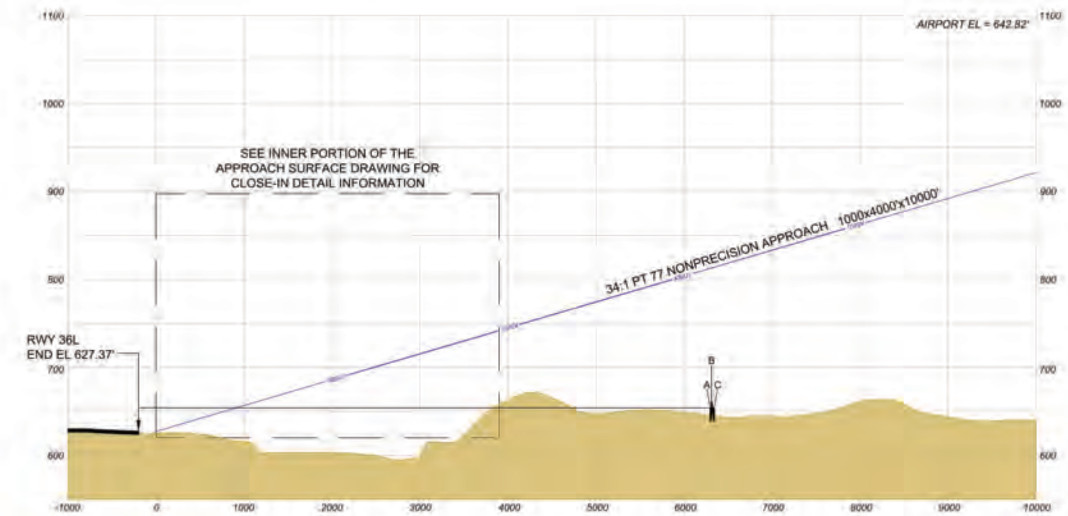


RUNWAY 18R APPROACH PROFILE



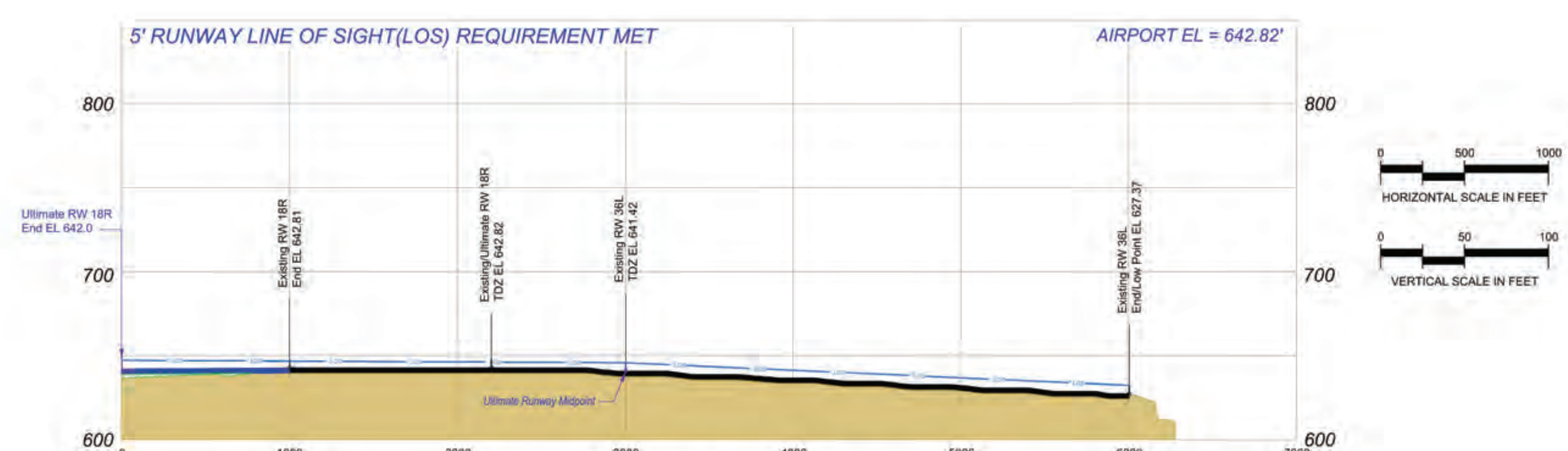
RUNWAY 36L APPROACH PROFILE

Runway 18R Obstructions							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
No Obstructions							

Runway 36L Obstructions							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
No Obstructions							

Runway 18R Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	W University Dr	USGS DEM	663.95	15.00	678.95	Ult. 18R Part 77 Approach	165.75
B	W University Dr	USGS DEM	660.95	15.00	675.95	Ult. 18R Part 77 Approach	169.92
C	W University Dr	USGS DEM	676.17	15.00	691.17	Ult. 18R Part 77 Approach	156.13
D	Hampton Rd	USGS DEM	679.60	15.00	694.60	Ult. 18R Part 77 Approach	236.61
E	N Masch Branch Rd	USGS DEM	672.49	15.00	687.49	Ult. 18R Part 77 Approach	248.63

Runway 36L Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Fm 2449	USGS DEM	639.33	15.00	654.33	Ex./Ult. 36L Part 77 Approach	158.83
B	Fm 2449	USGS DEM	645.94	15.00	660.94	Ex./Ult. 36L Part 77 Approach	152.55
C	Fm 2449	USGS DEM	639.18	15.00	654.18	Ex./Ult. 36L Part 77 Approach	160.03



RUNWAY 18R-36L PROFILE

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

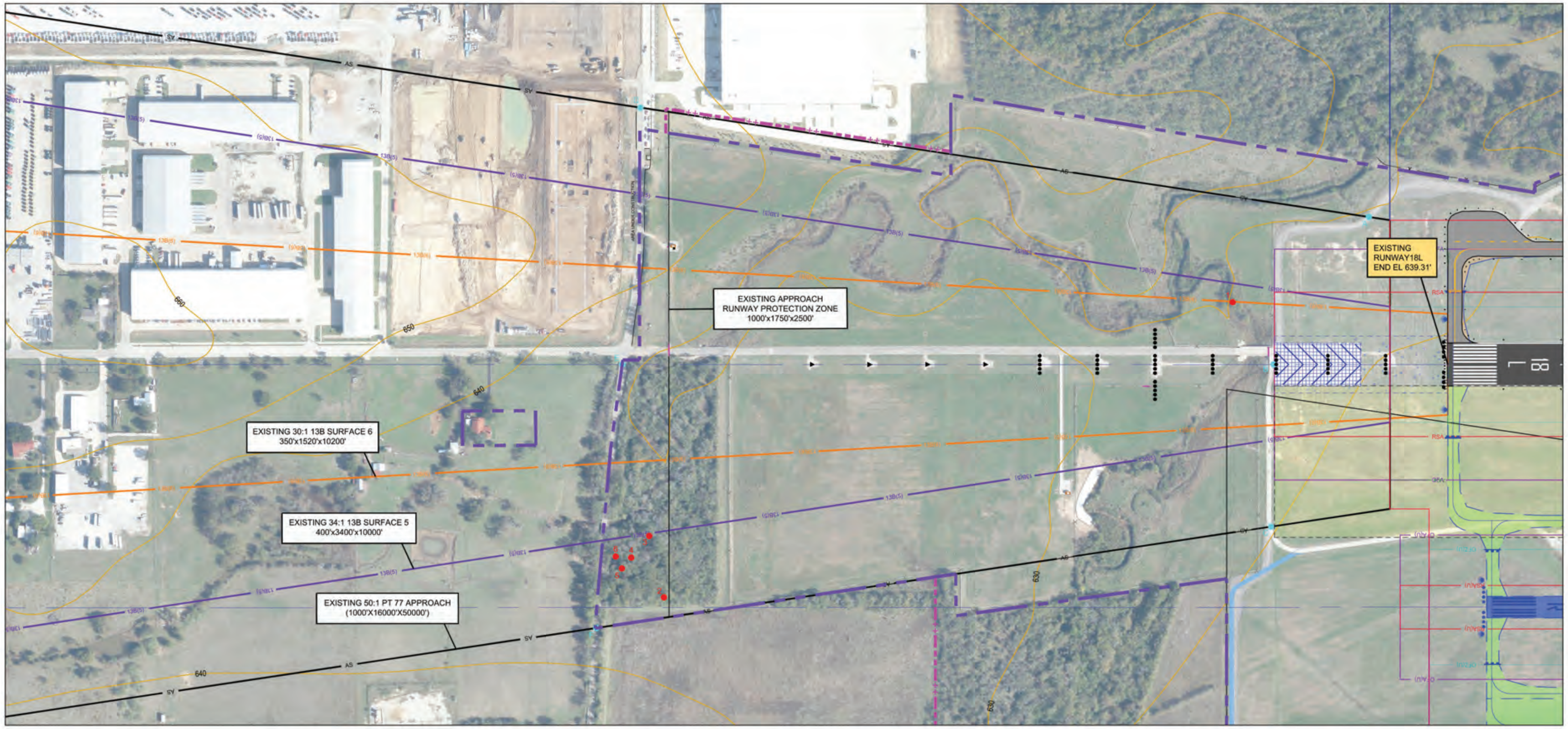
AIRPORT AIRSPACE
APPROACH PROFILE RUNWAY 18R-36L

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 8 OF 22

Coffman Associates Airport Consultants www.coffmanassociates.com

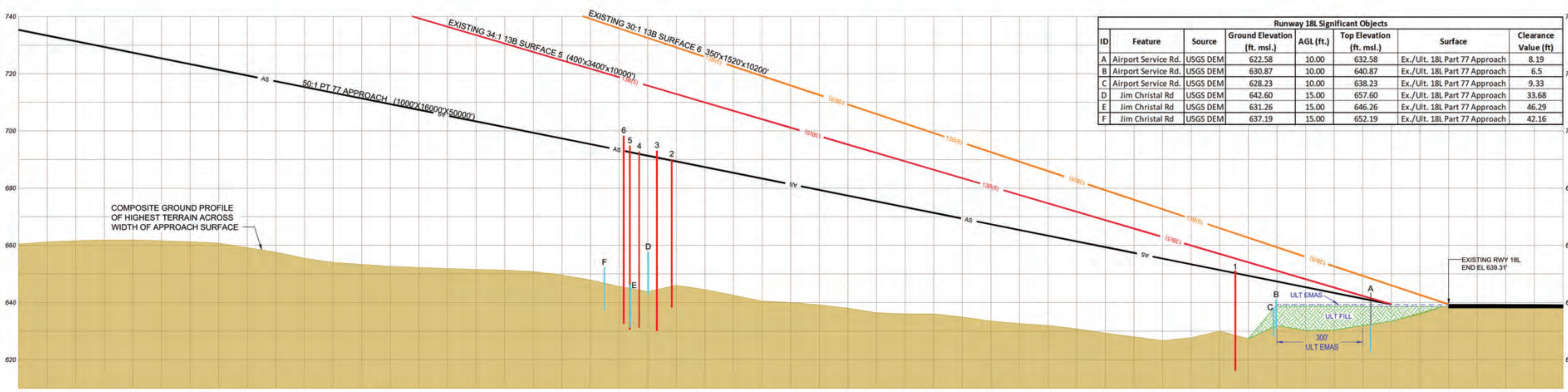


GENERAL NOTES:

1. TRIGGERING EVENT: AIRPORT MASTER PLAN UPDATE.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM PLANIMETRIC DATA SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL EAGAN, MN
3. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.
4. TERRAIN TO BE CLEARED AND GRADED TO MEET FAA STANDARDS.

LEGEND

OBSTRUCTION IDENTIFIER
SIGNIFICANT OBJECT
EXISTING PROPERTY LINE
ULTIMATE PROPERTY LINE



Runway 18L Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	622.58	10.00	632.58	Ex./Ult. 18L Part 77 Approach	8.19
B	Airport Service Rd.	USGS DEM	630.87	10.00	640.87	Ex./Ult. 18L Part 77 Approach	6.5
C	Airport Service Rd.	USGS DEM	628.23	10.00	638.23	Ex./Ult. 18L Part 77 Approach	9.33
D	Jim Christal Rd	USGS DEM	642.60	15.00	657.60	Ex./Ult. 18L Part 77 Approach	33.68
E	Jim Christal Rd	USGS DEM	631.26	15.00	646.26	Ex./Ult. 18L Part 77 Approach	46.29
F	Jim Christal Rd	USGS DEM	637.19	15.00	652.19	Ex./Ult. 18L Part 77 Approach	42.16

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

HORIZONTAL SCALE IN FEET (0, 200, 400)

VERTICAL SCALE IN FEET (0, 20, 40)

DRAFT

Runway 18L Inner-Approach Obstructions											
ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Tree	77406	Martinez Survey (11/11/2024)	H20/V3	N/A	616.10	35.10	651.20	Ex./Ult/ 18L Part 77 Approach	0.96	Remove Tree
2	Tree	89357	Martinez Survey (11/11/2024)	H20/V3	N/A	638.22	51.83	690.05	Ex./Ult/ 18L Part 77 Approach	0.40	Remove Tree
3	Tree	90577	Martinez Survey (11/11/2024)	H20/V3	N/A	629.92	63.15	693.07	Ex./Ult/ 18L Part 77 Approach	2.39	Remove Tree
4	Tree	90486	Martinez Survey (11/11/2024)	H20/V3	N/A	631.21	61.58	692.79	Ex./Ult/ 18L Part 77 Approach	0.87	Remove Tree
5	Tree	90630	Martinez Survey (11/11/2024)	H20/V3	N/A	630.45	64.28	694.73	Ex./Ult/ 18L Part 77 Approach	2.16	Remove Tree
6	Tree	90676	Martinez Survey (11/11/2024)	H20/V3	N/A	632.50	65.77	698.27	Ex./Ult/ 18L Part 77 Approach	5.27	Remove Tree

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 18L

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 9 OF 22

Coffman Associates
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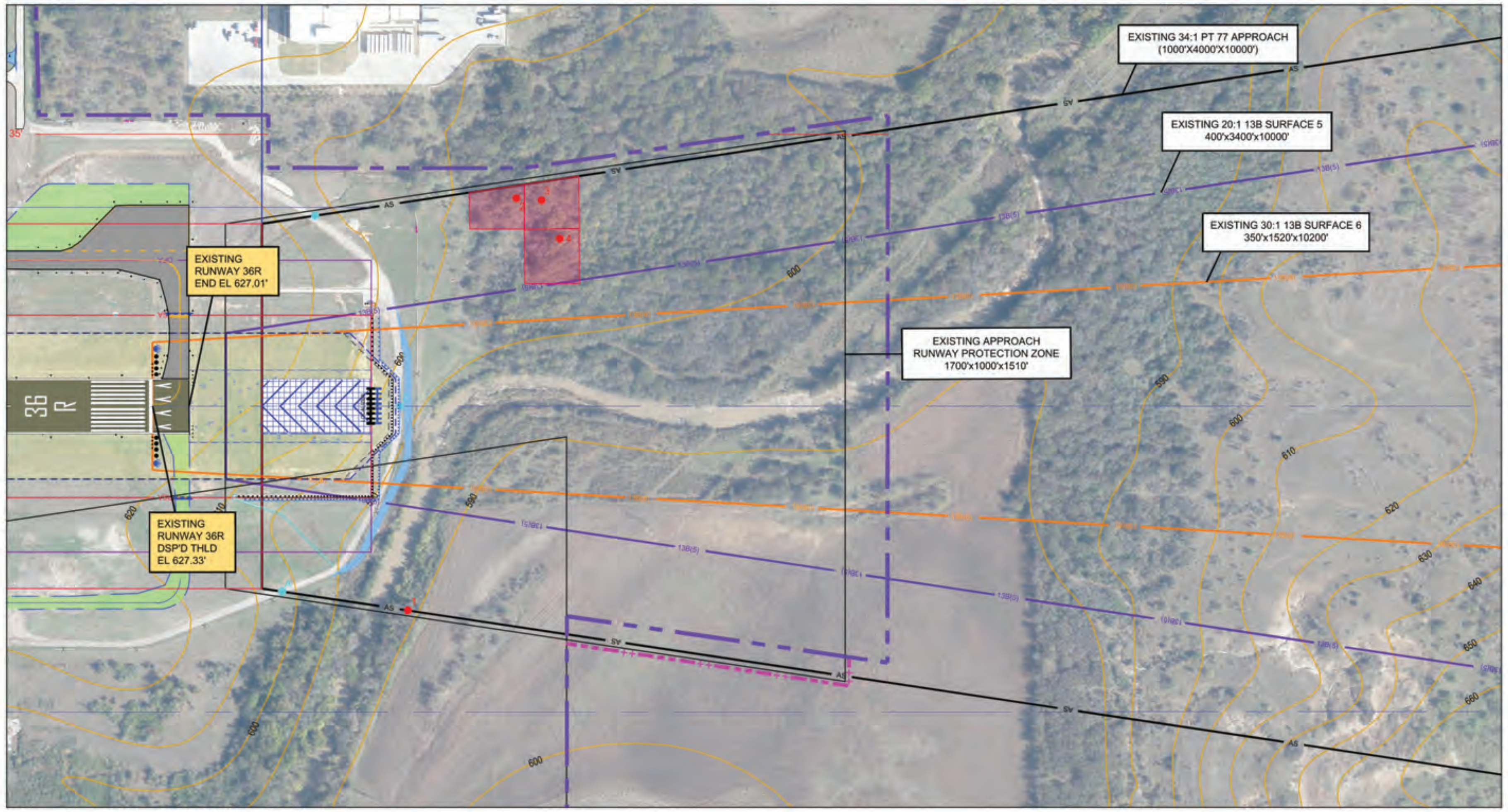


GENERAL NOTES:

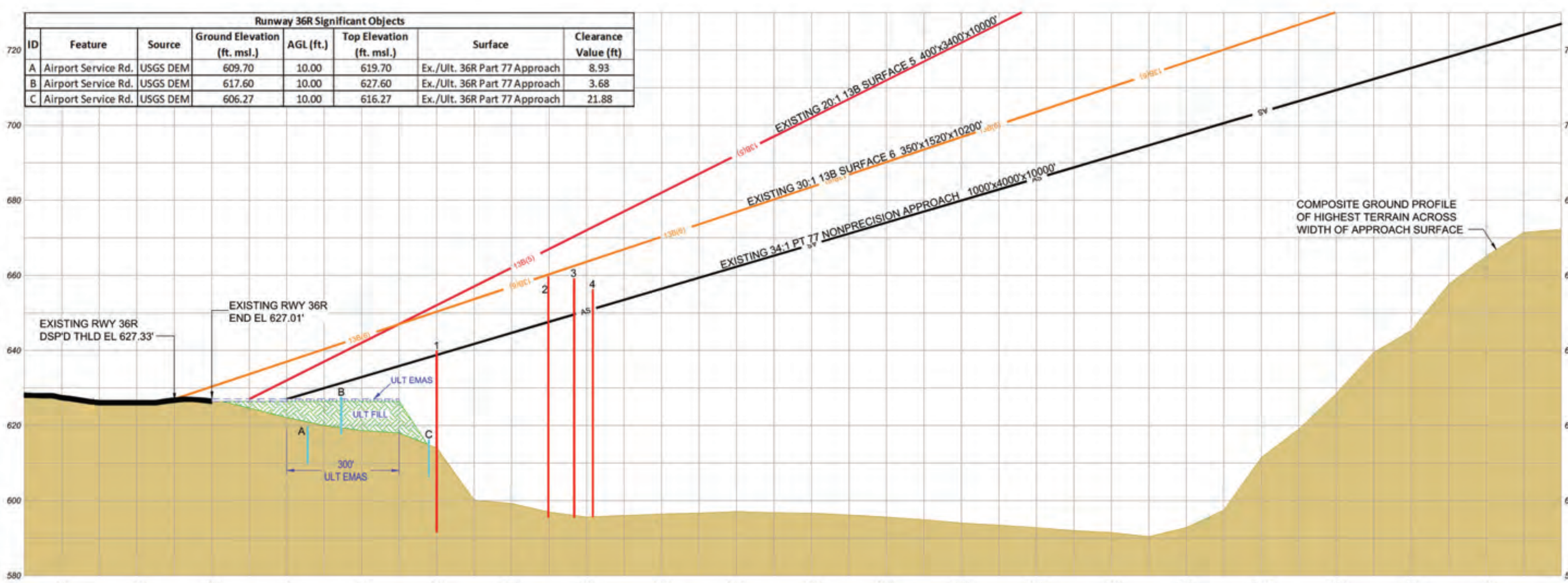
1. TRIGGERING EVENT: AIRPORT MASTER PLAN UPDATE.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM PLANIMETRIC DATA SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL EAGAN, MN
4. OBSTRUCTIONS WITHIN GRIDS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE.
3. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.
4. TERRAIN TO BE CLEARED AND GRADED TO MEET FAA STANDARDS.

LEGEND

- OBSTRUCTION GROUPING
- OBSTRUCTION IDENTIFIER
- SIGNIFICANT OBJECT
- EXISTING PROPERTY LINE
- ULTIMATE PROPERTY LINE

Runway 36R Significant Objects

ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	609.70	10.00	619.70	Ex./Ult. 36R Part 77 Approach	8.93
B	Airport Service Rd.	USGS DEM	617.60	10.00	627.60	Ex./Ult. 36R Part 77 Approach	3.68
C	Airport Service Rd.	USGS DEM	606.27	10.00	616.27	Ex./Ult. 36R Part 77 Approach	21.88



Runway 36R Inner-Approach Obstructions

ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Tree	88418	Martinez Survey (11/11/2024)	H20/V3	N/A	591.52	48.37	639.89	Ex./Ult/ 36R Part 77 Approach	1.12	Remove Tree
2	Tree	90627	Martinez Survey (11/11/2024)	H20/V3	N/A	595.45	64.21	659.66	Ex./Ult/ 36R Part 77 Approach	12.14	Remove Tree
3	Tree	90609	Martinez Survey (11/11/2024)	H20/V3	N/A	595.36	63.78	659.14	Ex./Ult/ 36R Part 77 Approach	9.59	Remove Tree
4	Tree	90436	Martinez Survey (11/11/2024)	H20/V3	N/A	595.52	60.74	656.26	Ex./Ult/ 36R Part 77 Approach	5.24	Remove Tree

Magnetic Declination 02° 52' East
Annual Rate of Change 00° 05' West
(Source: NOAA, NCEI, July 2025)

HORIZONTAL SCALE IN FEET (0, 200, 400)

VERTICAL SCALE IN FEET (0, 20, 40)

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

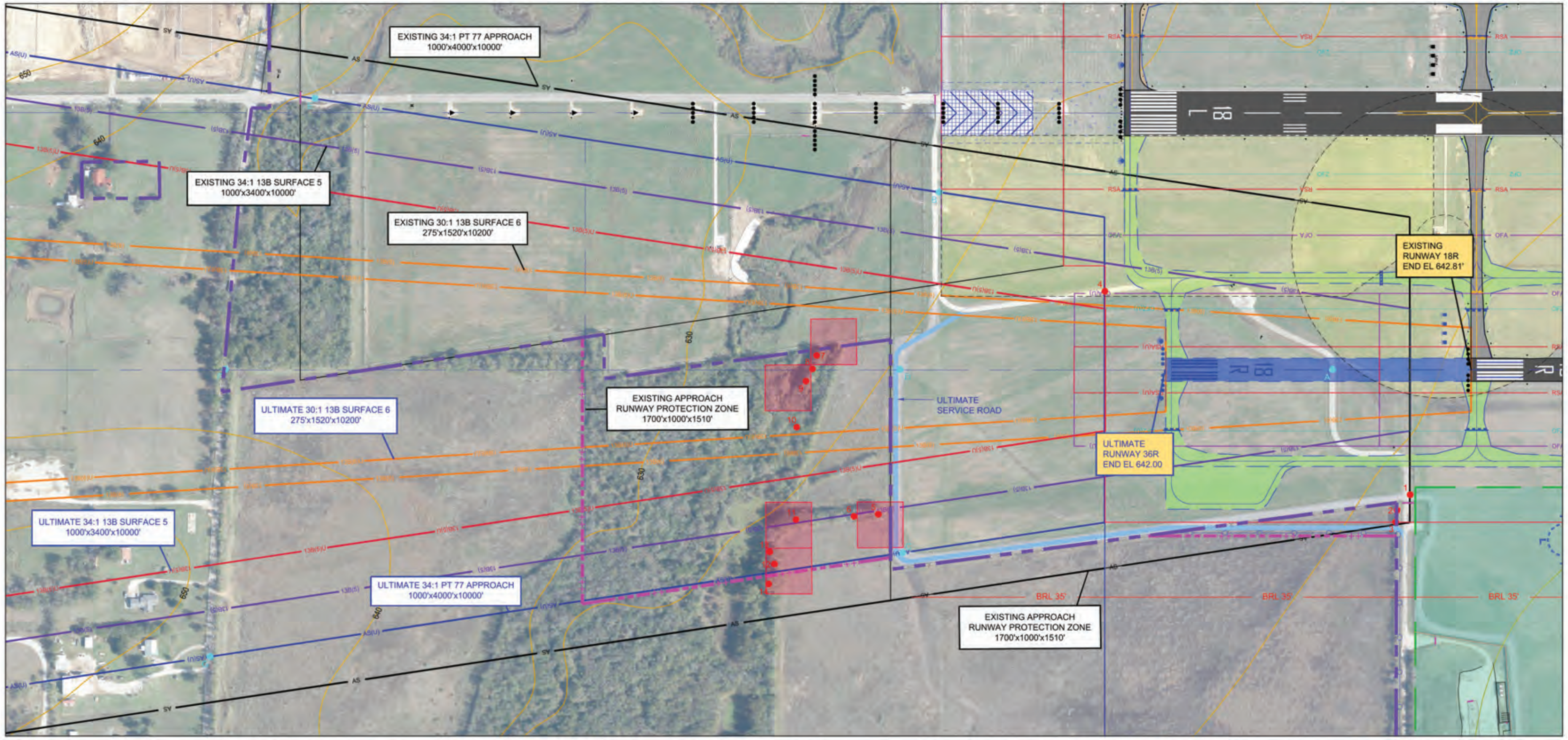
INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 18L

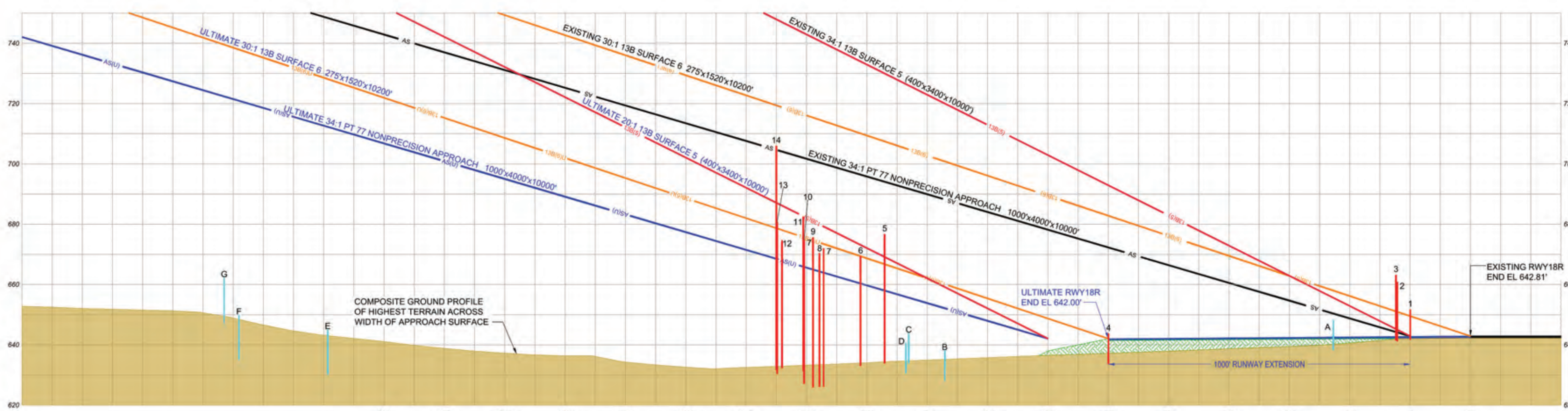
DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 — SHEET 10 OF 22

Coffman Associates — Airport Consultants — www.coffmanassociates.com





GENERAL NOTES:

1. TRIGGERING EVENT: AIRPORT MASTER PLAN UPDATE.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM PLANIMETRIC DATA SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL EAGAN, MN
4. OBSTRUCTIONS WITHIN GRIDS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE.
5. SEE SHEET 13 FOR 18R OBSTRUCTION AND SIGNIFICANT OBJECT TABLES.
6. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.
7. TERRAIN TO BE CLEARED AND GRADED TO MEET FAA STANDARDS.

LEGEND

- OBSTRUCTION GROUPING
- OBSTRUCTION IDENTIFIER
- SIGNIFICANT OBJECT
- EXISTING PROPERTY LINE
- ULTIMATE PROPERTY LINE

MAGNETIC NORTH
NORTH

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

DRAFT

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DENTON ENTERPRISE AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 18R

DENTON, TEXAS

PLANNED BY: E. Pfeifer
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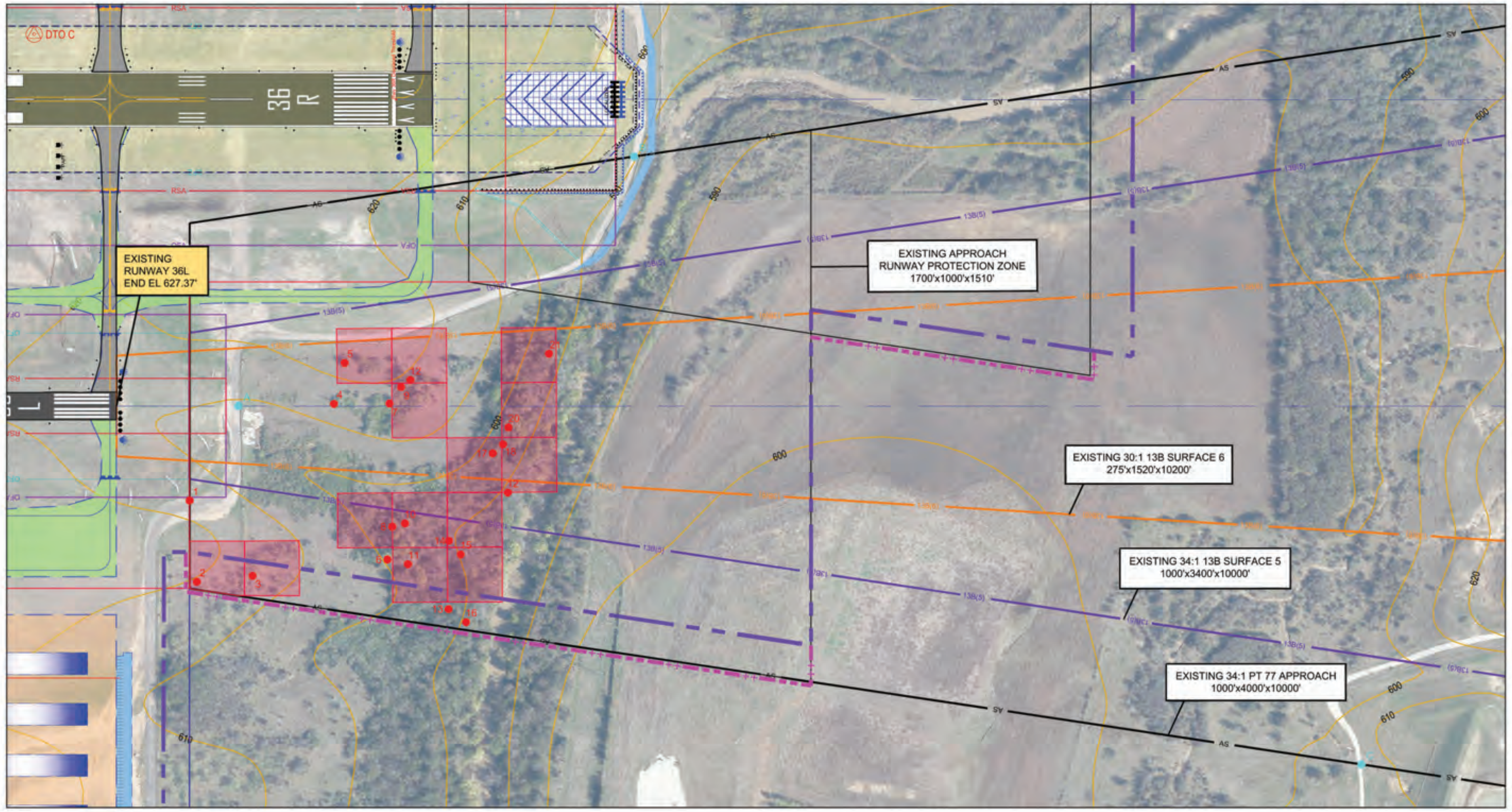
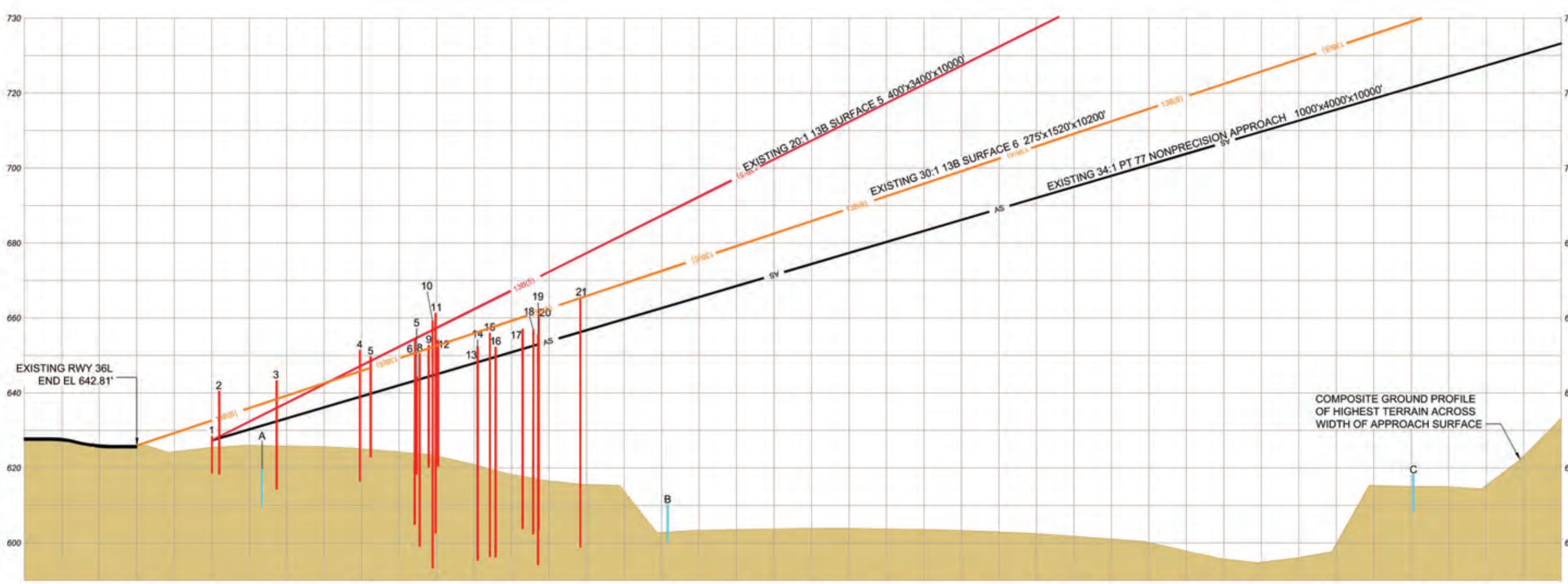
APPROVED BY: E. Pfeifer

October 2025

Coffman Associates
Airport Consultants
www.coffmanassociates.com





GENERAL NOTES:

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5. SEE SHEET 13 FOR 36L OBSTRUCTION AND SIGNIFICANT OBJECT TABLES.
6. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.

LEGEND

- OBSTRUCTION GROUPING
- OBSTRUCTION IDENTIFIER
- SIGNIFICANT OBJECT
- EXISTING PROPERTY LINE
- ULTIMATE PROPERTY LINE

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

HORIZONTAL SCALE IN FEET (0, 200, 400)

VERTICAL SCALE IN FEET (0, 20, 40)

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DENTON ENTERPRISE AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 36L

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

Coffman Associates
Airport Consultants
www.coffmanassociates.com

GENERAL NOTES:

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4. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.

Runway 18R Inner-Approach Obstructions

ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Airport Service Rd.	1	USGS DEM	N/A	N/A	641.72	10.00	651.72	Ex. 18R Part 77 Approach	8.91	To Remain
2	Tree	42173	Martinez Survey (11/11/2024)	H20/V3	N/A	641.09	19.74	660.83	Ex. 18R Part 77 Approach	16.77	Remove Tree
3	Tree	48260	Martinez Survey (11/11/2024)	H20/V3	N/A	641.39	21.75	663.14	Ex. 18R Part 77 Approach	18.94	Remove Tree
4	Airport Service Rd.	2	USGS DEM	N/A	N/A	633.65	10.00	643.65	Ult. 18R Part 77 Approach	1.65	To Remain
5	Tree	85673	Martinez Survey (11/11/2024)	H20/V3	N/A	633.82	42.78	676.60	Ult. 18R Part 77 Approach	12.78	Remove Tree
6	Tree	79185	Martinez Survey (11/11/2024)	H20/V3	N/A	632.92	36.34	669.26	Ult. 18R Part 77 Approach	3.10	Remove Tree
7	Tree	87437	Martinez Survey (11/11/2024)	H20/V3	N/A	625.97	45.96	671.93	Ult. 18R Part 77 Approach	2.17	Remove Tree
8	Tree	86629	Martinez Survey (11/11/2024)	H20/V3	N/A	625.98	44.33	670.31	Ult. 18R Part 77 Approach	0.15	Remove Tree
9	Tree	88881	Martinez Survey (11/11/2024)	H20/V3	N/A	625.75	49.82	675.57	Ult. 18R Part 77 Approach	4.77	Remove Tree
10	Tree	88214	Martinez Survey (11/11/2024)	H20/V3	N/A	627.00	47.78	674.78	Ult. 18R Part 77 Approach	3.11	Remove Tree
11	Tree	89221	Martinez Survey (11/11/2024)	H20/V3	N/A	631.27	51.16	682.43	Ult. 18R Part 77 Approach	10.68	Remove Tree
12	Tree	85367	Martinez Survey (11/11/2024)	H20/V3	N/A	632.16	42.36	674.52	Ult. 18R Part 77 Approach	0.70	Remove Tree
13	Tree	89065	Martinez Survey (11/11/2024)	H20/V3	N/A	630.25	50.51	680.76	Ult. 18R Part 77 Approach	6.46	Remove Tree
14	Tree	90808	Martinez Survey (11/11/2024)	H20/V3	N/A	631.58	74.29	705.87	Ex. 18R Part 77 Approach	1.27	Remove Tree

Runway 18R Significant Objects

ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	638.14	10.00	648.14	Ex. 18R Part 77 Approach	2.16
B	Airport Service Rd.	USGS DEM	628.00	10.00	638.00	Ult. 18R Part 77 Approach	19.95
C	Airport Service Rd.	USGS DEM	633.74	10.00	643.74	Ult. 18R Part 77 Approach	17.73
D	Airport Service Rd.	USGS DEM	630.59	10.00	640.59	Ult. 18R Part 77 Approach	21.15
E	N Masch Branch Rd	USGS DEM	629.90	15.00	644.90	Ult. 18R Part 77 Approach	73.19
F	Jim Christal Rd	USGS DEM	634.71	15.00	649.71	Ult. 18R Part 77 Approach	77.03
G	Jim Christal Rd	USGS DEM	647.05	15.00	662.05	Ult. 18R Part 77 Approach	66.14

Runway 36L Inner-Approach Obstructions

ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Airport Service Rd.	3	USGS DEM	N/A	N/A	618.56	10.00	628.56	Ex./Ult. 36L Part 77 Approach	1.19	To Remain
2	Tree	49718	Martinez Survey (11/11/2024)	H20/V3	N/A	618.27	22.25	640.52	Ex./Ult. 36L Part 77 Approach	12.56	Remove Tree
3	Tree	66584	Martinez Survey (11/11/2024)	H20/V3	N/A	614.33	29.02	643.35	Ex./Ult. 36L Part 77 Approach	10.90	Remove Tree
4	Tree	77201	Martinez Survey (11/11/2024)	H20/V3	N/A	616.46	34.99	651.45	Ex./Ult. 36L 13B #5	4.34	Remove Tree
									Ex./Ult. 36L Part 77 Approach	12.47	
5	Tree	61783	Martinez Survey (11/11/2024)	H20/V3	N/A	622.89	26.84	649.73	Ex./Ult. 36L 13B #5	1.17	Remove Tree
									Ex./Ult. 36L Part 77 Approach	9.89	
6	Tree	88857	Martinez Survey (11/11/2024)	H20/V3	N/A	604.86	49.75	654.61	Ex./Ult. 36L Part 77 Approach	11.32	Remove Tree
7	Tree	60273	Martinez Survey (11/11/2024)	H20/V3	N/A	618.28	26.19	644.47	Ex./Ult. 36L Part 77 Approach	1.03	Remove Tree
8	Tree	89299	Martinez Survey (11/11/2024)	H20/V3	N/A	598.95	51.61	650.56	Ex./Ult. 36L Part 77 Approach	6.89	Remove Tree
9	Tree	73214	Martinez Survey (11/11/2024)	H20/V3	N/A	620.23	32.56	652.79	Ex./Ult. 36L Part 77 Approach	8.41	Remove Tree
10	Tree	90688	Martinez Survey (11/11/2024)	H20/V3	N/A	593.21	66.07	659.28	Ex./Ult. 36L Part 77 Approach	14.60	Remove Tree
11	Tree	90299	Martinez Survey (11/11/2024)	H20/V3	N/A	602.59	58.77	661.36	Ex./Ult. 36L Part 77 Approach	16.43	Remove Tree
12	Tree	75253	Martinez Survey (11/11/2024)	H20/V3	N/A	620.45	33.78	654.23	Ex./Ult. 36L Part 77 Approach	9.12	Remove Tree
13	Tree	89895	Martinez Survey (11/11/2024)	H20/V3	N/A	597.46	54.99	652.45	Ex./Ult. 36L Part 77 Approach	4.25	Remove Tree
14	Tree	90127	Martinez Survey (11/11/2024)	H20/V3	N/A	595.25	56.85	652.10	Ex./Ult. 36L Part 77 Approach	3.87	Remove Tree
15	Tree	90364	Martinez Survey (11/11/2024)	H20/V3	N/A	596.31	59.77	656.08	Ex./Ult. 36L Part 77 Approach	6.90	Remove Tree
16	Tree	90048	Martinez Survey (11/11/2024)	H20/V3	N/A	596.13	56.21	652.34	Ex./Ult. 36L Part 77 Approach	2.71	Remove Tree
17	Tree	89664	Martinez Survey (11/11/2024)	H20/V3	N/A	603.73	53.37	657.10	Ex./Ult. 36L Part 77 Approach	5.35	Remove Tree
18	Tree	89861	Martinez Survey (11/11/2024)	H20/V3	N/A	602.27	54.67	656.94	Ex./Ult. 36L Part 77 Approach	4.36	Remove Tree
19	Tree	90492	Martinez Survey (11/11/2024)	H20/V3	N/A	594.10	61.68	655.78	Ex./Ult. 36L Part 77 Approach	2.82	Remove Tree
20	Tree	90317	Martinez Survey (11/11/2024)	H20/V3	N/A	603.44	59.16	662.60	Ex./Ult. 36L Part 77 Approach	9.58	Remove Tree
21	Tree	90707	Martinez Survey (11/11/2024)	H20/V3	N/A	598.81	66.67	665.48	Ex./Ult. 36L Part 77 Approach	9.20	Remove Tree

Runway 36L Significant Objects

ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	6.00	10.00	617.14	Ex./Ult. 36L Part 77 Approach	14.16
B	Airport Service Rd.	USGS DEM	2.00	10.00	607.80	Ex./Ult. 36L Part 77 Approach	55.33
C	Driveway	USGS DEM	5.00	10.00	615.75	Ex./Ult. 36L Part 77 Approach	105.88

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT
INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 18R-36L
OBSTRUCTION & SIGNIFICANT OBJECT TABLES
DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

Coffman Associates
Airport Consultants
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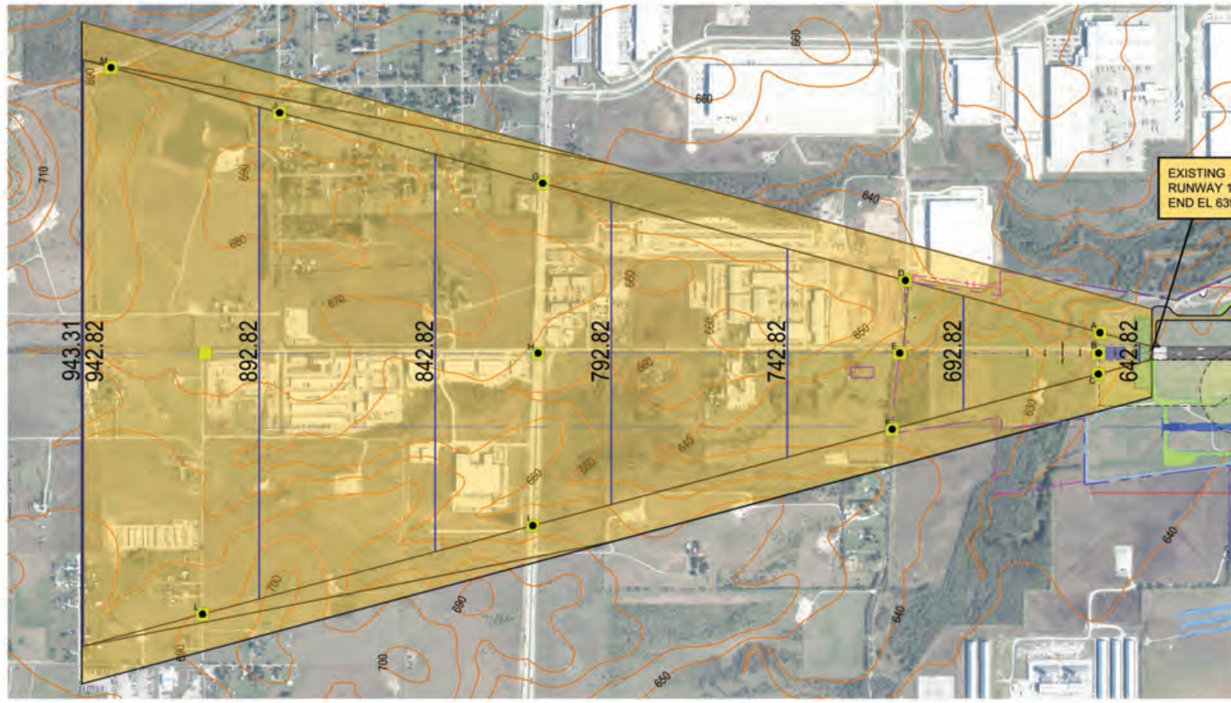
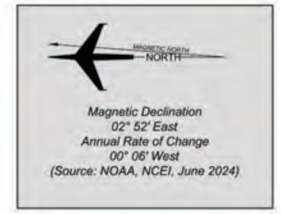
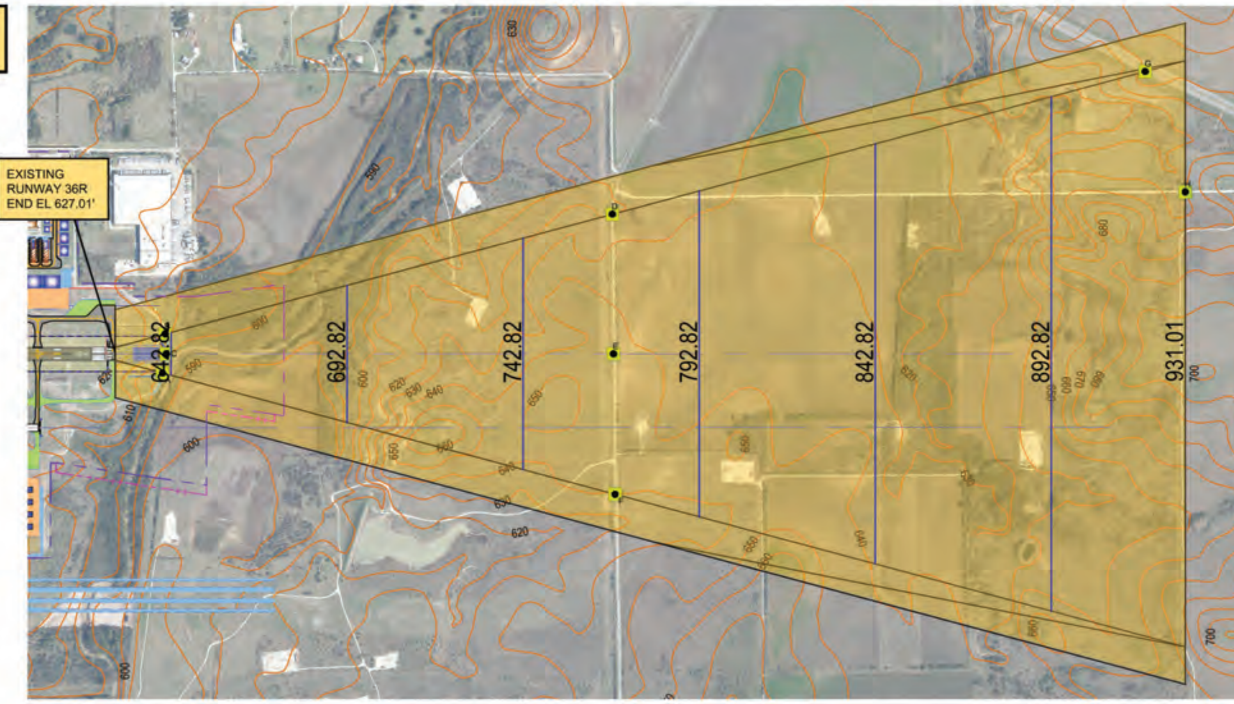
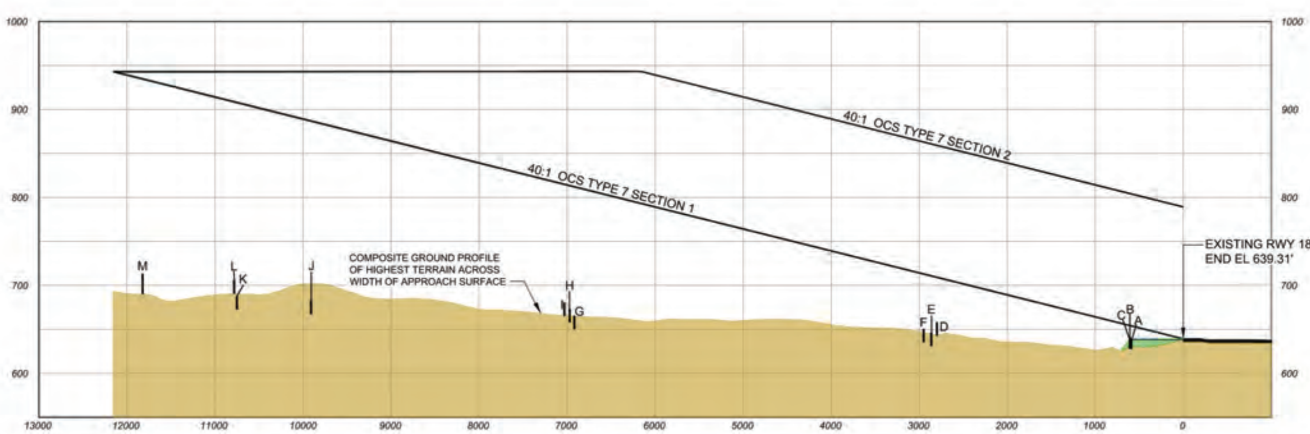
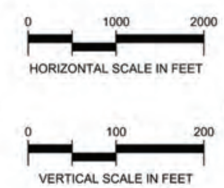
Airport EL = 642.82'

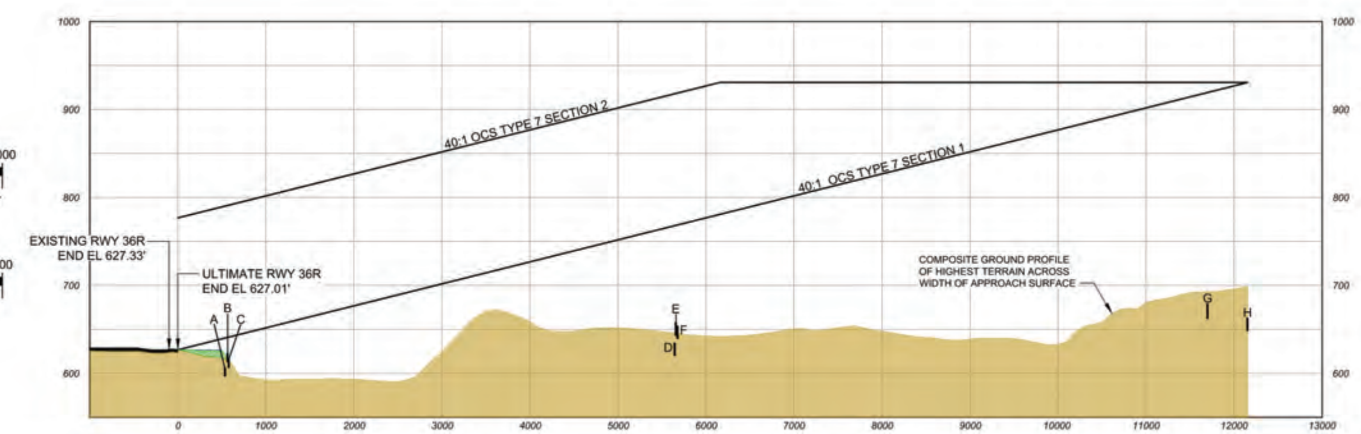












Runway 18L End Departure Obstructions

ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
No Obstructions											

Runway 18L End Significant Objects

ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	627.85	10.00	637.85	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	16.16
B	Airport Service Rd.	USGS DEM	630.87	10.00	640.87	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	13.52
C	Airport Service Rd.	USGS DEM	628.00	10.00	638.00	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	16.48
D	Jim Christal Rd	USGS DEM	642.96	15.00	657.96	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	51.31
E	Jim Christal Rd	USGS DEM	631.26	15.00	646.26	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	64.61
F	Jim Christal Rd	USGS DEM	635.62	15.00	650.62	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	62.40
G	W University Dr	USGS DEM	650.69	15.00	665.69	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	146.60
H	Us Hwy 380	USGS DEM	658.23	15.00	673.23	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	140.35
I	W University Dr	USGS DEM	665.57	15.00	680.57	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	134.53
J	Hampton Rd	USGS DEM	667.73	15.00	682.73	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	204.24
K	Masch Branch Rd	USGS DEM	672.73	15.00	687.73	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	220.37
L	N Masch Branch Rd	USGS DEM	690.90	15.00	705.90	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	202.97
M	Railroad	USGS DEM	690.42	23.00	713.42	Ex./Ult. Rwy 18L End Departure Surface (Sec. 1)	221.43

LEGEND

- EXISTING 13B SURFACE 7
- ULTIMATE 13B SURFACE 7
- EXISTING PROPERTY BOUNDARY
- ULTIMATE PROPERTY BOUNDARY
- SIGNIFICANT OBJECT
- ULTIMATE GRADE

Runway 36R End Departure Obstructions

ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
No Obstructions											

Runway 36R End Significant Objects

ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	596.64	10.00	606.64	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	33.76
B	Airport Service Rd.	USGS DEM	613.03	10.00	623.03	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	18.12
C	Airport Service Rd.	USGS DEM	606.27	10.00	616.27	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	25.22
D	Fm 2449	USGS DEM	620.03	15.00	635.03	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	133.10
E	Fm 2449	USGS DEM	642.98	15.00	657.98	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	110.47
F	Fm 2449	USGS DEM	639.21	15.00	654.21	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	114.71
G	I 35w	USGS DEM	662.44	17.00	679.44	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	240.00
H	John Paine Rd	USGS DEM	648.21	15.00	663.21	Ex./Ult. Rwy 36R End Departure Surface (Sec. 1)	267.61

DRAFT

GENERAL NOTES:

1. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
2. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM PLANIMETRIC DATA SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
4. OBSTRUCTIONS WITHIN GRIDS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE.
5. 50' CONTOURS SHOWN ACROSS DEPARTURE SLOPE CORRESPOND TO ULTIMATE CONDITION.
6. REFER TO FAA ADVISORY CIRCULAR 150/5300-13B, CHANGE 1, TABLE 3-5, DATED 08/16/2024 FOR INSTRUMENT DEPARTURE SURFACE.STANDARDS.
7. ALL ELEVATIONS IN MSL FEET.

NO.	REVISIONS	DATE	BY	APP'D.

DENTON ENTERPRISE AIRPORT

RUNWAY 18L-36R
DEPARTURE SURFACE DRAWING

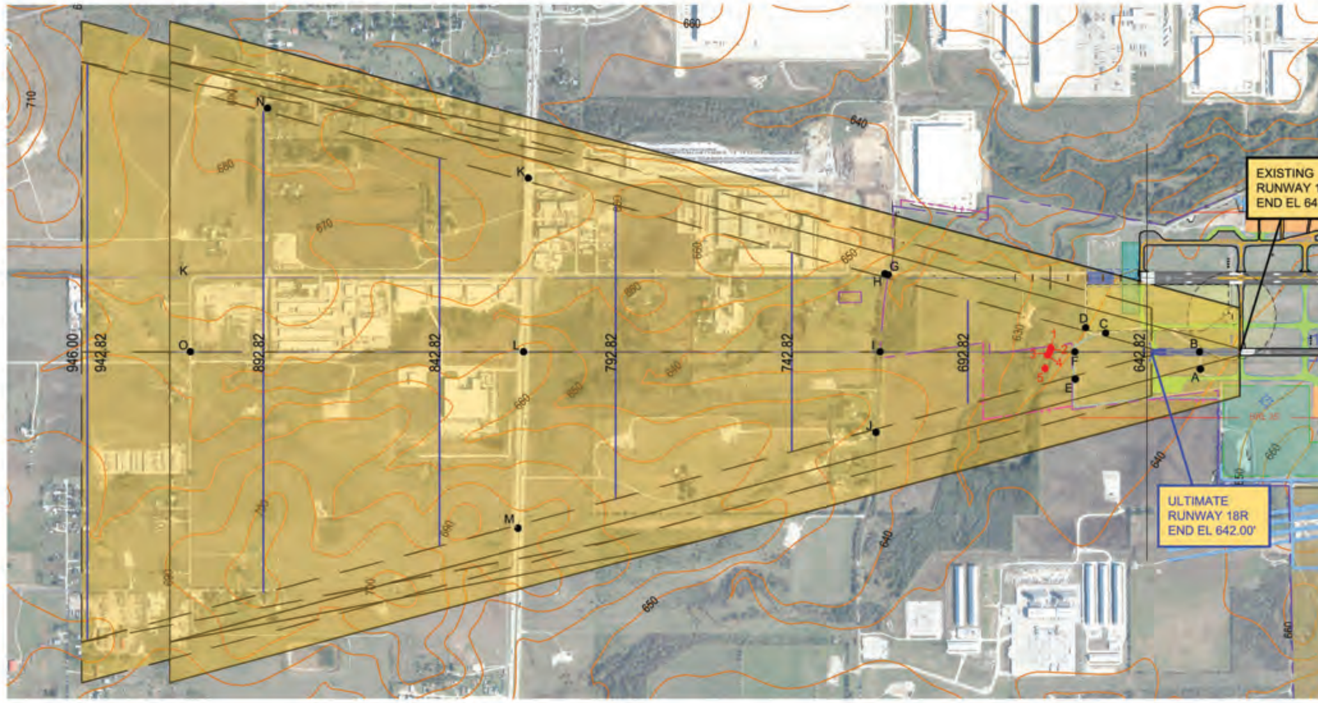
DENTON, TEXAS

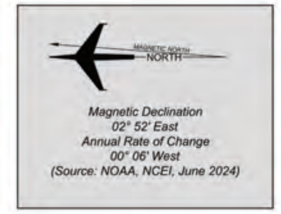
PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

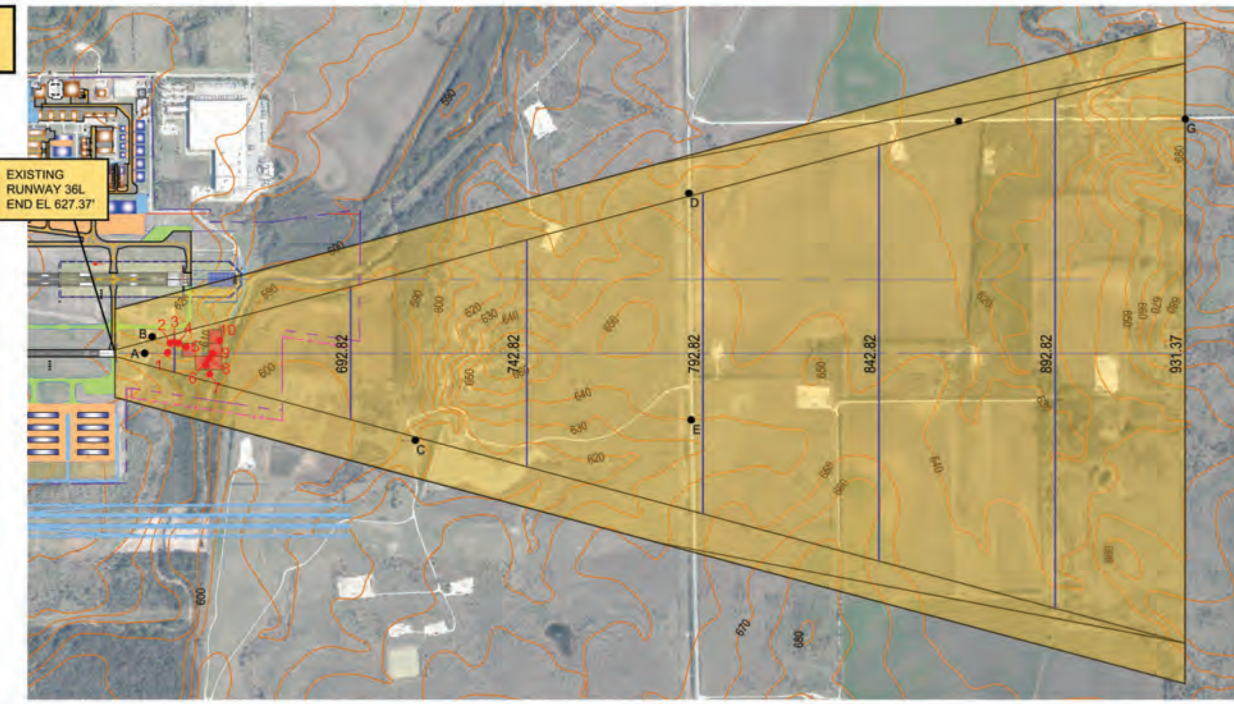
October 2025

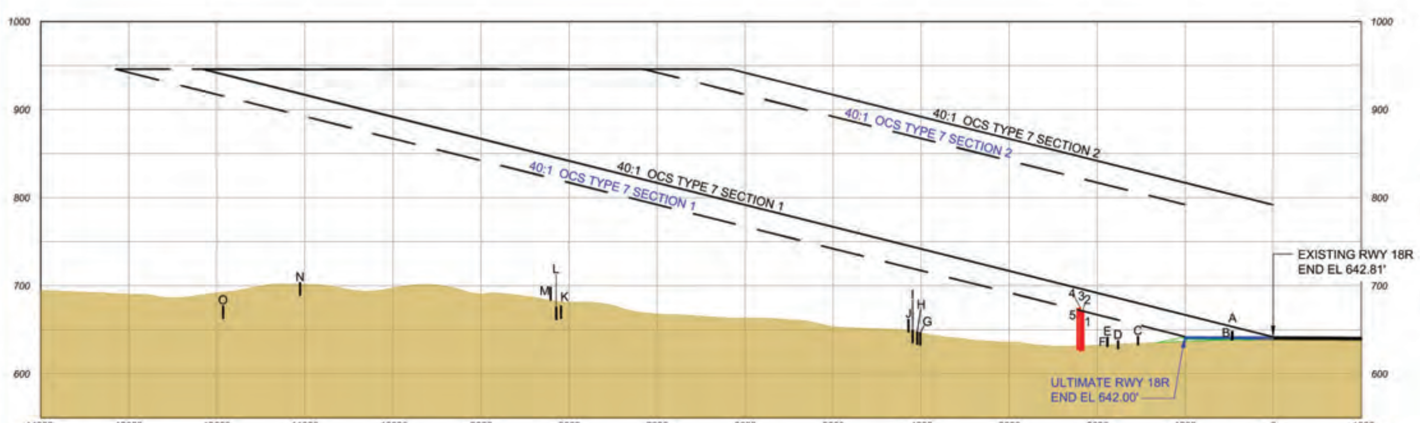
Coffman Associates
Airport Consultants
www.coffmanassociates.com

Airport EL = 642.82'



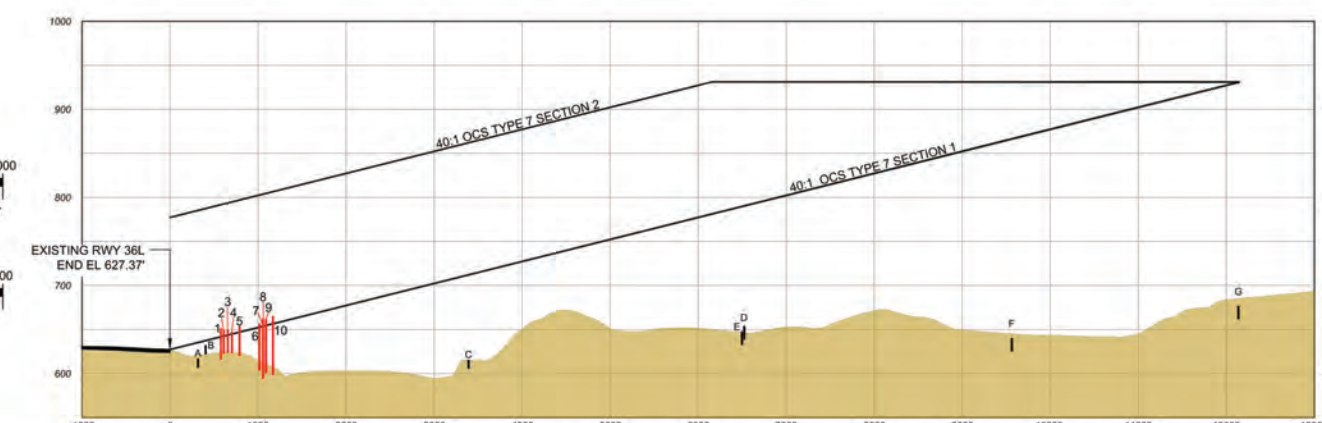






HORIZONTAL SCALE IN FEET (0, 1000, 2000)

VERTICAL SCALE IN FEET (0, 100, 200)



Runway 18R End Departure Obstructions											
ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Tree	87437	Martinez Survey (11/11/2024)	H20/V3	N/A	625.97	45.96	671.93	Ult. 18R End Dep. Sec. 1	1.33	Remove Tree
2	Tree	86959	Martinez Survey (11/11/2024)	H20/V3	N/A	626.23	44.95	671.18	Ult. 18R End Dep. Sec. 1	0.44	Remove Tree
3	Tree	86854	Martinez Survey (11/11/2024)	H20/V3	N/A	626.44	44.74	671.18	Ult. 18R End Dep. Sec. 1	0.09	Remove Tree
4	Tree	88881	Martinez Survey (11/11/2024)	H20/V3	N/A	625.75	49.82	675.57	Ult. 18R End Dep. Sec. 1	4.09	Remove Tree
5	Tree	88214	Martinez Survey (11/11/2024)	H20/V3	N/A	627.00	47.78	674.78	Ult. 18R End Dep. Sec. 1	2.56	Remove Tree

Runway 18R End Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	638.75	10.00	648.75	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	5.21
B	Airport Service Rd.	USGS DEM	638.14	10.00	648.14	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	6.04
C	Airport Service Rd.	USGS DEM	632.84	10.00	642.84	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	12.18
D	Airport Service Rd.	USGS DEM	628.41	10.00	638.41	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	22.28
E	Airport Service Rd.	USGS DEM	632.15	10.00	642.15	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	21.51
F	Airport Service Rd.	USGS DEM	630.59	10.00	640.59	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	23.19
G	Jim Christal Rd	USGS DEM	632.10	15.00	647.10	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	69.71
H	N Masch Branch Rd	USGS DEM	633.12	15.00	648.12	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	69.63
I	Jim Christal Rd	USGS DEM	634.71	15.00	649.71	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	69.32
J	Jim Christal Rd	USGS DEM	647.36	15.00	662.36	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	57.88
K	W University Dr	USGS DEM	662.48	15.00	677.48	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	141.49
L	W University Dr	USGS DEM	660.95	15.00	675.95	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	144.34
M	W University Dr	USGS DEM	683.28	15.00	698.28	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	123.58
N	Hampton Rd	USGS DEM	688.59	15.00	703.59	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	189.41
O	Masch Branch Rd	USGS DEM	662.35	15.00	677.35	Ex./Ult. Rwy 18R End Departure Surface (Sec. 1)	237.53

LEGEND

- EXISTING 13B SURFACE 7
- ULTIMATE 13B SURFACE 7
- EXISTING PROPERTY BOUNDARY
- FUTURE PROPERTY BOUNDARY
- OBSTRUCTION IDENTIFIER
- SIGNIFICANT OBJECT
- OBSTRUCTION GROUPING
- ULTIMATE GRADE

Runway 36L End Departure Obstructions											
ID	Feature	C.A. ID	Source	Accuracy	FAA Study #	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface Obstructed	Penetration Value (ft.)	Remediation
1	Tree	77201	Martinez Survey (11/11/2024)	H20/V3	N/A	616.46	34.99	651.45	Ex./Ult. 36L End Dep. Sec. 1	9.56	Remove Tree
2	Tree	61783	Martinez Survey (11/11/2024)	H20/V3	N/A	622.89	26.84	649.73	Ex./Ult. 36L End Dep. Sec. 1	7.11	Remove Tree
3	Tree	60569	Martinez Survey (11/11/2024)	H20/V3	N/A	623.35	26.32	649.67	Ex./Ult. 36L End Dep. Sec. 1	5.93	Remove Tree
4	Tree	55521	Martinez Survey (11/11/2024)	H20/V3	N/A	623.30	24.35	647.65	Ex./Ult. 36L End Dep. Sec. 1	2.71	Remove Tree
5	Tree	75253	Martinez Survey (11/11/2024)	H20/V3	N/A	620.45	33.78	654.23	Ex./Ult. 36L End Dep. Sec. 1	7.13	Remove Tree
6	Tree	89664	Martinez Survey (11/11/2024)	H20/V3	N/A	603.73	53.37	657.10	Ex./Ult. 36L End Dep. Sec. 1	4.36	Remove Tree
7	Tree	90492	Martinez Survey (11/11/2024)	H20/V3	N/A	594.10	61.68	655.78	Ex./Ult. 36L End Dep. Sec. 1	2.01	Remove Tree
8	Tree	90317	Martinez Survey (11/11/2024)	H20/V3	N/A	603.44	59.16	662.60	Ex./Ult. 36L End Dep. Sec. 1	8.78	Remove Tree
9	Tree	90453	Martinez Survey (11/11/2024)	H20/V3	N/A	600.70	61.09	661.79	Ex./Ult. 36L End Dep. Sec. 1	7.19	Remove Tree
10	Tree	90707	Martinez Survey (11/11/2024)	H20/V3	N/A	598.81	66.67	665.48	Ex./Ult. 36L End Dep. Sec. 1	8.89	Remove Tree

Runway 36L End Significant Objects							
ID	Feature	Source	Ground Elevation (ft. msl.)	AGL (ft.)	Top Elevation (ft. msl.)	Surface	Clearance Value (ft)
A	Airport Service Rd.	USGS DEM	607.14	10.00	617.14	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	18.22
B	Airport Service Rd.	USGS DEM	622.17	10.00	632.17	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	5.33
C	Driveway	USGS DEM	605.75	10.00	615.75	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	96.46
D	Fm 2449	USGS DEM	639.21	15.00	654.21	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	114.71
E	Fm 2449	USGS DEM	633.20	15.00	648.20	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	141.66
F	John Paine Rd	USGS DEM	625.67	15.00	640.67	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	225.80
G	John Paine Rd	USGS DEM	662.33	15.00	677.33	Ex./Ult. Rwy 36L End Departure Surface (Sec. 1)	253.49

GENERAL NOTES:

1. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
2. SUPPLEMENTAL ELEVATION DATA BEYOND THE LIMITS OF THE SURVEY FROM THE USGS NATIONAL ELEVATION DATASET (NED), 1/3 ARC-SECOND DEM, PUBLISHED 8/19/2022.
3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM PLANIMETRIC DATA SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
4. OBSTRUCTIONS WITHIN GRIDS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE.
5. 50' CONTOURS SHOWN ACROSS DEPARTURE SLOPE CORRESPOND TO ULTIMATE CONDITION.
6. REFER TO FAA ADVISORY CIRCULAR 150/5300-13B, CHANGE 1, TABLE 3-5, DATED 08/16/2024 FOR INSTRUMENT DEPARTURE SURFACE STANDARDS.
7. ALL ELEVATIONS IN MSL FEET.

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

DENTON ENTERPRISE AIRPORT

RUNWAY 18R-36L
DEPARTURE SURFACE DRAWING

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

Coffman Associates
Airport Consultants
www.coffmanassociates.com

TERMINAL AREA LOCATION

NOT TO SCALE

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING AIRFIELD COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA http://webdatasheet.faa.gov, FAA AIRPORT MASTER RECORD FORM 5010, THE FAA AIRPORT FACILITY DIRECTORY.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. THE PERIMETER OF THE AIRPORT IS ENCLOSED WITH 6-FOOT SECURITY FENCING WITH 3-STRAND BARBED WIRE. THE NORTH AND SOUTH ENDS OF THE AIRFIELD ARE SUPPLEMENTED WITH 10-FOOT HIGH WILDLIFE FENCING.
5. FOR CLARITY, ONLY THE ULTIMATE TAXIWAY OBJECT FREE AREA (TOFA) AND TAXIWAY OBJECT FREE AREA (TSA) ARE SHOWN.

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		SURVEY MONUMENT WITH IDENTIFIER
		AIRPORT REFERENCE POINT (ARP)
	SAME	AIRPORT BEACON
		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
	SAME	STRUCTURES OFF AIRPORT
N/A		ABANDON/REMOVE STRUCTURE
N/A		ABANDON/REMOVE PAVEMENT
		TAXIWAY MARKING
		HOLD MARKING
		TIE-DOWNS
	N/A	OBJECT FREE AREA
	N/A	RUNWAY SAFETY AREA
	N/A	OBSTACLE FREE ZONE
N/A		TAXIWAY OBJECT FREE AREA
N/A		TAXIWAY SAFETY AREA
	N/A	WINDSOCK
		ROADS AND PARKING PAVEMENT
		FENCE LINE
		FENCE GATE
		VEGEGATION
		TOPOGRAPHIC CONTOURS

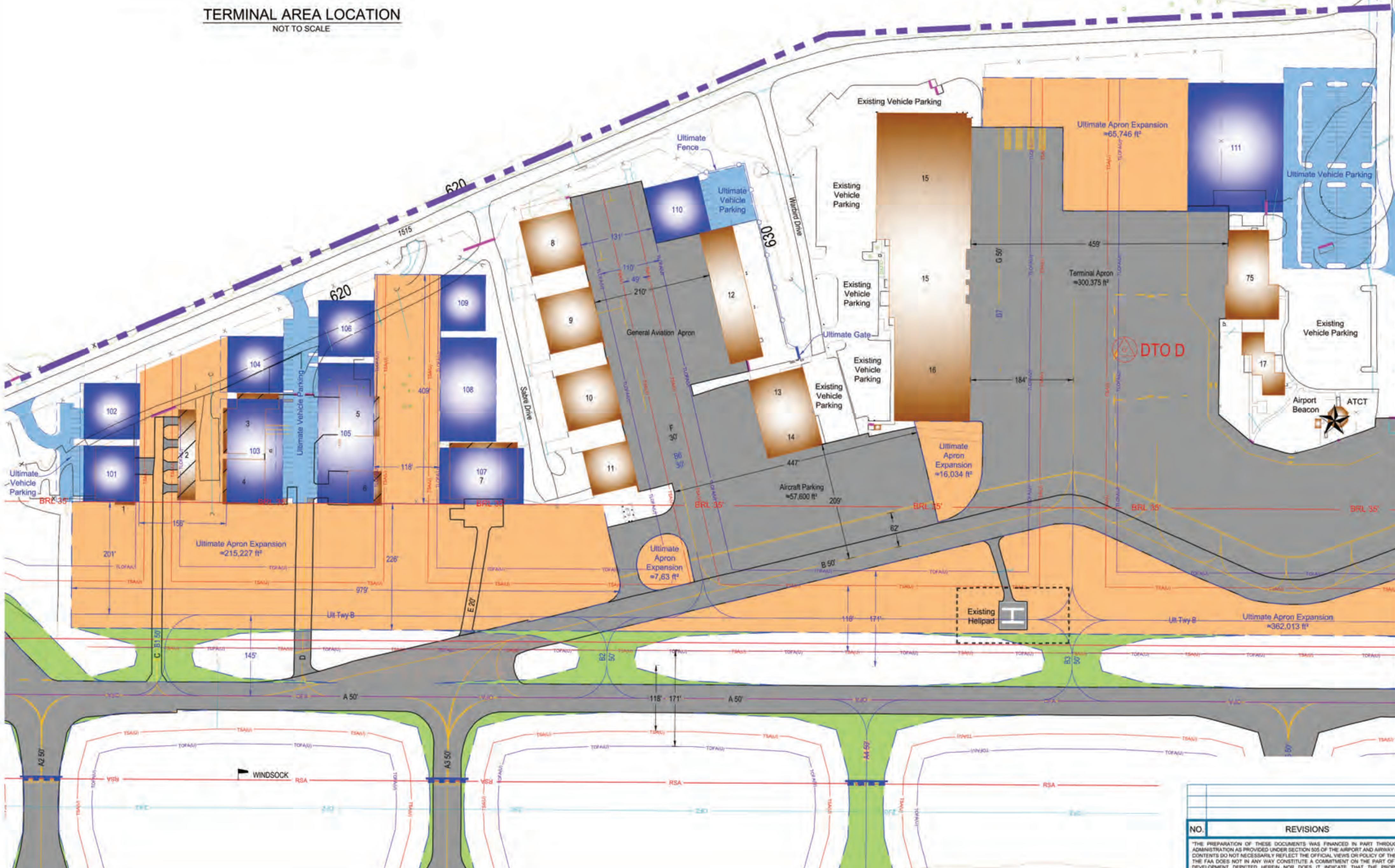
EXISTING AIRPORT FACILITES

#	Facility Name	Top Elevation ft. msl	Square Footage
1	DSR-Cherokee 180, LLC dba In the Pattern (to be removed)	656.1	7,000
2	DSR-Cherokee 180, LLC dba In the Pattern (to be removed)	643.7	5,100
3	Private Hangar (to be removed)	660.0	8,100
4	Private Hangar (to be removed)	655.1	6,100
5	DSR-Cherokee 180, LLC dba In the Pattern (to be removed)	651.9	5,700
6	DSR-Cherokee 180, LLC dba In the Pattern (to be removed)	653.7	3,600
7	CFD Integration, LLC dba CFDI Aero (to be removed)	655.8	12,200
8	DSR-Cherokee 180, LLC dba In the Pattern	662.5	10,000
9	CFD Integration, LLC dba CFDI Aero	662.3	9,900
10	Precision Aircraft Maintenance	667.3	9,900
11	Sheltair Aviation Dention, LLC	658.2	6,500
12	Marklyn Jet Spares	662.2	14,500
13	Sheltair Aviation Dention, LLC	663.8	9,400
14	Sheltair Aviation Dention, LLC	663.8	5,100
15	Sheltair Aviation Dention, LLC	692.7	60,000
16	Sheltair Aviation Dention, LLC	692.7	25,500
17	City of Denton - Airport Terminal	661.0	4,800
75	ARFF Station #9	673.6	14,421

ULTIMATE AIRPORT FACILITIES

#	Facility Name	Top Elevation ft. msl*	Size
101	Executive Hangar	654.0	100'x100'
102	Executive Hangar	652.0	100'x100'
103	Conventional Hangar	654.0	185'x100'
104	Executive Hangar	652.0	100'x100'
105	Conventional Hangar	662.0	250'x100'
106	Executive Hangar	650.0	100'x100'
107	Conventional Hangar	656.0	150'x100'
108	Conventional Hangar	655.0	185'x100'
109	Executive Hangar	650.0	100'x80'
110	Executive Hangar	654.0	100'x100'
111	Conventional Hangar	668.0	230'x170'

*Top elevation estimated based off common structure height



NORTH

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 100 200

SCALE IN FEET

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

DENTON ENTERPRISE AIRPORT

TERMINAL AREA DRAWING I

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

SHEET 16 OF 22

Coffman Associates
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www.coffmanassociates.com

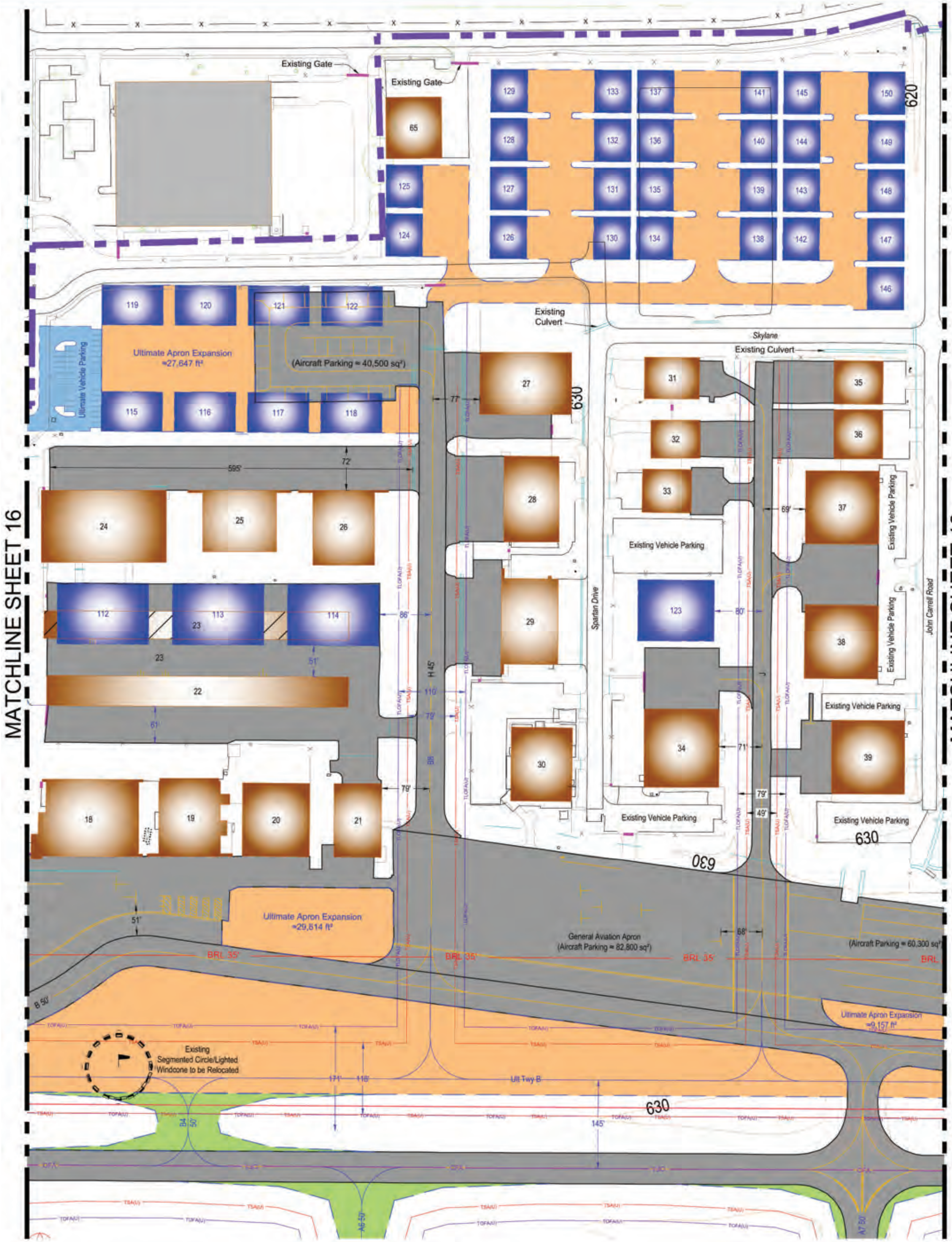
LEGEND

EXISTING	ULTIMATE	DESCRIPTION
	N/A	AIRPORT PROPERTY LINE
		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
	SAME	STRUCTURES OFF AIRPORT
N/A		ABANDON/REMOVE STRUCTURE
N/A		ABANDON/REMOVE PAVEMENT
		TAXIWAY PAVEMENT WITH CENTERLINE MARKING
		APRON PAVEMENT
		TIE-DOWNS
N/A		OBJECT FREE AREA
N/A		TAXIWAY OBJECT FREE AREA
N/A		TAXIWAY SAFETY AREA
		ROADS AND PARKING PAVEMENT
		FENCE LINE
	N/A	FENCE GATE
	N/A	CULVERT
		VEGETATION
		TOPOGRAPHIC CONTOURS

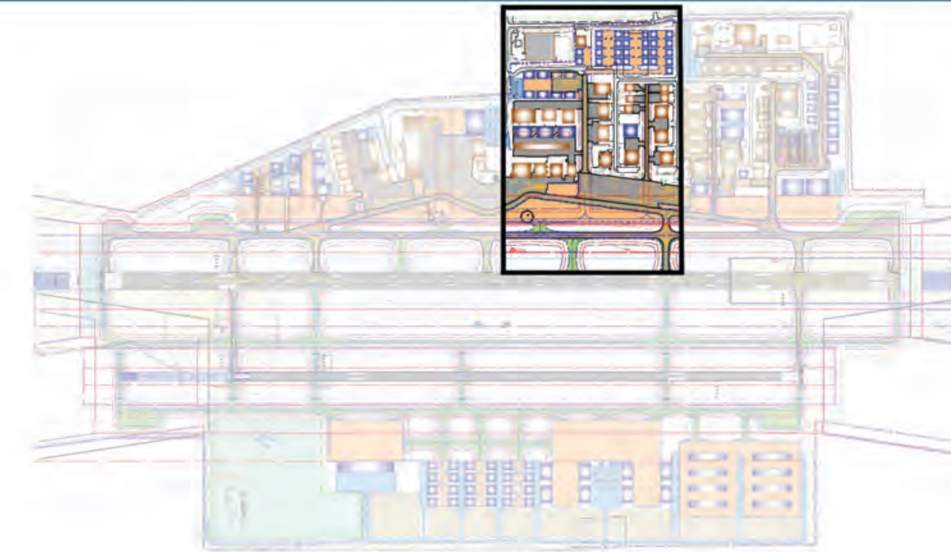
GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING AIRFIELD COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA http://webdatasheet.faa.gov, FAA AIRPORT MASTER RECORD FORM 5010, THE FAA AIRPORT FACILITY DIRECTORY.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. THE PERIMETER OF THE AIRPORT IS ENCLOSED WITH 6-FOOT SECURITY FENCING WITH 3-STRAND BARBED WIRE. THE NORTH AND SOUTH ENDS OF THE AIRFIELD ARE SUPPLEMENTED WITH 10-FOOT HIGH WILDLIFE FENCING.
5. FOR CLARITY, ONLY THE ULTIMATE TAXIWAY OBJECT FREE AREA (TOFA) AND TAXIWAY OBJECT FREE AREA (TSA) ARE SHOWN.

MATCHLINE SHEET 16



MATCHLINE SHEET 18



TERMINAL AREA LOCATION
NOT TO SCALE

ULTIMATE AIRPORT FACILITIES			
#	Facility Name	Top Elevation ft. msl*	Size
112	Conventional Hangar	658.0	150'x100'
113	Conventional Hangar	658.0	150'x100'
114	Conventional Hangar	658.0	150'x100'
115	Executive Hangar	656.0	100'X65'
116	Executive Hangar	656.0	100'X65'
117	Executive Hangar	656.0	100'X65'
118	Executive Hangar	656.0	100'X65'
119	Executive Hangar	654.0	100'X65'
120	Executive Hangar	654.0	100'X65'
121	Executive Hangar	654.0	100'X65'
122	Executive Hangar	654.0	100'X65'
123	Conventional Hangar	652.0	125'X100'
124	Executive Hangar	652.0	70'X60'
125	Executive Hangar	651.0	70'X60'
126	Executive Hangar	652.0	70'X60'
126	Executive Hangar	651.0	70'X60'
127	Executive Hangar	651.0	70'X60'
128	Executive Hangar	651.0	70'X60'
129	Executive Hangar	652.0	70'X60'
130	Executive Hangar	652.0	70'X60'
131	Executive Hangar	651.0	70'X60'
132	Executive Hangar	650.0	70'X60'
133	Executive Hangar	652.0	70'X60'
134	Executive Hangar	651.0	70'X60'
135	Executive Hangar	651.0	70'X60'
136	Executive Hangar	651.0	70'X60'
137	Executive Hangar	650.0	70'X60'
138	Executive Hangar	652.0	70'X60'
139	Executive Hangar	651.0	70'X60'
140	Executive Hangar	651.0	70'X60'
141	Executive Hangar	650.0	70'X60'
142	Executive Hangar	652.0	70'X60'
143	Executive Hangar	651.0	70'X60'
144	Executive Hangar	651.0	70'X60'
145	Executive Hangar	650.0	70'X60'
146	Executive Hangar	651.0	70'X60'
147	Executive Hangar	651.0	70'X60'
147	Executive Hangar	650.0	70'X60'
148	Executive Hangar	650.0	70'X60'
149	Executive Hangar	648.0	70'X60'
150	Executive Hangar	654.0	70'X60'

*Top elevation estimated based off common structure height

EXISTING AIRPORT FACILITES			
#	Facility Name	Top Elevation ft. msl	Square Footage
18	Sykes-Vaughan Investments, LLC	660.2	20,500
19	Avitech Aircraft Maintenance & Paint, LLC	677.3	12,700
20	Shared Corporate Hangar	659.7	13,200
21	Roberts and Roberts Maintenance/Assent Aeronautics, LLC	662.2	9,200
22	HS T-Hangar (24 units)	654.5	25,000
23	Shared Corporate Hangar	652.0	22,600
24	Shared Corporate Hangar	678.3	23,800
25	Shared Corporate Hangar	669.0	12,200
26	Shared Corporate Hangar	668.4	12,600
27	Aerospace Instrument Support	669.9	15,000
28	Sykes-Vaughan Investments, LLC	659.6	12,900
29	Corporate Hangars (2 units)	663.7	13,000
30	Sykes-Vaughan Investments, LLC	671.4	13,500
31	civil Air Patrol	664.9	6,000
32	Vinrose dba US Sport Planes	652.0	5,100
33	Shared Corporate Hangar	658.2	5,800
34	Sykes-Vaughan Investments, LLC	672.0	13,000
35	Private Hangar	657.1	5,700
36	Private Hangar	656.0	6,500
37	Sykes-Vaughan Investments, LLC	668.6	14,400
38	Sykes-Vaughan Investments, LLC	668.8	14,400
39	Sykes-Vaughan Investments, LLC	658.9	14,200
65	Global Maritime Supply Management, LLC	651.4	9,100

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

TERMINAL AREA DRAWING II

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

Coffman Associates
Airport Consultants
www.coffmanassociates.com

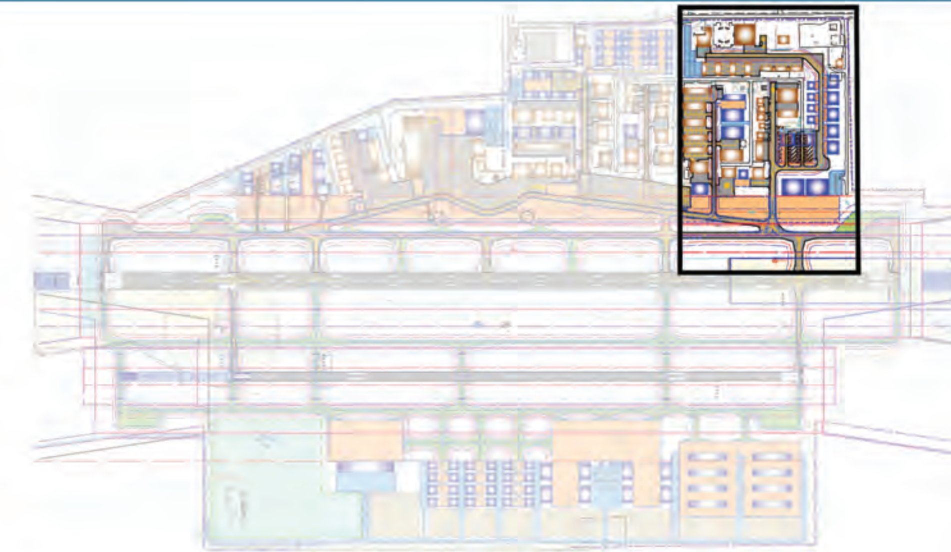
EXISTING AIRPORT FACILITES			
#	Facility Name	Top Elevation ft. msl	Square Footage
40	Box Hangar (4 units)	662.1	12,500
41	T-Hangar (8 units)	652.9	12,400
42	T-Hangar (8 units)	653.1	12,400
43	T-Hangar (8 units)	649.6	10,800
44	T-Hangar (8 units)	649.1	10,800
45	Corporate Hangar	659.7	16,100
46	ATP Flight School	669.3	20,000
47	Corporate Hangar	664.9	10,400
48	Private Hangar - Storage	655.4	3,000
49	Private Hangar - Storage	658.9	3,500
50	Corporate Hangar	654.1	4,100
51	Private Hangar - Storage	655.7	2,500
52	Corporate Hangar	656.3	3,800
53	Box Hangar (3 units)	661.8	10,700
54	Corporate Hangar	668.3	10,000
55	Box Hangar (6 units)	666.0	21,600
56	Box Hangar (3 units)	661.9	10,800
57	Private Hangar - Storage (to be removed)	659.0	3,400
58	Private Hangar - Storage (to be removed)	653.2	2,300
59	Private Hangar - Storage (to be removed)	647.4	1,100
60	Private Hangar - Storage (to be removed)	646.8	1,100
61	Private Hangar - Storage (to be removed)	647.4	1,100
62	Private Hangar - Storage (to be removed)	647.5	1,600
63	T-Hangar (12 units) (to be removed)	648.1	13,700
64	T-Hangar (12 units) (to be removed)	648.5	13,700
66	Corporate Hangar	663.1	15,500
67	Denton Med-Trans	663.7	31,500
68	Box Hangar (3 units)	647.2	3,861
69	T-Hangars (5 units)	648.5	5,909
70	T-Hangars (5 units)	649.0	6,200
71	Box Hangar (3 units)	649.7	6,200
72	Box Hangar (3 units)	649.7	4,200
73	Box Hangar (3 units)	650.3	4,200
74	Box Hangar (3 units)	650.8	4,200

ULTIMATE AIRPORT FACILITIES			
#	Facility Name	Top Elevation ft. msl*	Size
151	Conventional Hangar	654.0	140'x100'
152	Executive Hangar	656.0	90'x80'
153	Conventional Hangar	662.0	200'x110'
154	Conventional Hangar	662.0	200'x110'
155	Box Hangars (4-Units)	654.0	200'x50'
156	Conventional Hangar	664.0	150'x200'
157	Conventional Hangar	663.0	150'x200'
158	Conventional Hangar	666.0	140'x100'
159	Conventional Hangar	666.0	140'x100'
160	Conventional Hangar	655.0	65'x70'
161	Conventional Hangar	655.0	65'x70'
162	Conventional Hangar	655.0	65'x70'
163	Conventional Hangar	655.0	65'x70'
164	Conventional Hangar	660.0	120'x100'
165	Conventional Hangar	660.0	120'x100'
166	Conventional Hangar	660.0	120'x100'
167	Conventional Hangar	660.0	120'x100'
168	Conventional Hangar	660.0	120'x100'

*Top elevation estimated based off common structure height

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING AIRFIELD COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA http://webdatasheet.faa.gov, FAA AIRPORT MASTER RECORD FORM 5010, THE FAA AIRPORT FACILITY DIRECTORY.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. THE PERIMETER OF THE AIRPORT IS ENCLOSED WITH 6-FOOT SECURITY FENCING WITH 3-STRAND BARBED WIRE. THE NORTH AND SOUTH ENDS OF THE AIRFIELD ARE SUPPLEMENTED WITH 10-FOOT HIGH WILDLIFE FENCING.
5. FOR CLARITY, ONLY THE ULTIMATE TAXIWAY OBJECT FREE AREA (TOFA) AND TAXIWAY OBJECT FREE AREA (TSA) ARE SHOWN.



TERMINAL AREA LOCATION

NOT TO SCALE

LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
	N/A	AIRPORT PROPERTY LINE
		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
	SAME	STRUCTURES OFF AIRPORT
N/A		ABANDON/REMOVE STRUCTURE
N/A		ABANDON/REMOVE PAVEMENT
		TAXIWAY PAVEMENT WITH CENTERLINE MARKING
		APRON
		TIE-DOWNS
N/A		OBJECT FREE AREA
N/A		TAXIWAY OBJECT FREE AREA
N/A		TAXIWAY SAFETY AREA
N/A		TAXILANE OBJECT FREE AREA
		ROADS AND PARKING PAVEMENT
	N/A	FENCE LINE
	N/A	FENCE GATE
	N/A	CULVERT
		TOPOGRAPHIC CONTOURS

MAGNETIC NORTH

NORTH

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 100 200

SCALE IN FEET

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

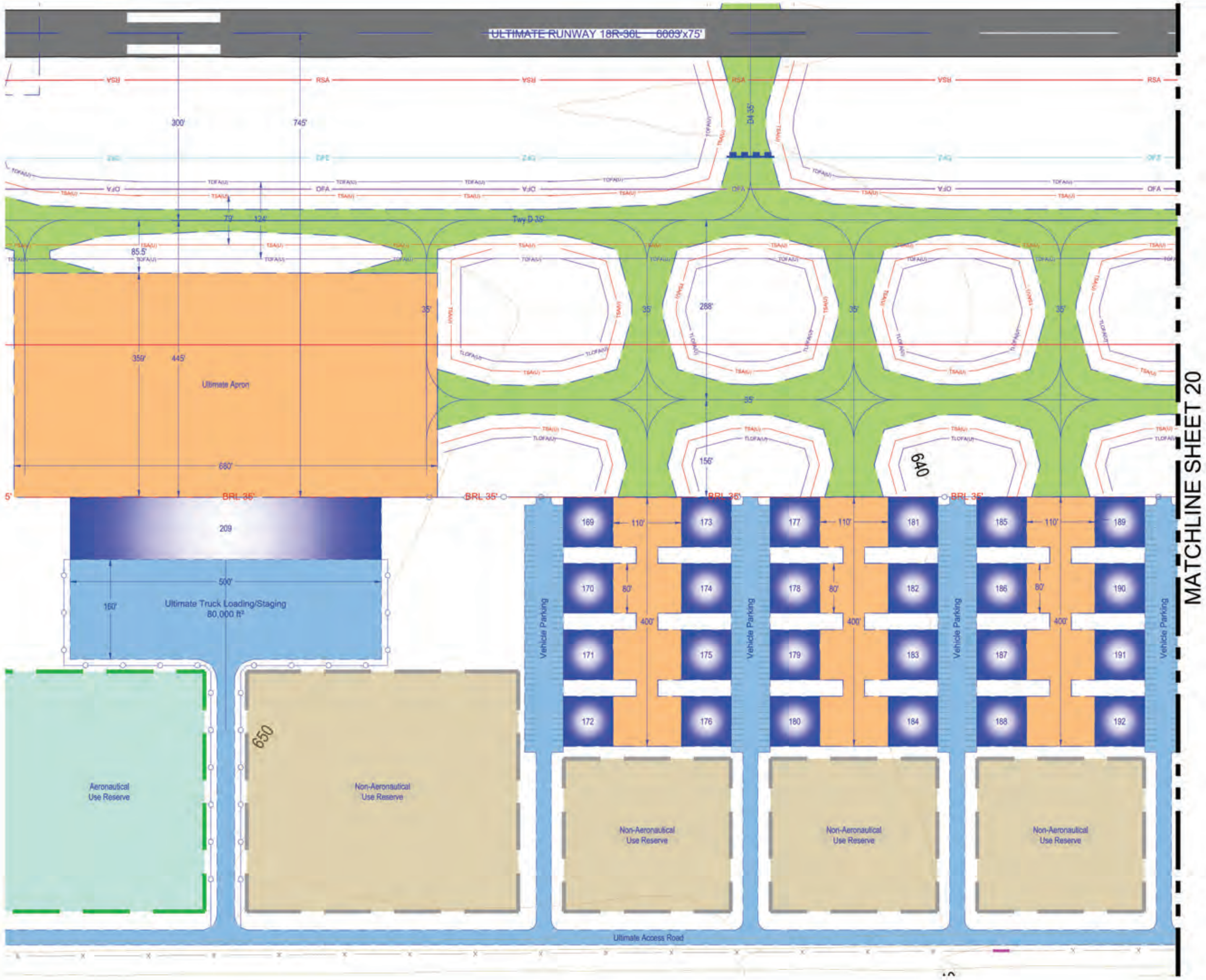
TERMINAL AREA DRAWING III

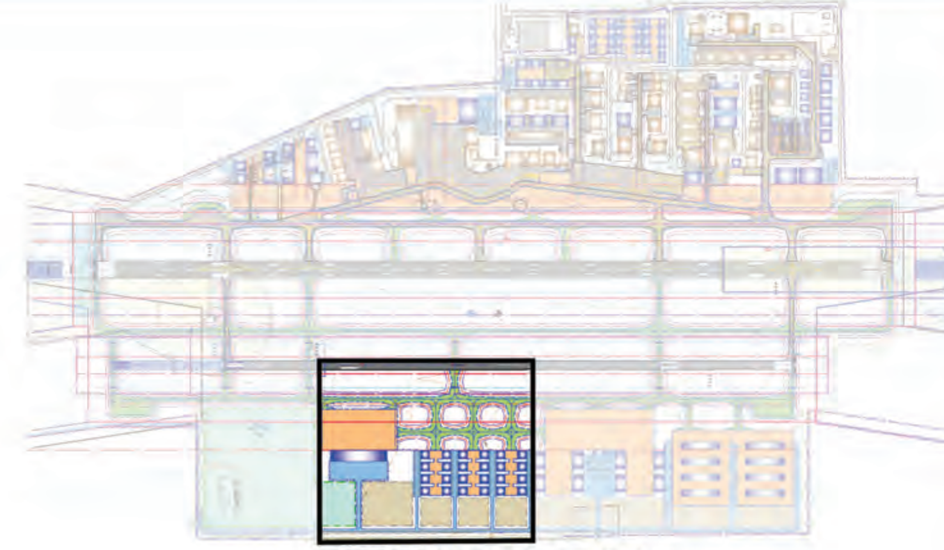
DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 18 OF 22

Coffman Associates
Airport Consultants
www.coffmanassociates.com





TERMINAL AREA LOCATION

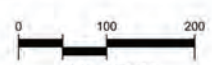
NOT TO SCALE

LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
	N/A	AIRPORT PROPERTY LINE
		BUILDING RESTRICTION LINE (35')
N/A		AVIATION RESERVE
N/A		NONAVIATION RESERVE
N/A		AAM USE RESERVE
N/A		STRUCTURES ON AIRPORT
		TAXIWAY PAVEMENT WITH CENTERLINE MARKING
		APRON
		TIE-DOWNS
N/A		RUNWAY SAFETY AREA
N/A		OBJECT FREE AREA
N/A		TAXIWAY OBJECT FREE AREA
N/A		TAXIWAY SAFETY AREA
N/A		TAXILANE OBJECT FREE AREA
		ROADS AND PARKING PAVEMENT
		FENCE LINE
		TOPOGRAPHIC CONTOURS

ULTIMATE AIRPORT FACILITIES

#	Facility Name	Top Elevation ft. msl*	Size
169	Corporate Hangar	668.0	80'x80'
170	Corporate Hangar	668.0	80'x80'
171	Corporate Hangar	668.0	80'x80'
172	Corporate Hangar	668.0	80'x80'
173	Corporate Hangar	667.0	80'x80'
174	Corporate Hangar	667.0	80'x80'
175	Corporate Hangar	667.0	80'x80'
176	Corporate Hangar	667.0	80'x80'
177	Corporate Hangar	666.0	80'x80'
178	Corporate Hangar	666.0	80'x80'
179	Corporate Hangar	666.0	80'x80'
180	Corporate Hangar	666.0	80'x80'
181	Corporate Hangar	664.0	80'x80'
182	Corporate Hangar	664.0	80'x80'
183	Corporate Hangar	664.0	80'x80'
184	Corporate Hangar	664.0	80'x80'
185	Corporate Hangar	663.0	80'x80'
186	Corporate Hangar	663.0	80'x80'
187	Corporate Hangar	663.0	80'x80'
188	Corporate Hangar	663.0	80'x80'
189	Corporate Hangar	662.0	80'x80'
190	Corporate Hangar	662.0	80'x80'
191	Corporate Hangar	662.0	80'x80'
192	Corporate Hangar	662.0	80'x80'
209	Air Cargo Handling Facility	686.0	500'x100'

*Top elevation estimated based off common structure height



Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

DRAFT

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING AIRFIELD COORDINATES, ELEVATIONS, AND BEARINGS FROM SURVEY DATED 11/11/2024 BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA http://webdatasheet.faa.gov, FAA AIRPORT MASTER RECORD FORM 5010, THE FAA AIRPORT FACILITY DIRECTORY.
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4. THE PERIMETER OF THE AIRPORT IS ENCLOSED WITH 6-FOOT SECURITY FENCING WITH 3-STRAND BARBED WIRE. THE NORTH AND SOUTH ENDS OF THE AIRFIELD ARE SUPPLEMENTED WITH 10-FOOT HIGH WILDLIFE FENCING.
5. FOR CLARITY, ONLY THE ULTIMATE TAXIWAY OBJECT FREE AREA (TOFA) AND TAXIWAY OBJECT FREE AREA (TSA) ARE SHOWN.

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

TERMINAL AREA DRAWING IV

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 19 OF 22

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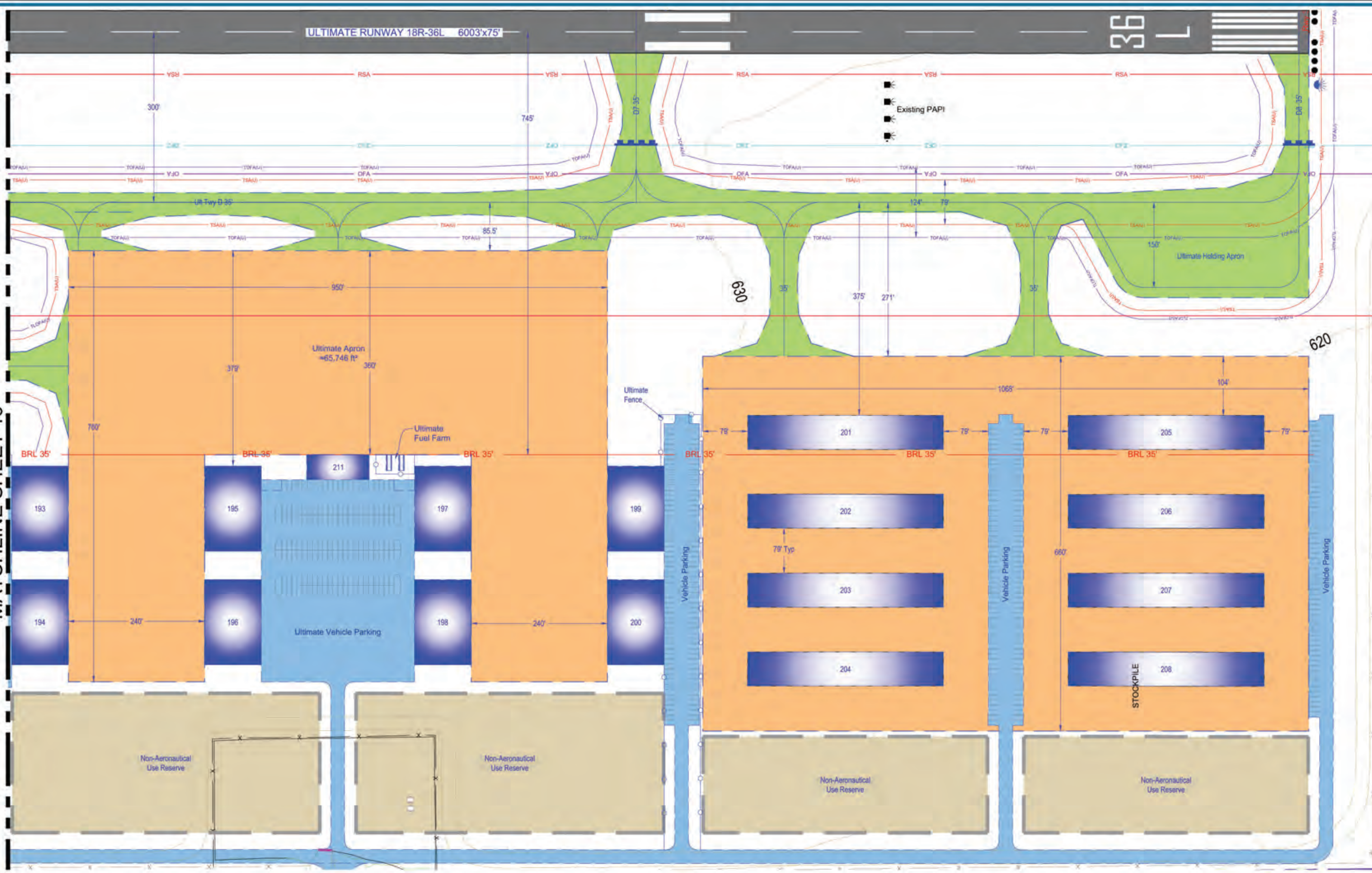

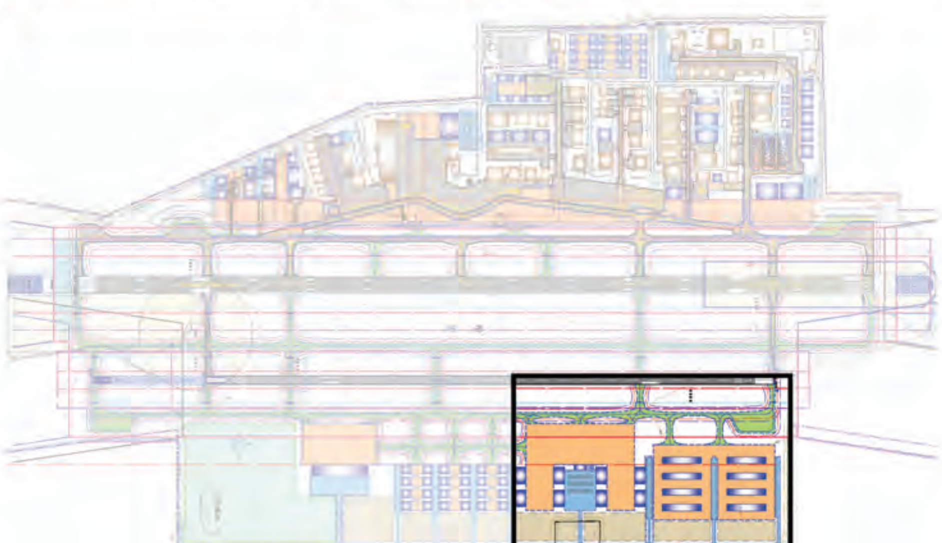

TERMINAL AREA LOCATION

NOT TO SCALE

ULTIMATE AIRPORT FACILITIES

	Facility Name	Top Elevation ft. msl*	Size
193	Conventional Hangar	661.0	150'x100
194	Conventional Hangar	661.0	150'x100
195	Conventional Hangar	659.0	150'x100
196	Conventional Hangar	659.0	150'x100
197	Conventional Hangar	657.0	150'x100
198	Conventional Hangar	657.0	150'x100
199	Conventional Hangar	655.0	150'x100
200	Conventional Hangar	655.0	150'x100
201	T-Hangars (12 Units)	651.0	20,700
202	T-Hangars (12 Units)	651.0	20,700
203	T-Hangars (12 Units)	651.0	20,700
204	T-Hangars (12 Units)	651.0	20,700
205	T-Hangars (12 Units)	649.0	20,700
206	T-Hangars (12 Units)	649.0	20,700
207	T-Hangars (12 Units)	649.0	20,700
208	T-Hangars (12 Units)	649.0	20,700
211	General Aviation Terminal	654.0	5,000

*Top elevation estimated based off common structure height

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
	N/A	AIRPORT PROPERTY LINE
		BUILDING RESTRICTION LINE (35')
N/A		AVIATION RESERVE
N/A		NONAVIATION RESERVE
N/A		AAM USE RESERVE
N/A		STRUCTURES ON AIRPORT
		TAXIWAY PAVEMENT WITH CENTERLINE MARKING
		APRON
		TIE-DOWNS
N/A		RUNWAY SAFETY AREA
N/A		OBJECT FREE AREA
N/A		TAXIWAY OBJECT FREE AREA
N/A		TAXIWAY SAFETY AREA
N/A		TAXILANE OBJECT FREE AREA
	N/A	PAPI-4
		ROADS AND PARKING PAVEMENT
		FENCE LINE
		TOPOGRAPHIC CONTOURS

NORTH

Magnetic Declination
02° 52' East
Annual Rate of Change
00° 05' West
(Source: NOAA, NCEI, July 2025)

0 100 200

SCALE IN FEET

DRAFT

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DENTON ENTERPRISE AIRPORT

TERMINAL AREA DRAWING V

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

Coffman Associates
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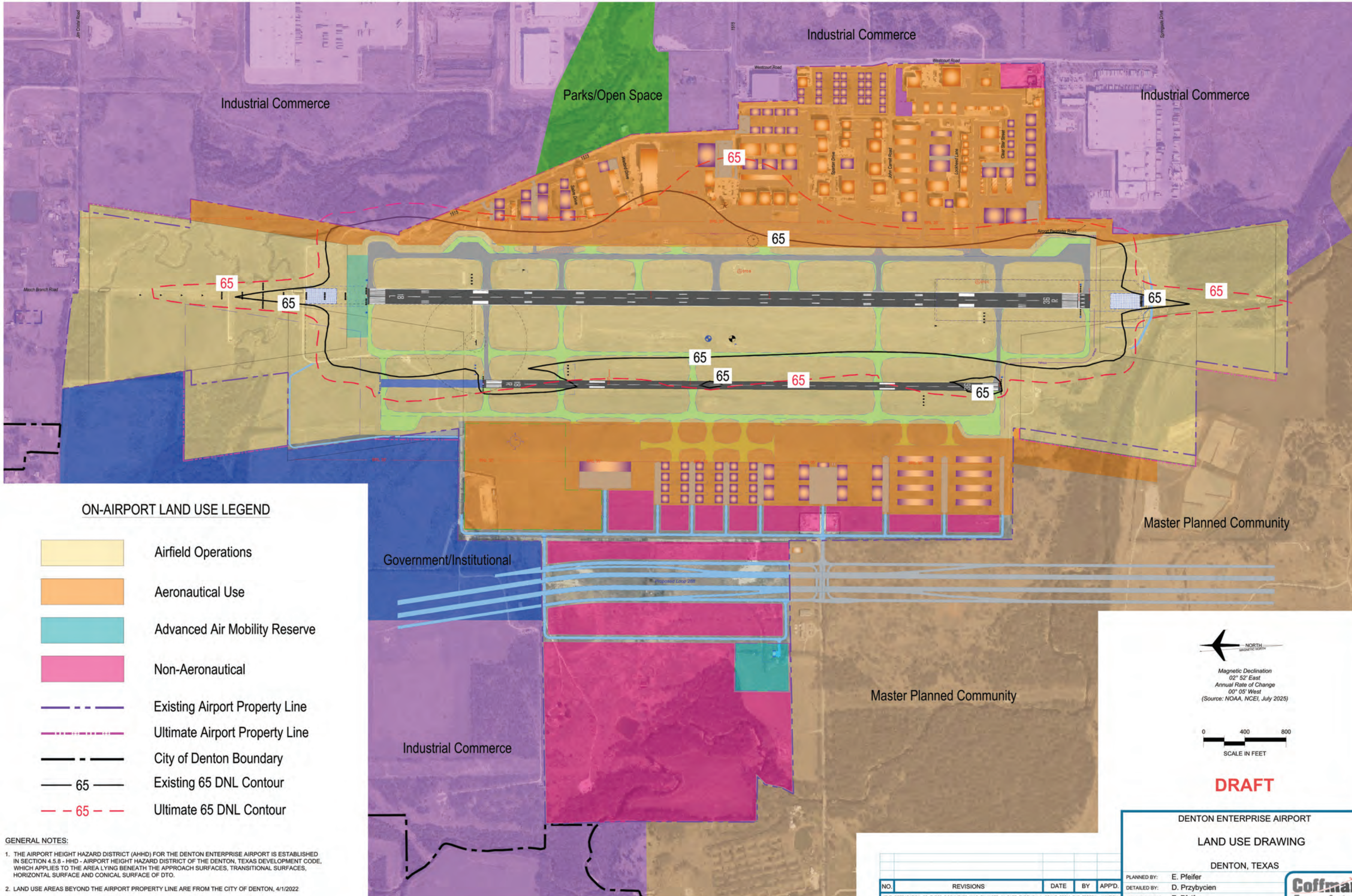

ON-AIRPORT LAND USE LEGEND

- Airfield Operations
- Aeronautical Use
- Advanced Air Mobility Reserve
- Non-Aeronautical
- Existing Airport Property Line
- Ultimate Airport Property Line
- City of Denton Boundary
- 65 Existing 65 DNL Contour
- 65 Ultimate 65 DNL Contour

GENERAL NOTES:

1. THE AIRPORT HEIGHT HAZARD DISTRICT (AHHD) FOR THE DENTON ENTERPRISE AIRPORT IS ESTABLISHED IN SECTION 4.5.8 - HHD - AIRPORT HEIGHT HAZARD DISTRICT OF THE DENTON, TEXAS DEVELOPMENT CODE, WHICH APPLIES TO THE AREA LYING BENEATH THE APPROACH SURFACES, TRANSITIONAL SURFACES, HORIZONTAL SURFACE AND CONICAL SURFACE OF DTO.
2. LAND USE AREAS BEYOND THE AIRPORT PROPERTY LINE ARE FROM THE CITY OF DENTON, 4/1/2022
3. NO SCHOOLS, HOSPITALS OR PARKS WITHIN LAND USE AREA OF DENTON ENTERPRISE AIRPORT.

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

LAND USE DRAWING

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025 SHEET 20 OF 22

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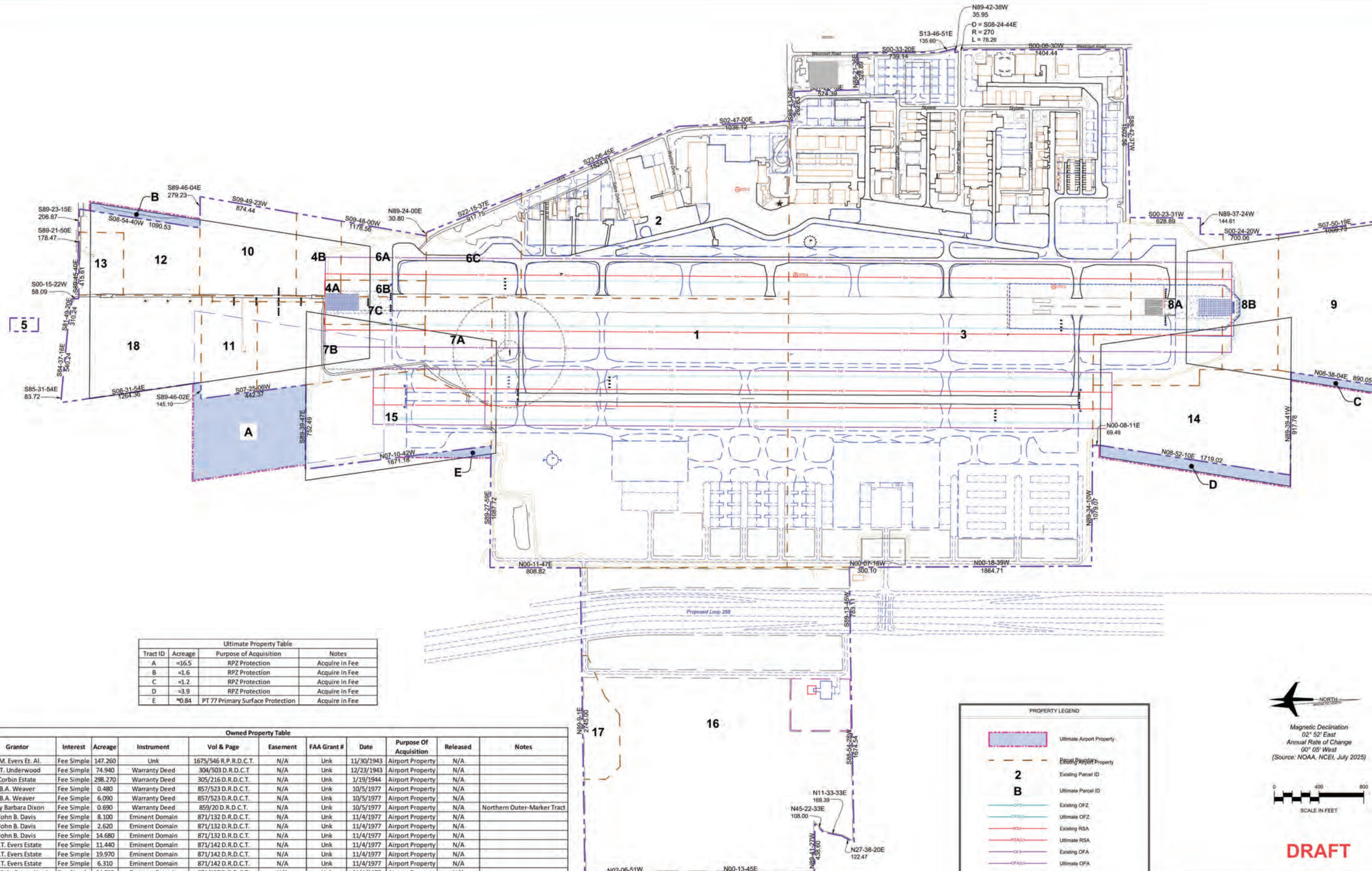
Airport Consultants
www.coffmanassociates.com



Ultimate Property Table			
Tract ID	Acreage	Purpose of Acquisition	Notes
A	≈16.5	RPZ Protection	Acquire in Fee
B	≈1.6	RPZ Protection	Acquire in Fee
C	≈1.2	RPZ Protection	Acquire in Fee
D	≈3.9	RPZ Protection	Acquire in Fee
E	≈0.84	PT 77 Primary Surface Protection	Acquire in Fee

Owned Property Table											
Tract ID	Grantor	Interest	Acreage	Instrument	Vol & Page	Easement	FAA Grant #	Date	Purpose Of Acquisition	Released	Notes
1	R.M. Evers Et. Al.	Fee Simple	147.260	Unk	1675/546 R.P.R.D.C.T.	N/A	Unk	11/30/1943	Airport Property	N/A	
2	P.T. Underwood	Fee Simple	74.940	Warranty Deed	304/503 D.R.D.C.T	N/A	Unk	12/23/1943	Airport Property	N/A	
3	Corbin Estate	Fee Simple	298.270	Warranty Deed	305/216 D.R.D.C.T.	N/A	Unk	1/19/1944	Airport Property	N/A	
4-A	B.A. Weaver	Fee Simple	0.480	Warranty Deed	857/523 D.R.D.C.T.	N/A	Unk	10/5/1977	Airport Property	N/A	
4-B	B.A. Weaver	Fee Simple	6.090	Warranty Deed	857/523 D.R.D.C.T.	N/A	Unk	10/5/1977	Airport Property	N/A	
5	May Barbara Dixon	Fee Simple	0.690	Warranty Deed	859/20 D.R.D.C.T.	N/A	Unk	10/5/1977	Airport Property	N/A	Northern Outer-Marker Tract
6-A	John B. Davis	Fee Simple	8.100	Eminent Domain	871/132 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
6-B	John B. Davis	Fee Simple	2.620	Eminent Domain	871/132 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
6-C	John B. Davis	Fee Simple	14.680	Eminent Domain	871/132 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
7-A	W.T. Evers Estate	Fee Simple	11.440	Eminent Domain	871/142 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
7-B	W.T. Evers Estate	Fee Simple	19.970	Eminent Domain	871/142 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
7-C	W.T. Evers Estate	Fee Simple	6.310	Eminent Domain	871/142 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
8-A	M.T. Cole Estate No. 1	Fee Simple	24.730	Eminent Domain	871/137 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
8-B	M.T. Cole Estate No. 1	Fee Simple	13.890	Eminent Domain	871/137 D.R.D.C.T.	N/A	Unk	11/4/1977	Airport Property	N/A	
9	M.T. Cole Estate No. 1	Fee Simple	31.107	Unk	94-R0071013 D.R.D.C.T.	N/A	Unk	7/7/1993	Airport Property	N/A	
10	Ed Wolski Et. Al.	Fee Simple	16.170	Unk	94-R0071011 D.R.D.C.T.	N/A	Unk	7/7/1993	Airport Property	N/A	
11	John & Margaret Porter	Fee Simple	9.670	Unk	94-R0071012 D.R.D.C.T.	N/A	Unk	7/7/1993	Airport Property	N/A	
12	Ed Wolski, Trustee, Et. Al.	Fee Simple	11.440	Unk	2005-67413 D.R.D.C.T.	N/A	Unk	Unk	Airport Property	N/A	
13	Ed Wolski, Trustee, Et. Al.	Fee Simple	5.000	Unk	2005-30268 D.R.D.C.T.	N/A	Unk	Unk	Airport Property	N/A	
14	SLF II Cole Properties, LP	Fee Simple	29.444	Unk	2016-163835 D.R.D.C.T.	N/A	Unk	12/27/2016	Airport Property	N/A	
15	City of Denton	Fee Simple	25.630	Unk	2017-57757 D.R.D.C.T.	N/A	Unk	5/17/2017	Airport Property	N/A	Resolution No. R2017-016
16	Wells Fargo Bank	Fee Simple	141.650	Unk	2012-147183 D.R.D.C.T.	N/A	Unk	12/31/2012	Airport Property	N/A	
17	Billie Glosser	Fee Simple	6.200	Warranty Deed	2012-147184 D.R.D.C.T.	N/A	Unk	12/31/2012	Airport Property	N/A	
18	Eagle Farms Et. Al.	Fee Simple	23.076	Unk	2010-9442 D.R.D.C.T.	N/A	Unk	1/27/2010	Airport Property	N/A	

DRAFT

NO.	REVISIONS	DATE	BY	APP'D.

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DENTON ENTERPRISE AIRPORT

EXHIBIT "A"
AIRPORT PROPERTY INVENTORY MAP

DENTON, TEXAS

PLANNED BY: E. Pfeifer
DETAILED BY: D. Przybycien
APPROVED BY: E. Pfeifer

October 2025

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