Denton Enterprise Airport MASTER PLAN

October 2015

Prepared for

CITY OF DENTON

Texas Department of Transportation
Aviation Division

Prepared by

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SECTION 1 - EXECUTIVE SUMMARY

1.1 INTRODUCTION

Denton Enterprise Airport (DTO or the Airport) is a general aviation airport owned and operated by the City of Denton, Texas. DTO is one of 11 reliever airports in the Dallas-Fort Worth area, and one of 24 reliever airports located in Texas[1].

The Airport undertook an Airport Master Plan Update to evaluate the aviation needs based on aviation and socioeconomic trends as of 2012, as well as updated Federal Aviation Administration (FAA) standards. It is important to note that due to funding and approval processes, the Master Plan analysis concluded in 2014, with production of the final documentation in 2015. Prior to the current study, the Airport Master Plan was previously completed in 2003. Many of the recommended components of that plan have been completed, including land acquisition, a runway extension, taxiway improvements, and a new terminal building.

This document describes the analyses and assessments conducted during the Airport Master Plan process and provides the results of those efforts. The Airport Master Plan's analysis and findings span approximately a 20-year period, however, certain aspects of the recommended plan took into consideration expansion beyond the final planning horizon. This planning process involved airport stakeholders and user engagement from a wide array of sources in order to develop a plan that not only suits the Airport's facility needs but also the needs of its users, the community, and the region. The intent is to maintain a flexible framework, to allow for contingencies which are increasingly a part of airport development, and to ensure the program is not rigid and can be modified to respond to circumstances that cannot be reasonably predicted at this time.

The Master Plan elements were conducted in accordance with FAA guidelines established in Advisory Circulars 150/5070-6B, *Airport Master Plans*, and 150/5300-13A, Change 1, *Airport Design*. The plan also reflects the requirements of the Texas Department of Transportation Aviation Division (TxDOT Aviation). Specific elements included in this master plan are as follows:

- Inventory
- Activity forecasts
- Demand/capacity analysis and facility requirements
- Alternatives development
- Implementation plan
- Financial plan
- Environmental overview
- Airport layout plan drawing set

[1] Texas Airport System Plan Update 2010, Texas Department of Transportation, Table 3.

Master Plan study activities and coordination during the course of the project occurred at various strategic milestones throughout the project's duration. These activities included engagement and outreach such as stakeholder meetings, Airport staff meetings, public information meetings, and a Strengths/Weakness/ Opportunities/Threats (SWOT) Analysis. In addition to the traditional Airport Master Plan tasks, the project also encompassed several related and supplemental analyses including:

- Surface Transportation Master Plan
- Drainage Master Plan
- Water/Wastewater Master Plan

These analyses are included as appendices to the Master Plan.

The following briefly outlines the major findings and recommendations presented in the Master Plan Report.

1.2 AVIATION ACTIVITY FORECASTS

Projections of aviation activity were developed for a 20-year planning period (2012-2032). These forecasts cover short-term (2012-2017), mid-term (2018-2022) and long-term (2023-2032) periods. These projections were used to evaluate the capability of the existing Airport facilities to meet current and future demand, and to estimate the extent to which facilities should be provided in the future.

Table 1.1 below highlights the projections of based aircraft and annual aircraft operations through the 20-year planning period.

Table 1.1 Based Aircraft and Operations Forecast Summary

Year	Based Aircraft(1)	Total Annual Operations(2)	Peak Month Operations(3)	PMAD Operations(4)	Peak Hour Operations (PMAD)(5)
2012	375	169,000	17,100	552	75
2017 (PAL 1)	476	206,300	20,800	671	91
2022 (PAL 2)	506	220,700	22,300	719	97
2027 (PAL 3)	556	235,100	23,800	768	104
2032 (PAL 4)	611	252,600	25,500	823	111

Notes:
(1) Data from Table 4.9
(2) Data from Table 4.16. Numbers rounded to nearest 100.
(3) Peak month operations equals 10.1 percent of total annual operations. Numbers rounded to nearest 100.
(4) Peak month average day operations equals peak month operations divided by 31. Numbers rounded to nearest integer.
(5) Equals 13.5 percent of PMAD operations. Numbers rounded to nearest integer.

Source: Kimley-Horn and Associates, Inc., 2014.

1.3 DEMAND/CAPACITY ANALYSIS AND FACILITY REQUIREMENTS

The objective of the demand/capacity and facility requirements analysis was to ensure each of the Airport's functional areas has long-term capacity, flexibility, and growth potential to enable them to respond to changing demand scenarios. The projections of aviation activity presented above in **Table 1.1** were used in the demand/capacity analysis for the development of airport facility requirements.

1.3.1 AIRFIELD FACILITY REQUIREMENTS

The components of the airfield, including runways, taxiways, and navigational aids, were analyzed for their long-term ability to accommodate the anticipated demand. As a result, the following recommendations were made for the airfield facilities:

- Construct a parallel 5,000-foot long parallel runway for airfield capacity enhancement, designed to RDC C-II standards
- Construct a taxiway network to support the new parallel runway

1.3.2 GENERAL AVIATION AND SUPPORT FACILITY REQUIREMENTS

General aviation facility requirements were developed for hangar space, apron space, vehicular parking, and support facilities, including fueling facilities and airport access. The following requirements were developed for general aviation and support facilities:

General Aviation Facilities

- Develop additional conventional/box and T-hangars to accommodate a projected deficiency of approximately 250,300 square feet
- Develop additional conventional hangars to accommodate a projected deficiency of approximately 390,000 square feet
- Provide a minimum additional apron area of approximately 830,100 square feet
- Provide additional general aviation public vehicular parking of approximately 408 stalls or 122,400 square feet

Support Facilities

- Expand the Airport's Jet A fuel storage facilities through additional tanks, expanded fuel farms, or increasing frequency of fuel deliveries
- Improve the intersection geometry for FM 2449 at Underwood Road
- Raise the bridge above the floodplain on Airport Road near Western Boulevard
- Raise the bridge above the floodplain on Underwood Road near FM 2449
- Widen Airport Road to four-lane divided from Denton Enterprise Airport to Western Boulevard
- Widen Airport Road to four-lane divided from Western Boulevard to Bonnie Brae Road
- Signalize the intersection of Airport Road and Western Boulevard when warranted
- Evaluate ARFF equipment and building needs for development when warranted

1.4 ALTERNATIVES ANALYSIS

The alternatives analysis process consisted of developing alternatives to meet the projected needs of the Airport in each of its functional areas. Three airfield alternatives were developed as airfield capacity enhancement scenarios, including various alignments of a new 5,000-foot long parallel runway constructed to RDC C-II standards. Additionally, several taxiway alternatives were explored to mitigate safety issues with direct apron access to the existing runway.

Three landside alternatives were developed, which included various spatial configurations of facilities to meet projected needs for hangar space, apron space, fixed-base operators (FBO), and support facilities.

After analysis by the Master Plan Advisory Committee, Airport staff, local agencies, and the consultant team, an overall Airport Development Plan was created which combined the preferred airfield and landside alternatives into an overall long-term airport development scenario. The proposed Airport development includes the following improvements:

- Addition of a 5,000-foot long west parallel runway, constructed to C-II standards at 100 feet wide
- Relocation of taxiway connectors A2 and A6 to improve access to the new runway
- Realignment of Taxiway Bravo, and removal of direct access taxiways between the apron and runways
- Additional apron space
- Additional hangars, including conventional, box, and T-hangars
- Roadway capacity improvements on Airport Road and Underwood Road
- Improvements to Hickory Creek bridge crossing
- New access road to connect Tom Cole Road to Jim Christal Road, allowing western Airport access
- Dedicated areas to be used for non-aeronautical business development or general aviation development beyond the planning period

1.5 IMPLEMENTATION AND FINANCIAL PLAN

Following the development of the Airport Development Plan, an Implementation Plan was created which assigned project phasing to the development projects. The Implementation Plan also provides recommendations on post-Master Plan study activities that should be considered in the future.

The Financial Plan outlines the proposed improvements over the 20-year planning period. Cost estimates were developed for the projects in the Airport Development Plan, and each project is listed in an overall Capital Improvement Program (CIP). The CIP is broken down by phase, and analyzes funding sources for each project and the estimated federal, state, and local funding share of each. It is estimated that the total CIP for the Master Plan's proposed development will be approximately $150 million. The proposed CIP summary is shown below in **Table 1.2.** The summary of anticipated funding sources by PAL is shown in **Table 1.3**.

Table 1.2 Proposed Capital Improvement Program Summary

Item	PAL I (2015-2017) Total	PAL 2 (2018-2022) Total	PAL 3 (2023-2032) Total	Program Total
Airfield	$21,850,000	$9,410,000	$2,230,000	$33,490,000
General Aviation Area	$25,410,000	$30,580,000	$27,320,000	$83,310,000
Surface Transportation Facilities	$660,000	$12,680,000	$0	$13,340,000
Miscellaneous & Maintenance	$2,780,000	$9,745,000	$7,150,000	$19,675,000
Capital Improvement Program Totals	**$50,700,000**	**$62,415,000**	**$36,700,000**	**$149,815,000**

Source: Kimley-Horn and Associates, Inc., 2014.

Table 1.3 Funding Sources by PAL

PAL	Estimated Capital Costs	Federal Non-Primary Entitlement	State Apportionment	Local	3rd Party
1	$50,700,000	$300,000	$27,490,000	$4,810,000	$18,100,000
2	$62,415,000	$750,000	$21,588,000	$17,287,000	$22,790,000
3-4	$36,700,000	$1,650,000	$12,084,000	$1,526,000	$21,440,000
TOTAL	**$149,815,000**	**$2,700,000**	**$61,162,000**	**$23,623,000**	**$62,330,000**

Source: Kimley-Horn and Associates, Inc., 2014.

1.6 ENVIRONMENTAL OVERVIEW

The potential environmental impacts that may result from the implementation of the projects in the Airport Development Plan were evaluated. The Environmental Overview evaluated key impact categories as listed in FAA Order 1050.1E, as listed below.

- Air Quality
- Biotic Communities - Fish, Wildlife, Birds and Vegetation
- Existing and Future Land Use
- Endangered and Threatened Species
- Hazardous Materials
- Historic and Archaeological Resources
- Floodplains
- Noise
- Section 4(f)
- Water Quality
- Waters of the U.S. including Wetlands

The Environmental Overview is not intended to be a formal environmental impact statement. Rather, its purpose is to ensure environmental factors are considered and to point out those areas that may be potentially affected by the planned development at the Airport. Based on site reconnaissance, review of available data obtained from federal, state and local agency databases, and review of other supporting documentation, a summary of potential environmental impacts anticipated as a result of the proposed development and operation of the Denton Enterprise Airport are provided in **Table 1.4**.

Table 1.4 Summary of Potential Environmental Impacts

Categories	Potential Impacts
Air Quality	*Potential impact to existing Nonattainment Area for 8-Hour Ozone*
Biotic Communities	*Impacted communities are likely to be regularly maintained areas, agricultural fields, and some natural shrub/scrub habitat. No significant impacts anticipated*
Existing and Future Land Use	*None, consistent with existing and future land use plans*
Endangered and Threatened Species	*None anticipated, no listed species observed or documented in study area*
Hazardous Materials	*Not significant, cleanup of one reported leak completed in December, 1999*
Historic and Archaeological Resources	*None anticipated, no resources present*
Floodplains	*Potential minor impacts to 100-yr floodplain*
Noise	*None anticipated, noise sensitive sites outside of DNL 65 contour*
Section 4(f)	*None anticipated, no Section 4(f) resources present*
Water Quality	*Potential impacts to Dry Fork Hickory Creek and Hickory Creek, these water bodies are not listed as Impaired according to CWA 303(d) list of impaired waters*
Waters of the U.S. including Wetlands	*Potential impacts to wooded riparian habitat, forested and emergent wetlands, and freshwater ponds.*

Source: Kimley-Horn and Associates, Inc., 2014.

In general, the result of the Environmental Overview was there are no major environmental impacts anticipated as a result of the proposed Airport development. A full Environmental Assessment is required prior to implementing any of the proposed development projects for which federal funding will be sought, including the development of the parallel runway.

1.7 AIRPORT LAYOUT PLAN

The improvements as depicted in the Airport Development Plan are incorporated into an Airport Layout Plan (ALP) drawing set. The ALP is a group of drawings which serve as the primary tool for providing guidance and direction on the future development at the Airport. The various drawings depict the recommendations contained within this Master Plan Update with regard to development at Denton Enterprise Airport. The ALP drawing set includes the following sheets:

- Airport Layout Drawing
- Airport Airspace Plan
- Airport Airspace Profile
- Inner Portion of the Approach Surface Drawings
- Airport Land Use Drawing
- Airport Property Map

The ALP reflects improvements recommended through the 2032 planning horizon, including a west parallel runway and taxiway system, hangar developments, apron space development, and airport support facilities. In addition, new roadway access to the proposed western airport development is shown.

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)

Scale: 1" = 700'

DENTON ENTERPRISE AIRPORT

DFW ACCESS. EXTRAORDINARY BUSINESS.

Exhibit 8.1

Implementation Plan - Overall Phasing Schematic

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Denton Enterprise Airport
Master Plan Technical Report

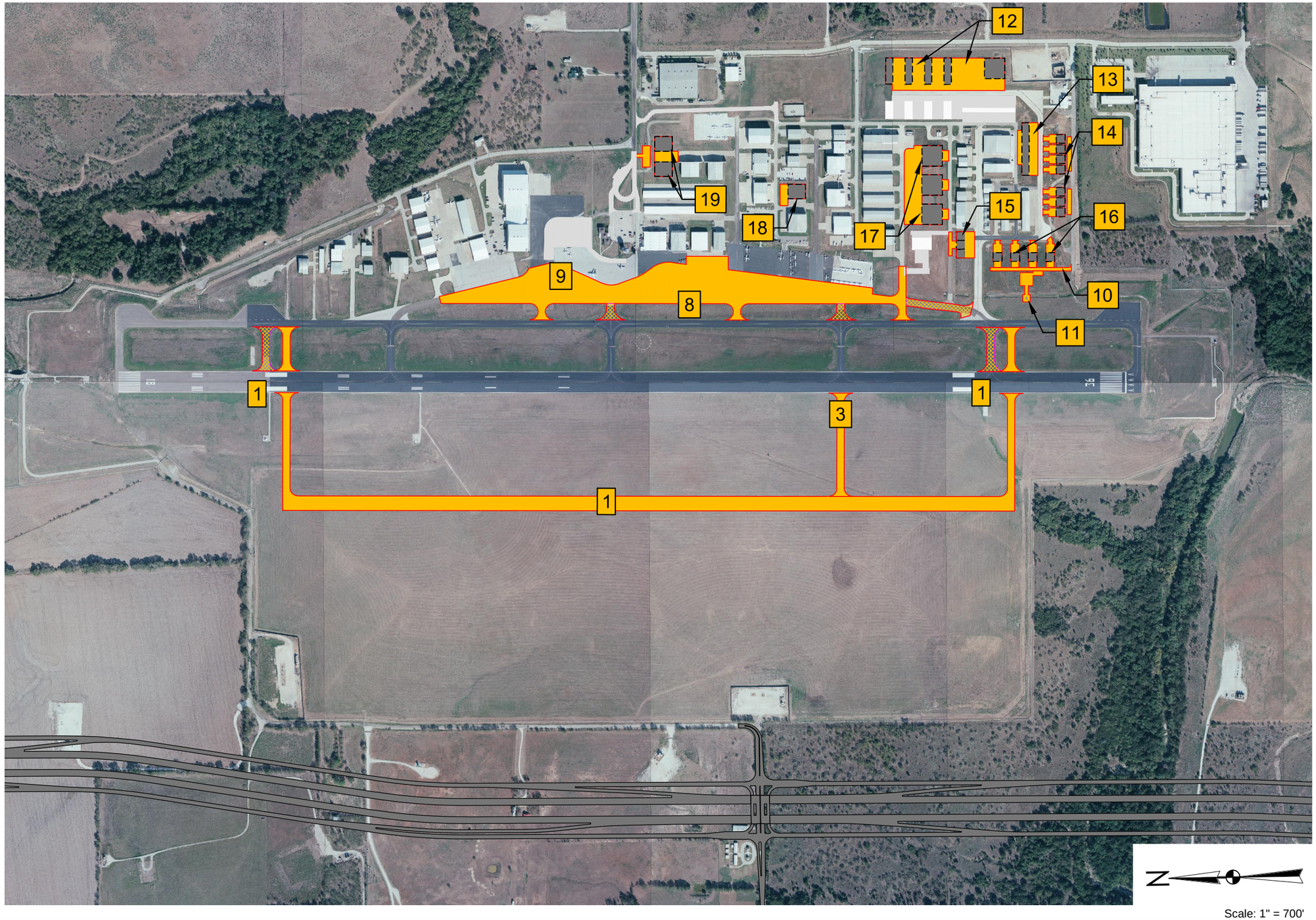
LEGEND

PROPOSED BUILDING

PAL 1 PROJECT

PAVEMENT DEMOLITION

AIRFIELD	
1	New Parallel Runway 18R-36L
3	Extend Taxiway A5
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



Source: Geodetix, Inc. 2012 (Aerial Photography)

Scale: 1" = 700'

DENTON ENTERPRISE AIRPORT
DFW ACCESS. EXTRAORDINARY BUSINESS.

Exhibit 8.2

Implementation Plan - PAL 1

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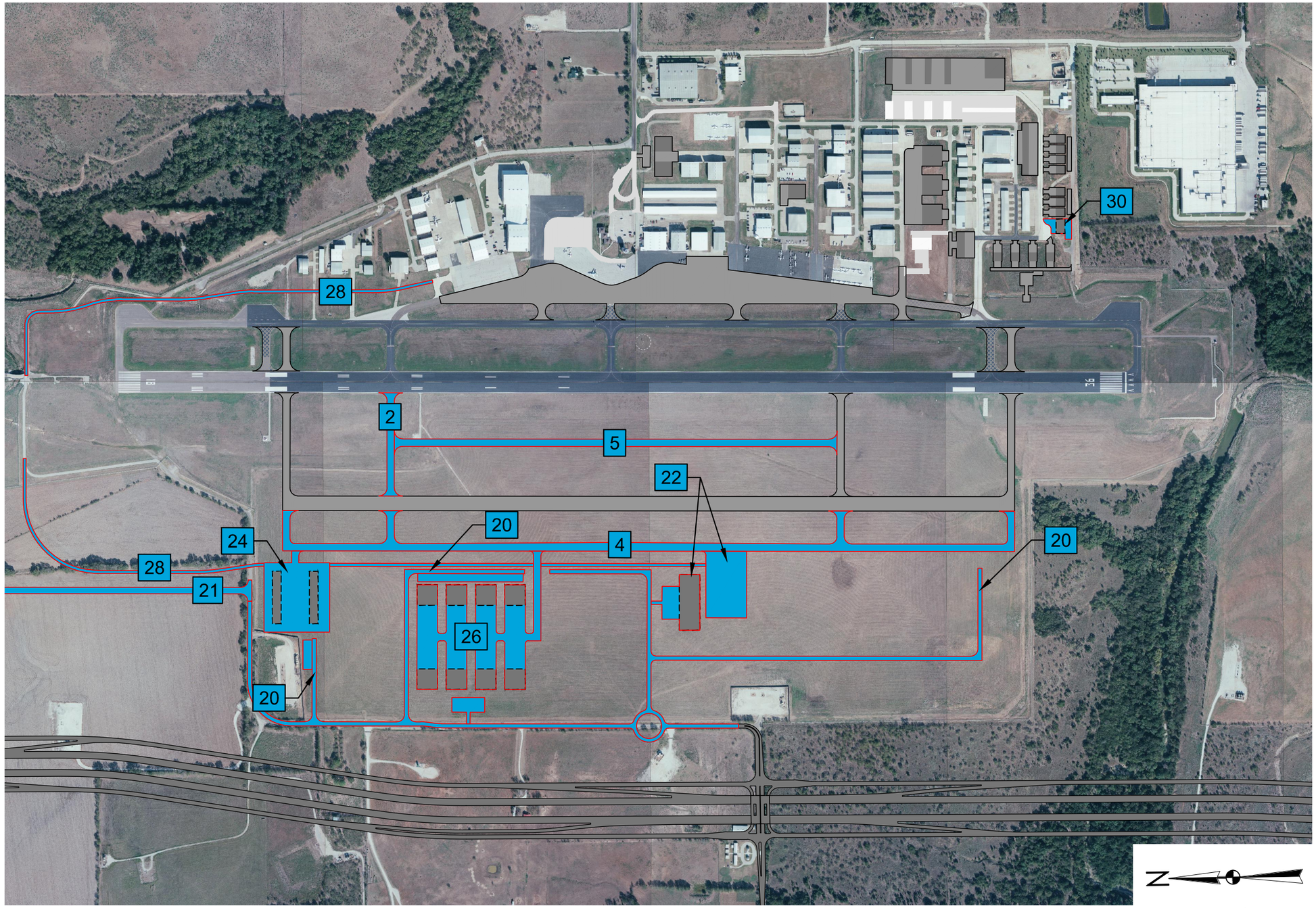
LEGEND

- PROPOSED BUILDING
- COMPLETED PROJECT
- PAL 2 PROJECT
- PAVEMENT DEMOLITION

AIRFIELD	
2	Extend Taxiway A3
4	New West Parallel Taxiway
5	New Interior Parallel Taxiway
GENERAL AVIATION	
20	Construct West Side Access Roads
21	Relocate Tom Cole Road
22	New GA Ramp, Support Facility
24	Construct Small Box / T-Hangars
26	Conventional Hangar Development 1
MISCELLANEOUS	
28	North Vehicle Service Road
30	ARFF Facility and Vehicle



Source: Geodetix, Inc. 2012 (Aerial Photography)

Scale: 1" = 700'

DENTON ENTERPRISE AIRPORT
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Exhibit 8.3

Implementation Plan - PAL 2

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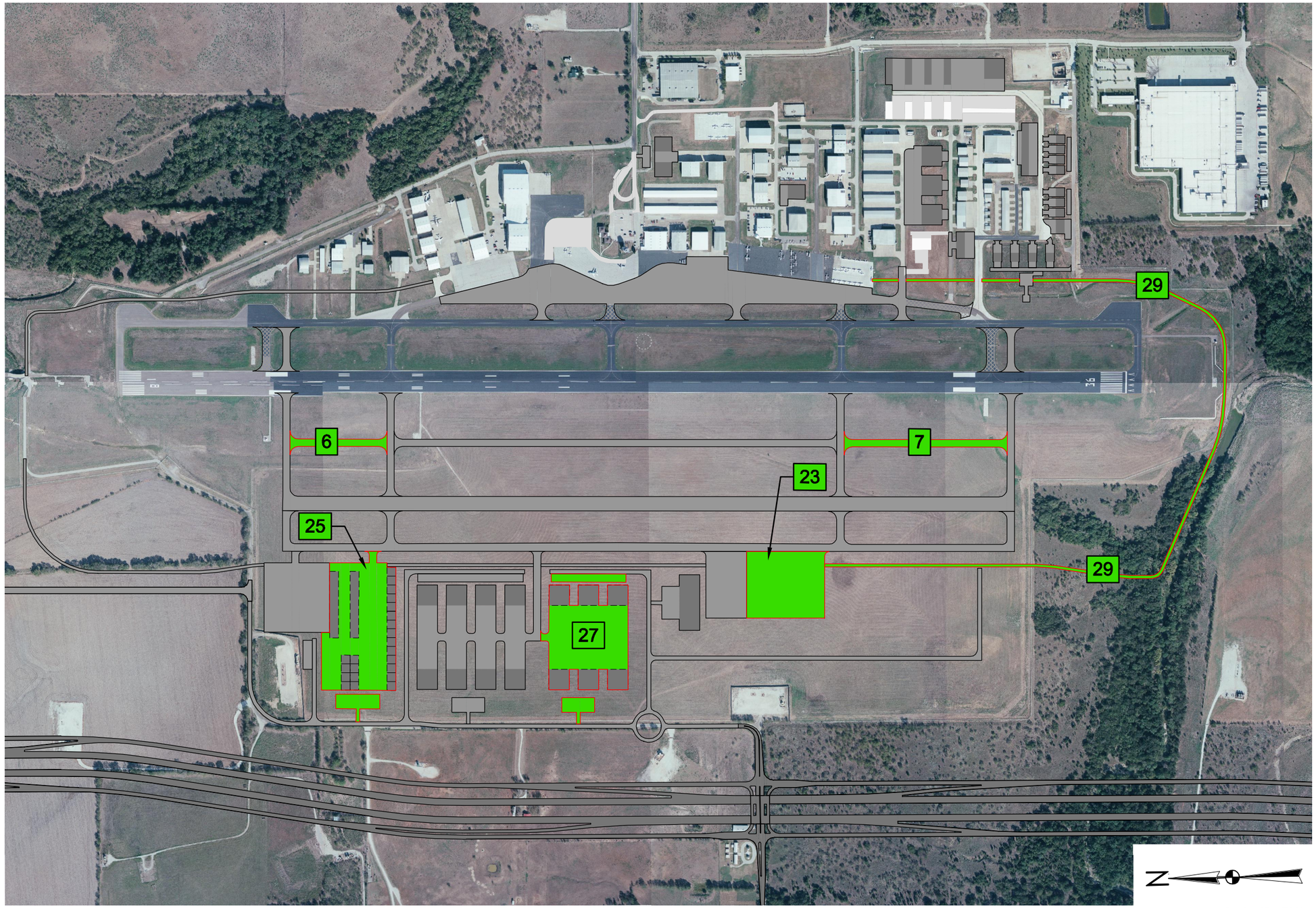
Denton Enterprise Airport
Master Plan Technical Report

LEGEND

- PROPOSED BUILDING
- COMPLETED PROJECT
- PAL 3 PROJECT
- PAVEMENT DEMOLITION

AIRFIELD	
6	Extend Parallel Taxiway North
7	Extend Parallel Taxiway South
GENERAL AVIATION	
23	Expand GA Ramp
25	Expand Box / T-Hangars
27	Conventional Hangar Development 2
MISCELLANEOUS	
29	South Vehicle Service Road



Source: Geodetix, Inc. 2012 (Aerial Photography)

Scale: 1" = 700'

DENTON ENTERPRISE AIRPORT
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Exhibit 8.4

Implementation Plan - PALs 3 and 4

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