Airport 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 also 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 those 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 purposes of 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 to potential airfield improvements at Mesquite Metro Airport (HQZ). 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 resulting 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 Mesquite and airport stakeholders, including users of the airport and the local community and region, all of whom have a vested interest in the development and operation of HQZ.

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 Mesquite, HQZ 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 HQZ.

NO ACTION/NON-DEVELOPMENT ALTERNATIVES

Prior to the presentation of development alternatives for HQZ, there are several non-development options that should be taken into consideration. Non-development alternatives include a "no-build" or "do-nothing" alternative, development of a new replacement airport at a new location, or closure of the existing airport and the transfer of services to another existing airport. The following presents a discussion of the primary non-development alternatives.

NO-BUILD/DO-NOTHING ALTERNATIVE

The City of Mesquite is charged with managing the airport for the economic betterment of the community and region. In some cases, alternatives may include a no-action option; for HQZ, 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 – completed in 2018 – found that HQZ had a total economic impact of $22.7 million annually and supported more than 280 jobs.** If facilities are not maintained and improved so the airport can support general aviation operations, or if 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, HQZ has received nearly $20.3 million in state and federal grants since 1980. These grants represent a direct economic stimulus that has lasting positive economic impacts. The City of Mesquite has a vested interest in maintaining and improving airport facilities for business and general aviation users. Without a commitment to 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 development of a new airport site. The development of a new facility is a very complex and expensive option. A new site will 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 mentioned, the City of Mesquite has accepted nearly $20.3 million in federal and state development grant funding. The acceptance of these grants obligates the airport sponsor, through grant assurances, 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, requiring repayment of grants that are not yet fully depreciated. The investments made, as well as 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, and/or financially feasible.

NON-DEVELOPMENT ALTERNATIVES SUMMARY

The purpose of this master plan is to examine aviation needs at HQZ 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 residents and businesses which rely upon it. Ultimately, the final decision regarding development rests with the City of Mesquite, TxDOT, and the FAA on an individual project basis. HQZ is a vibrant facility with abundant growth potential remaining; as such, the non-development alternatives will not be considered further in this planning process. The analysis to follow 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 forecast aviation demand and meets FAA design standards to the greatest degree possible. As owner and operator, the City of Mesquite provides the overall guidance for the operation and development of the airport. It is of primary concern that HQZ is marketed, developed, and operated for the betterment of the community and its users. The following basic planning principles and objectives will be utilized as general guidelines during this planning effort:

- To develop a safe, attractive, and efficient aviation facility, in accordance with applicable federal, state, and local regulations;
- To preserve and protect public and private investments in existing airport facilities;
- To provide a means for the airport to grow as dictated by demand;
- To establish a plan to ensure the long-term viability of the airport, as well as to promote compatible land uses surrounding the airport;
- To develop a facility that is readily responsive to the changing needs of all aviation users;
- To be reflective and supportive of the long-term planning efforts currently applicable to the region;

- To develop a facility with a focus on self-sufficiency in both operational and developmental cost recovery; and
- To ensure that future development is environmentally compatible.

REVIEW OF PREVIOUS AIRPORT PLANS

The previous master plan for HQZ was completed and approved in 2007. More recently, the airport layout plan (ALP) was updated with a "pen and ink" revision in 2019. The 2019 ALP is shown on **Exhibit 4A**. The ALP provides information on existing and ultimate conditions at HQZ, including:

- Airport data related to airport category, airport reference code (ARC), elevation, wind conditions, temperature, and navigational aids located at the airport; and
- Runway data related to the critical design aircraft, safety areas, markings, lighting, and visual and navigational aids associated with the runway and taxiway system.

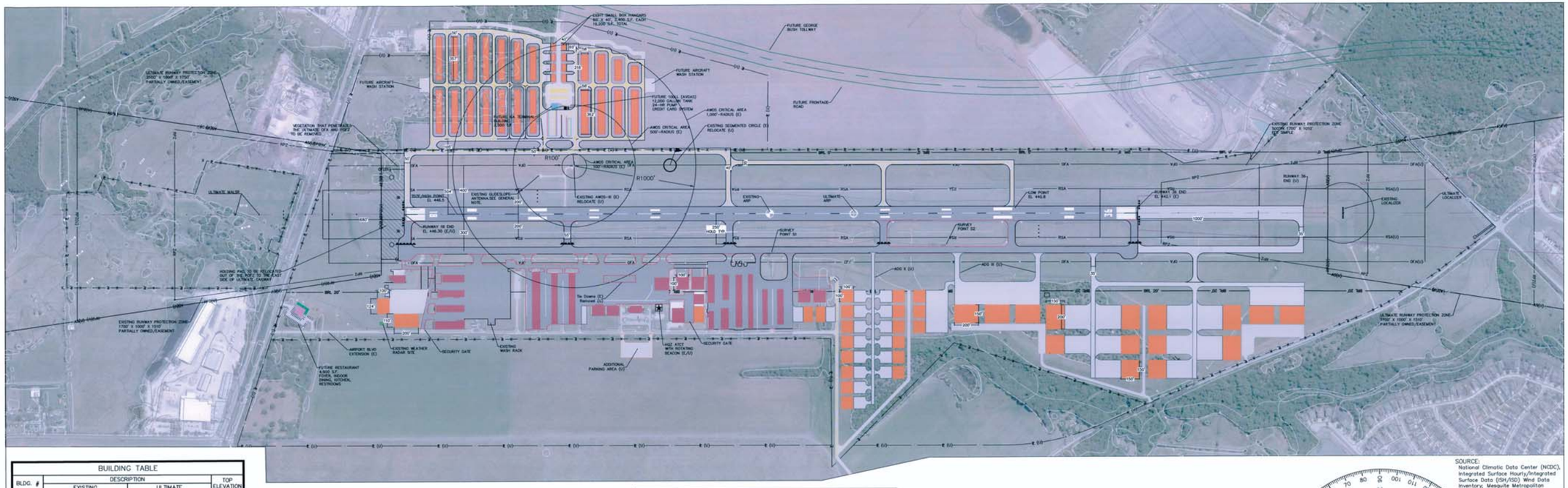
Additionally, the drawing graphically depicts both airside and landside recommendations based on previous airport planning efforts, including:

- Extending Runway 18-36 1,370 feet south to an ultimate length of 7,370 feet;
- Upgrading to an ultimate runway design code (RDC) of D-II-2400;
- Implementing instrument approach visibility minimums down to ½-mile;
- Hangar development within the existing airport property boundary on the southwest side of the airfield, as well as on the northeast side of the airfield within property to be acquired;
- Construction of a partial parallel taxiway on the east side of Runway 18-36; and
- Designation of areas for non-aeronautical land use, such as a restaurant.

The analysis presented in this chapter will revisit the recommendations presented on the ALP and in the previous master plan. Since the completion of the last plan, the FAA has made significant modifications to design standards, as outlined in the previous chapter. As such, some of the previous plan's elements may be carried over to this master plan, while others may be changed or removed from further consideration.

AIRSIDE ALTERNATIVES

As previously detailed, the development alternatives are categorized into two functional areas: airside and landside. Airside considerations relate to runways, taxiways, navigational aids, lighting and marking aids, etc., 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 set-back distances from the runway and object clearance standards. These criteria are defined first to ensure that 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 to benefit the economic development and well-being of the regional area.



BUILDING TABLE			
BLDG. #	DESCRIPTION EXISTING	DESCRIPTION ULTIMATE	TOP ELEVATION
900	TEXAS DPS	NA	470.1'
906	ELECTRICAL VAULT	NA	454.1'
910	T-HANGARS	NA	462.2'
920	T-HANGARS	NA	462.1'
930	T-HANGARS	NA	462.3'
940	EXECUTIVE HANGARS	NA	470.1'
1000	FUEL FARM	NA	474.4'
1130 #100	T-HANGARS	NA	463.7'
1130 #200	T-HANGARS	NA	461.0'
1130 #300	T-HANGARS	NA	461.4'
1200	BEACON	NA	504.7'
1280	CONVENTIONAL HANGAR	NA	470.2'
1290	CONVENTIONAL HANGAR	NA	472.8'
1340	TERMINAL BLDG	NA	472.8'
1350	CONVENTIONAL HANGAR	NA	468.7'
1360	CONVENTIONAL HANGAR	NA	468.7'
1370	CONVENTIONAL HANGAR	NA	468.7'
1440	EXECUTIVE HANGARS	NA	465.1'
1442	EXECUTIVE HANGARS	NA	469.5'
1510	T-HANGARS	NA	471.8'
1512	T-HANGARS	NA	466.6'
1520	T-HANGARS	NA	461.4'
1530	T-HANGARS	NA	465.6'
1540	T-HANGARS	NA	465.6'
1550	T-HANGARS	NA	465.6'
1	N/A	T-HANGAR	465'
2	N/A	T-HANGAR	465'
3	N/A	T-HANGAR	465'
4	N/A	T-HANGAR	465'
5	N/A	T-HANGAR	465'
6	N/A	T-HANGAR	465'
7	N/A	T-HANGAR	465'
8	N/A	T-HANGAR	465'
9	N/A	T-HANGAR	465'
10	N/A	T-HANGAR	465'
11	N/A	T-HANGAR	465'
12	N/A	T-HANGAR	465'
13	N/A	T-HANGAR	465'
14	N/A	T-HANGAR	465'
15	N/A	T-HANGAR	465'
16	N/A	BOX HANGAR	475'
17	N/A	BOX HANGAR	475'
18	N/A	BOX HANGAR	475'
19	N/A	BOX HANGAR	475'
20	N/A	BOX HANGAR	475'
21	N/A	BOX HANGAR	475'
22	N/A	BOX HANGAR	475'
23	N/A	TERMINAL BUILDING	475'
24	N/A	100LL AVGAS PUMP	475'
25	N/A	T- HANGAR	465'
26	N/A	T- HANGAR	465'
27	N/A	T- HANGAR	465'
28	N/A	T- HANGAR	465'
29	N/A	T- HANGAR	465'
30	N/A	T- HANGAR	465'
31	N/A	T- HANGAR	465'
32	N/A	T- HANGAR	465'
33	N/A	RESTAURANT	460'
34	N/A	PATIO DINING	460'
35	N/A	BOX HANGAR	475'

ACTUAL ULTIMATE ELEVATIONS WILL BE DETERMINED BY FINAL GRADING AND DRAINAGE PLAN

SURVEY MONUMENT COORDINATES			
ID	PERMANENT IDENTIFIER	LATITUDE	LONGITUDE
S1	AB2810	32°45'19.14"	96°31'52.79"
S2	CS3209	32°45'04.99"	96°31'51.96"

BUILDING TABLE				
BLDG. #	DESCRIPTION EXISTING	DESCRIPTION ULTIMATE	TOP ELEVATION
36	N/A	BOX HANGAR	485'
37	N/A	BOX HANGAR	485'
38	N/A	BOX HANGAR	485'
39	N/A	BOX HANGAR	485'
40	N/A	BOX HANGAR	485'
41	N/A	BOX HANGAR	485'
42	N/A	BOX HANGAR	485'
43	N/A	BOX HANGAR	485'
44	N/A	BOX HANGAR	485'
45	N/A	BOX HANGAR	485'
46	N/A	BOX HANGAR	485'
47	N/A	BOX HANGAR	485'
48	N/A	BOX HANGAR	485'
49	N/A	BOX HANGAR	485'
50	N/A	BOX HANGAR	485'
51	N/A	BOX HANGAR	485'
52	N/A	BOX HANGAR	485'
53	N/A	BOX HANGAR	485'
54	N/A	BOX HANGAR	485'
55	N/A	BOX HANGAR	485'
56	N/A	BOX HANGAR	490'
57	N/A	BOX HANGAR	490'
58	N/A	BOX HANGAR	490'
59	N/A	BOX HANGAR	490'
60	N/A	BOX HANGAR	485'
61	N/A	BOX HANGAR	490'
62	N/A	BOX HANGAR	485'
63	N/A	BOX HANGAR	485'
64	N/A	BOX HANGAR	490'
65	N/A	BOX HANGAR	485'
66	N/A	BOX HANGAR	485'
67	N/A	BOX HANGAR	490'
68	N/A	BOX HANGAR	490'
69	N/A	BOX HANGAR	490'
70	N/A	BOX HANGAR	490'
71	N/A	BOX HANGAR	465'
72	BOX HANGAR	N/A	485'
73	N/A	BOX HANGAR	485'
74	N/A	BOX HANGAR	485'
75	N/A	BOX HANGAR	485'
76	BOX HANGAR	N/A	485'
77	BOX HANGAR	N/A	485'
78	BOX HANGAR	N/A	465'
79	N/A	BOX HANGAR	485'

ACTUAL ULTIMATE ELEVATIONS WILL BE DETERMINED BY FINAL GRADING AND DRAINAGE PLAN

TRUE NORTH

MAGNETIC DECLINATION
3° 2' E (2015)
ANNUAL RATE OF CHANGE:
0° 7.0' W

0 200 400 800
1" = 800'

GENERAL NOTES

SURVEY MAPPING PERFORMED FEBRUARY 8–10, 2005 BY GEODETIX, INC., SAN ANTONIO, TX. ALL EXISTING COORDINATES AND RUNWAY END ELEVATIONS SUPPLIED BY GEODETIX, INC., SAN ANTONIO, TX.

THE EXISTING HEIGHT HAZARD ZONING ORDINANCE FOR THIS AIRPORT WAS ADOPTED 13 DECEMBER 1993. ZONED 7000' x 100', OTHER THAN UTILITY, PIA.

THE NORTH END RSA LENGTH IS LIMITED TO 680' DUE TO THE UNION PACIFIC RAILROAD AND SCYENE ROAD. A PROPOSED SOUTH RUNWAY EXTENSION AND THE APPLICATION OF DECLARED DISTANCES ARE PROPOSED TO REMEDIATE THIS SAFETY AREA DEFICIENCY.CAUTION ZONE LIGHTS ARE PRESENT AT MESQUITE METRO AIRPORT

TXDOT APPROVAL OF THE ALP DOES NOT CONSTITUTE A COMMITMENT TO FUNDING FOR CONSTRUCTION OF THE RUNWAY EXTENSION, THE DEPICTION IS FOR PLANNING PURPOSES ONLY.

PARALLEL TAXIWAY CONSTRUCTION WILL NOT BEGIN PRIOR TO ACHIEVING CAT I GPS MINIMUMS, WHICH WILL ALLOW FOR THE PHASE OUT OF THE GLIDESLOPE. DEPICTION OF TAXIWAY ON THE ALP DOES NOT IMPLY TXDOT COMMITMENT TO FUND CONSTRUCTION OF THE TAXIWAY, AND IS FOR PLANNING PURPOSES ONLY.

REQUEST MODIFICATION TO DESIGN STANDARD, GLIDESLOPE ANTENNA LOCATED 307' FROM RUNWAY CENTERLINE

AIRPORT DATA TABLE		
	RUNWAY 18–36	
	EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL)	446.5'	446.5'
AIRPORT NAVIGATION AIDS	GPS–18 ILS–17; LOC–35	GPS–18 ILS–17; GPS–35 LOC BC–35
MEAN MAX TEMP (Hottest Month °F)	96°	96°
AIRPORT REFERENCE CODE (ARC)	C–II	D–II
AIRPORT CRITICAL AIRCRAFT	BOMBARDIER CHALLENGER 300/600	GULFSTREAM IV
NPIAS SERVICE LEVEL	RL	RL
TAXIWAY MARKING	℄ REF	℄ REF
TAXIWAY LIGHTING	MITL	MITL
WIND COVERAGE	99.48%	99.48%
AIRPORT REFERENCE POINT COORDINATES	N 32°44'49.1" W 096°31'49.5"	N 32°44'42.3" W 096°31'49.6"

DATUM COORDINATE SYSTEMS – HORIZONTAL DATUM NAD 83, STATE PLANE, TEXAS CENTRAL FIPS 4202 FEET; VERTICAL DATUM NAVD 88. DO NOT APPLY CORRECTION FACTOR.

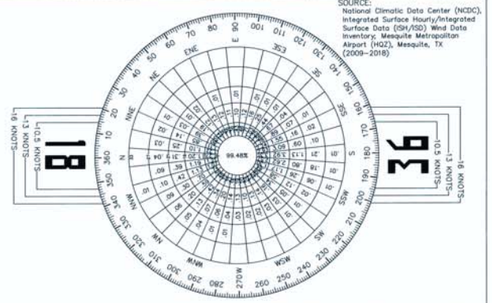
A FAA 405 SURVEY WAS COMPLETED AS PART OF THIS ALP.

LEGEND	EXISTING	ULTIMATE
RUNWAY/TAXIWAY		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		(U)
AIRPORT PROPERTY LINE with FENCE		(U)
AIRPORT REFERENCE POINT (ARP)		
WIND CONE AND SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
HQZ ATCT/C&G BEACON		
FENCE LINE		
TELEPHONE/POWER POLE LINE		
NONDIRECTIONAL BEACON (NDB)		
RWY END IDENTIFIER LIGHTS (REILS)		
VGSI		
BUILDING RESTRICTION LINE (BRL)		BRL 17
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
AWOS		
HOLD POSITION AND SIGN		
SURVEY MARKERS		

MODIFICATIONS TO FAA AIRPORT DESIGN STANDARDS		
NO.	OBJECT	REMEDIATION
1.		
2.		

RUNWAY DATA TABLE				
	RW 18–36			
	EXISTING		ULTIMATE	
RUNWAY LENGTH & WIDTH (ft.)	6,000' X 100'		7370' X 100'	
PAVEMENT DESIGN STRENGTH (lbs.)	70,000 (SW) 100,000 (DW) 100,000 (DTW)		70,000 (SW) 100,000 (DW) 100,000 (DTW)	
RUNWAY LIGHTING	MIRL		MIRL	
PERCENT EFFECTIVE GRADE	0.10%		0.05%	
PERCENT WIND COVERAGE	99.48%		99.48%	
MAXIMUM ELEVATION ABOVE MSL	446.5'		446.5'	
RW SURFACE TYPE	CONCRETE		CONCRETE	
RSA – LENGTH BEYOND RW END	680'(18)/1000'(36)		680'(18)/1000'(36)	
RSA – WIDTH	400'		400'	
OFA – LENGTH BEYOND RW END	630'(18)/1000'(36)		630'(18)/1000'(36)	
OFA WIDTH	800'		800'	
OFZ – LENGTH BEYOND RW END	200'		200'	
OFZ WIDTH	400'		400'	
RUNWAY END	18	36	18	36
RUNWAY MARKING	PIR	PIR	PIR	PIR
FAR PART 77 APPROACH CATEGORY	PIR	D	PIR	D
APPROACH TYPE	ILS	GPS LPV	ILS	GPS LPV
APPROACH SLOPE	50:1/40:1	34:1	50:1/40:1	34:1
RUNWAY VISUAL AIDS	LDIN PAPI–4 REIL	LDIN PAPI–4	LDIN PAPI–4 REIL	LDIN PAPI–4 REIL
APPROACH VISIBILITY MINIMA	3/4 MILE	1 MILE	1/2 MILE	3/4 MILE
TOUCHDOWN ZONE ELEVATION	446.5'	442.5'	446.5'	442.5'
TAKE–OFF RUN AVAILABLE (TORA)	5999'	5630'	7370'	7370'
TAKE–OFF DISTANCE AVAILABLE (TODA)	5999'	5630'	7370'	7370'
APPROACH STOP DISTANCE AVAILABLE (ASDA)	5999'	5630'	7370'	7000'
LANDING DISTANCE AVAILABLE (LDA)	5630'	5630'	7370'	7000'

RUNWAY END COORDINATES AND ELEVATIONS			
	LATITUDE	LONGITUDE	ELEVATION
EXISTING RWY 18 END	32°45'18.74"	96°31'48.97"	446.00'
EXISTING RWY 36 END	32°44'19.39"	96°31'50.05"	441.90'
ULTIMATE RWY 36 END	32°44'05.83"	96°31'50.30"	442.00'



SOURCE:
National Climatic Data Center (NCDC), Integrated Surface Hourly/Integrated Surface Data (ISH/ISD) Wind Data Inventory: Mesquite Metropolitan Airport (HQZ), Mesquite, TX (2009–2018)

ALL WEATHER WIND COVERAGE		
RUNWAY	CROSSWIND COMPONENT	PERCENT
RUNWAY 18–36	16 KNOTS	99.48%

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300–13, AS AMENDED, PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION AND AN FAA FORM 7460–1 SUBMITTED PRIOR TO ANY CONSTRUCTION ON AIRPORT PROPERTY

11 OCT 2019
DAN HARMON, INTERIM DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

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

10/3/19
SIGNATURE — DATE

Airport Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

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PLH	November 2018
DESIGNED BY	DATE
CL/KH	June 2019
DRAWN BY	DATE
MAW	November 2018
CHECKED BY	DATE

AIRPORT LAYOUT DRAWING
MESQUITE METROPOLITAN AIRPORT (HQZ)
CITY OF MESQUITE, TX

Texas Department of Transportation
Aviation Division

SHEET 1 OF 1

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Exhibit 4B presents the airside and landside alternative considerations that will be specifically addressed in this analysis. 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 Mesquite, and the public.

The remainder of this chapter will describe 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.

AIRSIDE CONSIDERATIONS

This section identifies and evaluates various airside development factors at HQZ to meet the requirements set forth in Chapter Three. Airside facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable development options. A summary of the primary airside planning issues to be considered in this alternatives analysis is listed below.

AIRPORT DESIGN CRITERIA

Applicable standards for airport design are outlined in FAA Advisory Circular (AC) 150/5300-13B, *Airport Design*. The design of airfield facilities is primarily based on the physical and operational characteristics of aircraft using the airport. As discussed in Chapter Two, an RDC is applied to each runway at an airport to identify the appropriate design standards for the runway and associated taxiway system. The RDC is comprised of the aircraft approach category (AAC), the airplane design group (ADG), and the approach visibility minimums expressed in runway visual range (RVR) values. It relates to the largest and fastest aircraft that regularly operate at the airport. The FAA has historically defined regular use as at least 500 annual operations at the airport. While this can sometimes be represented by one specific make and model of aircraft, most of the runway's RDC values are represented by several different aircraft that, collectively, operate frequently at the airport.

As a regional reliever airport in the FAA's *National Plan of Integrated Airport Systems* (NPIAS), HQZ should be capable of safely accommodating the needs of corporate, charter, military, public safety, recreational, and instructional aviation uses in the Dallas-Fort Worth Metroplex. Analysis in Chapter Two indicated that the RDC for Runway 18-36 is currently B-II-4000; however, larger business jets – such as the Challenger 300 and 600, Cessna Citation III / VI, and other large business jets – have been identified operating at HQZ. While operations larger than ARC C-II do not currently meet the threshold of 500 annual operations to be considered the critical design group, HQZ has historically been planned to an ARC of C-II. Given the forecast increases in business jet and turbine aircraft activity, HQZ could reasonably support a shift to RDC C-II-4000 in the future. The airfield should continue to be planned for some of the most demanding general aviation business jet aircraft utilizing the airport and should strive to accommodate business jet activity to the greatest extent possible, as demand dictates. As such, alternative design considerations for Runway 18-36 will be presented under ultimate RDC C-II-4000 standards.

AIRSIDE CONSIDERATIONS

- Evaluate improvements necessary to meet the appropriate existing and ultimate Federal Aviation Administration (FAA) design standards.
- Examine a potential runway extension on Runway 18-36.
- Evaluate the taxiway system in meeting airfield safety, design, and geometry standards.
- Upgrade airport signage to include runway distance remaining signs.



LANDSIDE CONSIDERATIONS

- Determine efficient land uses that allow the airport to meet the needs of aviation users and promote non-aviation uses where possible.
- Consider potential locations for advanced air mobility (AAM) and electric vertical takeoff and landing (eVTOL) facilities.
- Identify locations for hangar development to meet projected demand.
- Evaluate options to construct support facilities needed for aviation activities.
- Examine options for additional vehicle parking access while best segregating aircraft and vehicle traffic on airport movement areas.



RUNWAY LENGTH

The runway length analysis in the previous chapter concluded that the existing length of Runway 18-36 (6,000 feet) is capable of safely accommodating most business jet aircraft currently operating at HQZ; however, during hot summer periods, some larger aircraft must depart from HQZ with restricted payloads (less fuel/freight; fewer passengers), which can limit non-stop destination distances. Furthermore, when considering wet runway conditions, the landing length requirements of several business jets analyzed in Chapter Three often exceed the current primary runway length. When analyzing runway takeoff and landing length requirements, the existing critical design aircraft (Cessna Citation CJ2+) can take off at 100 percent useful load on the current runway; however, the aircraft needs 6,600 feet of landing length when operating under Part 135 charter aircraft rules on a wet or contaminated runway. The ultimate critical design aircraft (Bombardier Challenger 300) needs approximately 6,200 feet of runway length to take off at maximum takeoff weight (MTOW) and approximately 6,800 feet of landing length when operating under Part 135 charter aircraft rules on a contaminated or wet runway environment; therefore, length alternatives for the runway will explore extension options up to 7,000 feet.

The facility requirements concluded that additional length on the primary runway may become necessary in the future, depending on how the business jet aircraft fleet mix changes and grows. For these reasons, the alternatives to follow consider extension options to the runway so that the airport is prepared in the future, should demand for an extension materialize. At a minimum, planning for runway extensions allows the city to develop land use and zoning policies that limit the potential for encroaching developments that would restrict future airport expansion.

TAXIWAY CONFIGURATION

The taxiway system at HQZ primarily meets the recommended design and geometry standards set forth by the FAA; however, there are certain existing non-standard taxiway geometry conditions that need to be addressed:

- Taxiway D provides direct access from the aircraft apron/aircraft hangar storage area to Runway 18-36.
- The taxilane linkage from the private hangar (adjacent to the Runway 18 threshold) provides direct access to Runway 18-36.

Each of these conditions can lead to pilots inadvertently taxiing onto the runway, creating a runway incursion and other potentially dangerous airfield safety concerns. Both of these conditions are addressed in the airside alternatives to follow.

ANCILLARY IMPROVEMENTS

Airfield Signage | Airfield identification signs assist a pilot in identifying their location on the airfield and directing them to their desired location. Lighted signs are installed on the runway and taxiway system on the airfield. The signage system includes runway and taxiway designations, holding positions,

routing/directional, and runway exits. All existing signs should be maintained throughout the planning period. At present, there are no distance remaining signs serving HQZ; consideration should be given to the addition of distance remaining signage on Runway 18-36, at a minimum. Airfield signage should be expanded or upgraded as airfield improvements are made.

AIRSIDE ALTERNATIVES

Four airfield alternatives have been prepared to address the issues outlined above. The details of each alternative are described below, along with the alternative's associated advantages and disadvantages.

AIRSIDE ALTERNATIVE 1

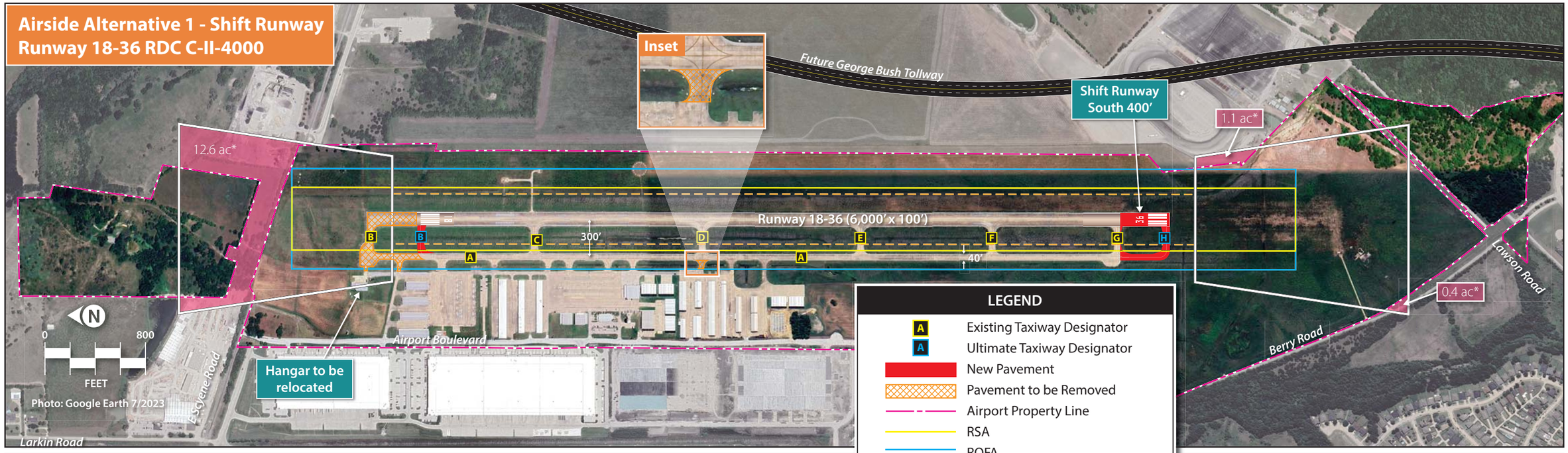
Depicted on **Exhibit 4C**, Airside Alternative 1 considers improvements to the airfield to meet critical safety area design standards for RDC C-II-4000. In addition, this alternative explores options to mitigate existing direct access points from apron or aircraft hangar storage areas to Runway 18-36.

Runway 18-36 | The existing Runway 18-36 length of 6,000 feet allows 100 percent of the business jet fleet to take off at 60 percent MTOW during the hottest periods of the summer. As such, this alternative maintains the existing runway length; however, to meet ultimate RDC C-II-4000 design standards, consideration is given to shifting the entire surface of the runway approximately 400 feet to the south. In doing so, the ultimate runway safety area (RSA) and runway object free area (ROFA) would also be shifted off E Scyene Road and would be contained within existing airport property. Primary impacts associated with a 400-foot southern runway shift include shifting the Runway 18 runway protection zone (RPZ) over an existing hangar, which would need to be relocated. The RPZ serving Runway 18 would also encompass approximately 12.6 acres of uncontrolled property, which would need to be protected via property acquisition or avigation easement. Additionally, the RPZ serving Runway 36 is shifted beyond airport property, which includes approximately 1.1 and 0.4 acres of uncontrolled property, as well as portions of Berry Road and Lawson Road. These areas of the RPZ also need to be acquired or protected via avigation easements. The proposed improvements to the runway would involve several connected projects, including:

- An extension of Taxiway A;
- Relocation of the runway end identifier lights (REILS) and lead-in light systems (LDIN), which are the approach lighting systems (ALS) serving Runway 18 and 36;
- Acquisition (fee-simple/easement) of approximately 12.6, 1.1, and 0.4 acres of uncontrolled property and relocation of the existing hangar within the shifted RPZs; and
- Mitigation of any overgrown vegetation and gradient incompatibilities associated with the RSA, ROFA, and runway obstacle free zone (ROFZ) serving the shifted runway.

Taxiway Geometry Improvements | This alternative considers removing and relocating the entirety of Taxiway A approximately 400 feet to the south, serving the shifted Runway 18-36. Ultimately, this will eliminate the existing direct access provided by the taxilane linkage extending directly to Taxiway B from

Airside Alternative 1 - Shift Runway
Runway 18-36 RDC C-II-4000

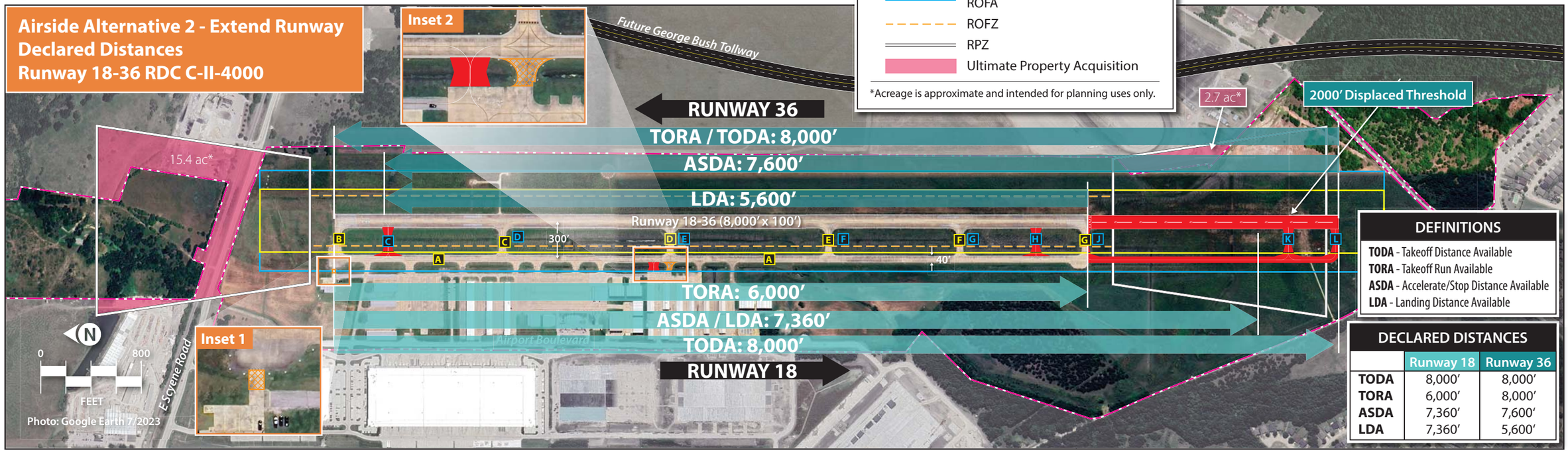


LEGEND

- Existing Taxiway Designator
- Ultimate Taxiway Designator
- New Pavement
- Pavement to be Removed
- Airport Property Line
- RSA
- ROFA
- ROFZ
- RPZ
- Ultimate Property Acquisition

*Acreage is approximate and intended for planning uses only.

Airside Alternative 2 - Extend Runway
Declared Distances
Runway 18-36 RDC C-II-4000



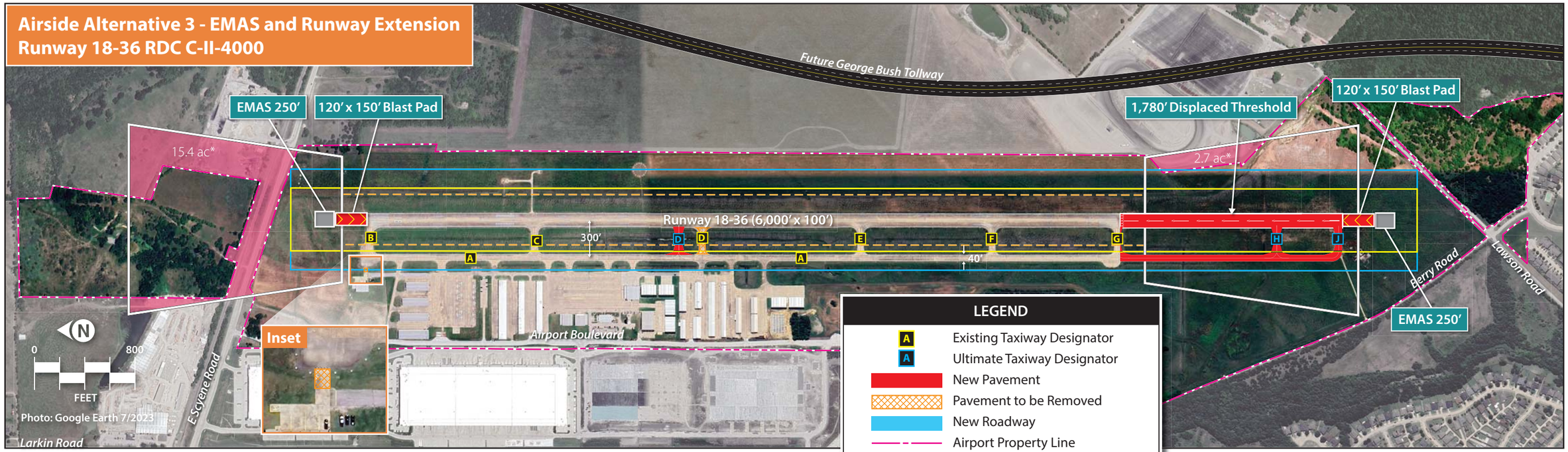
DEFINITIONS

TODA - Takeoff Distance Available
TORA - Takeoff Run Available
ASDA - Accelerate/Stop Distance Available
LDA - Landing Distance Available

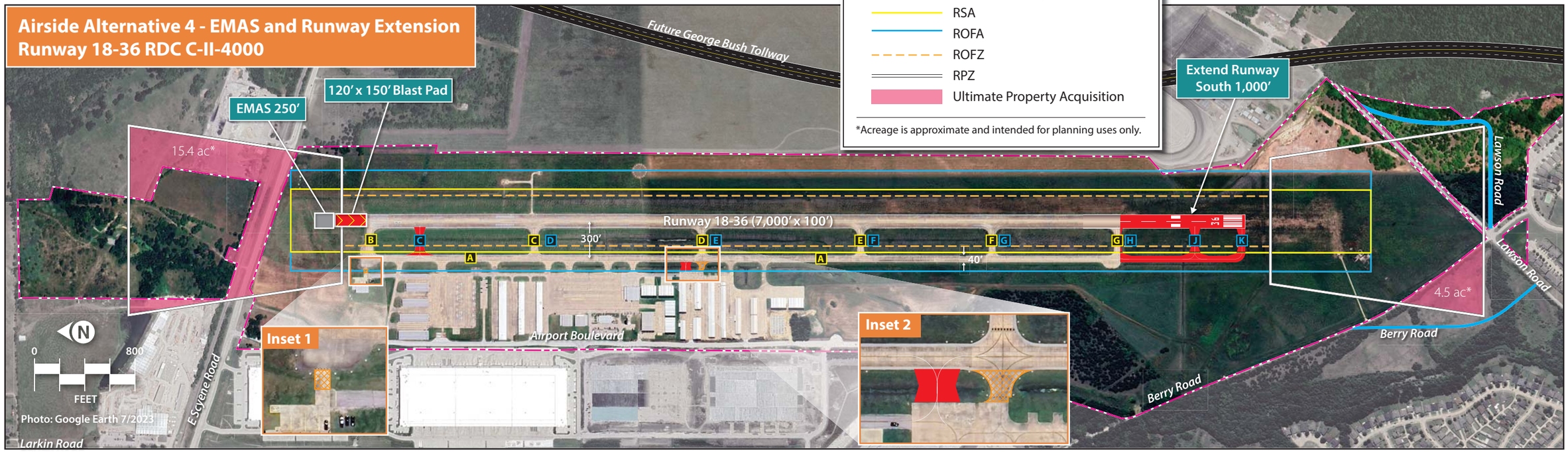
DECLARED DISTANCES

	Runway 18	Runway 36
TODA	8,000'	8,000'
TORA	6,000'	8,000'
ASDA	7,360'	7,600'
LDA	7,360'	5,600'

Airside Alternative 3 - EMAS and Runway Extension
Runway 18-36 RDC C-II-4000



Airside Alternative 4 - EMAS and Runway Extension
Runway 18-36 RDC C-II-4000



LEGEND

- Existing Taxiway Designator
- Ultimate Taxiway Designator
- New Pavement
- Pavement to be Removed
- New Roadway
- Airport Property Line
- RSA
- ROFA
- ROFZ
- RPZ
- Ultimate Property Acquisition

*Acreage is approximate and intended for planning uses only.

a private hangar to Runway 18-36. Furthermore, the construction of an additional taxiway connector from Taxiway A is considered, serving the shifted Runway 36 threshold. This new taxiway could also serve as a bypass taxiway to alleviate potential points of congestion.

Other taxiway improvements in this alternative include the removal of the western portion of Taxiway D, thereby removing the direct access provided from the aircraft apron/aircraft hangar storage area, across Taxiway A, and ultimately to Runway 18-36.

AIRSIDE ALTERNATIVE 2

As shown on **Exhibit 4C**, Airside Alternative 2 examines potential options to extend the runway, meet critical safety area design standards for RDC C-II-4000, and mitigate existing direct access points provided from apron or aircraft hangar storage areas to Runway 18-36. It should be noted that the RPZs in this alternative remain in their existing locations; as such, the RPZ serving Runway 18 encompasses approximately 15.4 acres of uncontrolled property, while the RPZ serving Runway 36 encompasses approximately 2.7 acres of uncontrolled property.

Runway 18-36 | A 2,000-foot extension to Runway 18-36 results in a length of 8,000 feet, which would satisfy the existing and ultimate critical aircraft for both takeoff and landing situations and would increase utility for the largest business jets, such as the Gulfstream G550/650. To meet ultimate RDC C-II-4000 design standards, consideration is given to the implementation of declared distances to mitigate safety area deficiencies to the ultimate RSA and ROFA beyond the north end of the runway, which include uncontrolled property and are traversed by E Scyene Road. Additionally, declared distances are implemented under this alternative to mitigate safety area deficiencies that would be imposed by a runway extension to the south. Declared distances are used to define the effective runway length for landing and takeoff when a standard RSA/ROFA cannot be achieved or an RPZ needs to be relocated. The four declared distances include:

- **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 RSA/ROFA length beyond the runway end); and

- **Landing Distance Available (LDA) –** the runway length declared available and suitable for landing an aircraft (factors in the RSA/ROFA length beyond the runway end and positioning of the approach RPZ).

The declared distances pertaining to the RSA and ROFA are the ASDA and LDA, while the TORA and LDA pertain to the RPZs. The runway extension and declared distances presented in Alternative 2 reduce the TORA, ASDA, and LDA for the runway in each direction to meet the C-II standard of 1,000 feet of RSA and ROFA beyond the runway end. The application of declared distances keeps the RPZs in their current location, which minimizes impacts to off-airport properties. As such, the existing uncontrolled acreage amounts remain the same as in the existing condition under this alternative, amounting to 15.4 acres of uncontrolled property within the Runway 18 RPZ and 2.7 acres of uncontrolled property within the Runway 36 RPZ. The resulting declared distances for this alternative are presented in **Table 4A**. The proposed improvements to the runway would involve several connected projects, including:

TABLE 4A| Airside Alternative 2 – Declared Distances

Runway 18-36 Declared Distances	18	36
Takeoff Run Available (TORA)	6,000'	8,000'
Takeoff Distance Available (TODA)	8,000'	8,000'
Accelerate-Stop Distance Available (ASDA)	7,360'	7,600'
Landing Distance Available (LDA)	7,360'	5,600'

Source: Coffman Associates analysis

- An extension of Taxiway A;
- Relocation of the LDIN and REILs serving Runway 36;
- Acquisition (fee-simple/easement) of approximately 15.4 and 2.7 acres of uncontrolled property within the existing Runway 18 and shifted Runway 36 RPZs; and
- Mitigation of any overgrown vegetation and gradient incompatibilities associated with the RSA, ROFA, and ROFZ.

Taxiway Geometry Improvements | This alternative considers removing the existing direct access provided by the taxilane linkage extending directly to Taxiway B from a private hangar to Runway 18-36. With the extension of Taxiway A to serve the ultimate Runway 36 end, bypass taxiways are also considered at each end of the runway to alleviate potential points of congestion. Other taxiway improvements in this alternative include the removal and relocation of the western portion of Taxiway D to the north. Ultimately, this would remove the direct access provided from the aircraft apron/aircraft hangar storage area, across Taxiway A, and ultimately to Runway 18-36.

AIRSIDE ALTERNATIVE 3

Airside Alternative 3, shown on **Exhibit 4C**, examines potential options to meet critical safety area design standards for RDC C-II-4000 while maximizing usable runway length. As such, a runway extension to an ultimate length of 7,780-feet is considered, which accommodates both the existing and ultimate critical aircraft in all takeoff and landing configurations and increases utility for the largest business jets in the national fleet. Although a runway extension is considered, the RPZs in this alternative remain in their existing locations. As such, the RPZ serving Runway 18 encompasses approximately 15.4 acres of uncontrolled property, while the RPZ serving Runway 36 encompasses approximately 2.7 acres of uncontrolled property. Additionally, options to mitigate existing direct access points provided from apron or aircraft hangar storage areas to Runway 18-36 are explored.

Runway 18-36 | Another option to reduce the effective RSAs from exiting airport property is to install an engineered materials arresting system (EMAS) to the end of a runway. EMAS uses crushable material

placed at the end of a runway to stop an aircraft that overruns the runway. The tires of the aircraft sink into the lightweight material and the aircraft is decelerated as it rolls through the material. The application of an EMAS bed reduces the amount of RSA/ROFA required beyond the end of the runway from 1,000 feet to 600 feet.

FAA Advisory Circular (AC) 150/5220-22B, *Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*, provides guidance on the selection and design standards of an EMAS. The minimum width of the EMAS bed must be the width of the runway, based on the standard width for the applicable airplane design group (ADG). The EMAS bed length depends on the airport configuration and the aircraft using the airport but should be designed to decelerate the design aircraft at speeds of 70 knots; the airport operator and EMAS manufacturer must consult with the FAA on selecting the appropriate design entrance speed and installation of the EMAS. The EMAS bed rests on a base of paved surface slightly wider than the bed itself; the EMAS material is set back at a distance from the runway threshold, based on the consultation, to prevent premature erosion of the material due to jet blast. Installing EMAS at the north and south ends of the runway would reduce the required length of the RSA/ROFA from 1,000 feet beyond the runway end to 600 feet, which would bring the ultimate RSA and ROFA off of E Scyene Road and onto existing airport property. Additionally, a runway extension of 1,780 feet could be implemented to the south while still meeting RDC C-II-4000 RSA and ROFA standards. This would bring the effective runway length to 7,780-feet. To keep the RPZ in its existing location, a threshold displacement of 1,780 feet is considered on Runway 36, thereby reducing the effective runway length for landing operations to 6,000 feet. The proposed improvements to the runway would involve several connected projects, including:

- An extension of Taxiway A;
- Relocation of the LDIN and REILs serving Runway 36;
- Acquisition (fee-simple/easement) of approximately 15.4 and 2.7 acres of uncontrolled property within the existing Runway 18 and shifted Runway 36 RPZs;
- Removal and relocation of portions of Berry Road and Lawson Road within the shifted RPZ;
- Installation of EMAS on the north end of the runway to meet safety area requirements; and
- Mitigation of any overgrown vegetation and gradient incompatibilities associated with the RSA, ROFA, and ROFZ.

Taxiway Geometry Improvements | This alternative considers the complete removal of the taxilane linkage extending directly to Taxiway B from a private hangar to Runway 18-36, thereby eliminating direct access. Furthermore, this alternative considers the removal and relocation of the eastern portion of Taxiway D to the north, eliminating direct access to Runway 18-36. With the extension of Taxiway A to serve the ultimate Runway 36 end, a bypass taxiway is also considered to alleviate potential points of congestion.

AIRSIDE ALTERNATIVE 4

Depicted on **Exhibit 4C**, Airside Alternative 4 considers improvements to the airfield that are loosely based on the current ALP, including a 1,000-foot extension of the runway to the south for an ultimate length of 7,000 feet. Additional considerations are taken to maintain the full effective length of the proposed runway while still meeting ultimate safety area design standards associated with RDC C-II-4000.

Runway 18-36 | A 1,000-foot extension of Runway 18-36 to the south results in a length of 7,000 feet, which would allow the ultimate critical aircraft (Bombardier Challenger 300) to take off at 100 percent MTOW during the hottest periods of the summer. Additionally, a runway of this length would allow landing operations under the 60 percent rule by the ultimate critical aircraft with wet or contaminated runway conditions. Primary impacts associated with a southern runway extension to 7,000 feet include shifting the RPZ serving Runway 36 beyond airport property, which includes approximately 4.5 acres of uncontrolled property, as well as portions of Berry Road and Lawson Road that would ultimately have to be relocated. Furthermore, this alternative includes an EMAS option serving the north end of the runway in order to meet ultimate RSA and ROFA safety area requirements. The proposed improvements to the runway would involve several connected projects, including:

- An extension of Taxiway A;
- Relocation of the LDIN and REILs serving Runway 36;
- Acquisition (fee-simple/easement) of approximately 15.4 and 4.5 acres of uncontrolled property within the existing Runway 18 and shifted Runway 36 RPZs;
- Removal and relocation of portions of Berry Road and Lawson Road within the shifted RPZ;
- Installation of EMAS on the north end of the runway to meet safety area requirements; and
- Mitigation of any overgrown vegetation and gradient incompatibilities associated with the RSA, ROFA, and ROFZ.

Taxiway Geometry Improvements | This alternative considers removing the entirety of the taxilane linkage extending directly to Taxiway B from a private hangar to Runway 18-36, thereby eliminating direct access. Also considered is the removal and relocation of the western portion of Taxiway D to the north. Ultimately, this would remove the direct access provided from the aircraft apron/aircraft hangar storage area, across Taxiway A, and ultimately to Runway 18-36. With the extension of Taxiway A to serve the ultimate Runway 36 end, bypass taxiways are also considered at each end of the runway to alleviate potential points of congestion.

AIRSIDE SUMMARY

The sections above addressed several planning considerations for the airside facilities at HQZ. The primary issues to consider on the airfield include addressing non-standard airfield geometry and increasing operational utility at the airport. It is important that the PAC, airport and city management, and the public offer their feedback so that the best combination of these alternatives is selected. Following discussion and review with these entities, a preferred recommended airside development concept will be drafted and presented in the next chapter.

ADVANCED AIR MOBILITY AND EVTOL CONSIDERATIONS

Since the turn of the decade, private companies have been developing and testing advanced air mobility (AAM) technologies. AAM, which may also be called urban air mobility (UAM), is a new 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, with AAM expected to become a key component of the nation's air transportation network. Images are provided below of several different AAM/eVTOL aircraft currently in development that would use a vertiport like the one proposed in these recommendations.

Various eVTOL Aircraft in Development (Courtesy of VoloCopter, Joby, and Lilium)

Guidelines for Vertiport Facilities

This section reviews applicable guidelines established by the FAA regarding the design of vertiports for eVTOL aircraft. A vertiport is defined as an aviation facility with the primary purpose of supporting eVTOL aircraft. As previously stated, AAM is still a developing technology. Recently, the FAA Office of Airports and Technical Center solicited aircraft design information from AAM developers. Nine companies responded to the inquiry with varying levels of cooperation, including aircraft design and specifications, operational concepts, infrastructure design, and takeoff and landing profiles. As a result of the feedback, the FAA was able to develop an interim document on the design of vertiports, titled Engineering Brief (EB) 105, *Vertiport Design*.

Reference Aircraft

The design criteria established in *Vertiport Design* are intended for eVTOL aircraft that meet the performance criteria and design characteristics of the reference aircraft. The reference aircraft denotes an eVTOL aircraft that integrates certain performance and design features of the nine previously mentioned emerging aircraft. These aircraft models are evolving rapidly and manufacturers are approaching aircraft certification with a wide range of designs. Furthermore, new eVTOL aircraft have not yet received FAA airworthiness certification, nor do they have established safety records. This makes it impractical for the FAA to categorize these aircraft the way fixed-wing and helicopter aircraft have been; however, the feedback from eVTOL manufacturers revealed common characteristics, which the FAA used to produce *Vertiport Design*. These preliminary design characteristics, expected performance capabilities, and assumptions regarding takeoff and landing area design for eVTOL aircraft are summarized in **Table 4B** and **Figure 4A**.

TABLE 4B | Reference Aircraft

DESIGN CHARACTERISTICS	CRITERIA
Propulsion	Electric battery driven, utilizing distributed electric propulsion
Propulsive Units	Two or more
Battery Systems	Two or more
Maximum Takeoff Weight (MTOW)	12,500 pounds (5,670 kg) or less
Aircraft Length	50 feet (15.2 m) or less
Aircraft Width	50 feet (15.2 m) or less
Operating Conditions	
Operation Location	Land-based (ground or elevated) – no amphibian or float operations
Pilot	On board
Flight Conditions	VFR
Performance	
Hover	Hover out of ground effect (HOGE) in normal operations
Takeoff	Vertical
Landing	Vertical
Downwash/Outwash	Must be considered in TLOF/FATO sizing and ingress/egress areas to ensure no endangerment to people/property in the vicinity, and no impact to safety critical navigational aids and surfaces, supporting equipment, nearby aircraft, and overall safety
TLOF = touchdown and liftoff area FATO = final approach and takeoff area	

Source: FAA Engineering Brief 105, Vertiport Design

Design Standards for Vertiports

Once the reference aircraft is determined, the design dimensions for the vertiport can be established. 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 EB 105. 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 below.

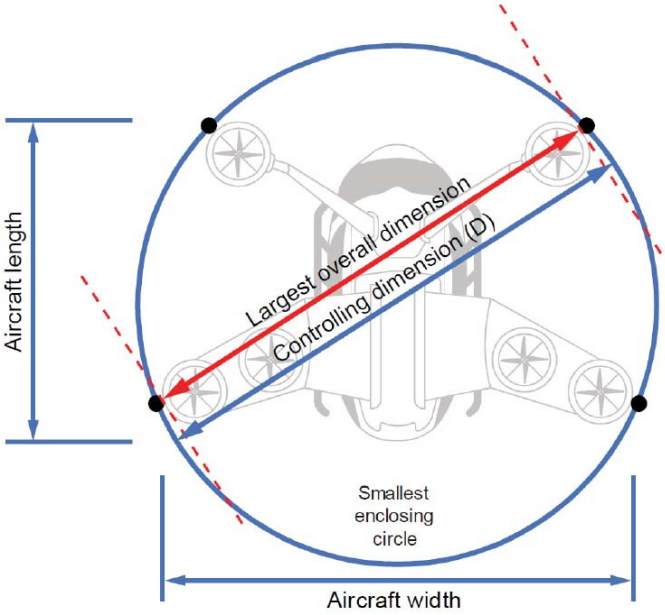


Figure 4A – Reference Aircraft Controlling Dimensions

- **Final Approach and Takeoff Area (FATO) |** The FATO is a defined, load-bearing area over which the aircraft completes the final phase of the 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. This 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 dimensions for these areas are presented in **Table 4C** and are based on the controlling dimension – designated "D" – of the design eVTOL aircraft, as defined for the vertiport facility. 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 turning (if applicable). The controlling dimension may be calculated as the largest overall dimension, which is the hypotenuse of a triangle with base legs of the aircraft width and length (**Figure 4A**). The maximum size of each element is presented in **Table 4B**, based on the maximum design characteristics shown in **Table 4A**.

TABLE 4C | Takeoff and Landing Area Dimensions

Element	Length	Value (ft)	Maximum Size (sf)
TLOF	1 × D	71	5,041
FATO	2 × D	142	20,164
Safety Area	3 × D	213	45,369

FATO = final approach and takeoff area
TLOF = touchdown and liftoff area

Source: FAA EB 105, Vertiport Design (Table 2-1); Coffman Associates analysis

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 by **Figure 4B**. 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. A study conducted in 2011 found that a square is the preferred visual cue by EMS helicopter pilots: it was rated higher than a circle, triangle, or octagon. Regardless of the shape, the FATO and Safety Area will have the same shape.

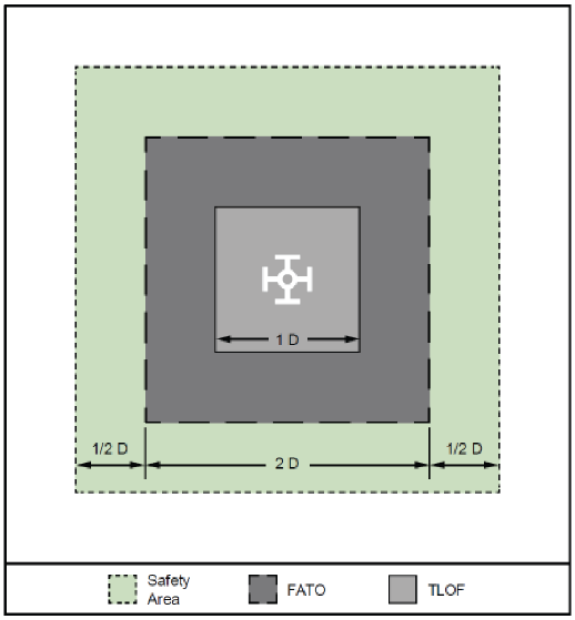


Figure 4B – Takeoff and Landing Area

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, where 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 4C** is a visual representation of the imaginary surfaces as they apply to vertiports.

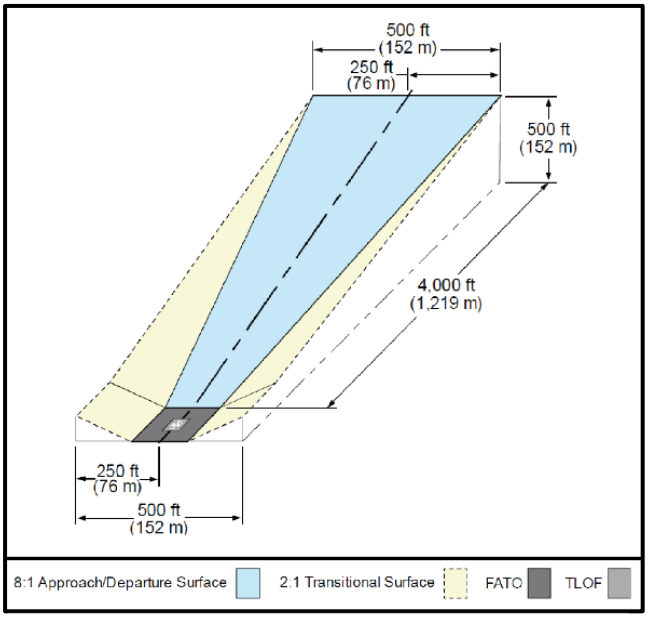


Figure 4C – Vertiport Imaginary Surfaces

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, then expand to mid-sized and smaller markets. Full integration of eVTOL into the national airspace system may not occur for many more years; however, it is prudent for this planning study to consider the potential for such activity at HQZ. For this reason, the alternatives analysis will include options for a potential future vertiport on airport property. The vertiport dimensions depicted are conceptual and are not based on a specific reference aircraft.

Electrical infrastructure will be needed at the vertiport to provide power and recharging capabilities for the aircraft. Initial estimates from manufacturers range between 500-kilowatt (kW) to 1.0-megawatt (MW) power supply per charger. The vertiport in the terminal area is planned to have five parking spaces, which equates to 5.0 MWs on the high end; the goal is for the charging stations to provide an 80 percent charge in 15-25 minutes.

LANDSIDE PLANNING CONSIDERATIONS

Generally, landside issues are related to those facilities necessary or desired for the safe and efficient parking and storage of aircraft, movement of pilots and passengers to and from aircraft, airport support, and overall revenue support functions. Landside planning considerations, summarized previously on **Exhibit 4B**, will focus on strategies that follow a philosophy of separating activity levels. 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 treat the development like that of a community, in which land use planning is the guide. For an airport, the land use guide in the terminal area should generally be dictated by aviation activity levels. Due to the amount of developable land available at HQZ, some consideration will also be given to non-aviation uses that can provide additional revenue support to the airport and support economic development for the region.

Landside planning issues focus on facility-locating strategies, following a philosophy of separating activity levels; therefore, it is important to plan for an appropriate mix of smaller T-hangars, executive hangars, and larger conventional hangars.

The orderly development of the airport terminal area – those areas parallel to the runway and along the flight line – can be the most critical (and often the most difficult) development to control on an airport. A development approach of "taking the path of least resistance" can have a significant effect on the long-term viability of an airport. Allowing development without regard to a functional plan can result in a haphazard array of buildings and small ramp areas, which will eventually preclude the most efficient use of valuable space along the flight line.

The alternatives to be presented are not the only options for development. In some cases, a portion of one alternative could be intermixed with another, and some alternative development concepts could be replaced with others. The final recommended plan only serves as a guide for the airport to aid in the strategic planning of available properties. 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 that airport property can be maximized.

REVENUE SUPPORT LAND USES

Due to the amount of land on airport property that exceeds the space needed for forecast aviation demand, consideration is given for HQZ to utilize portions of its property for non-aviation purposes, to include commercial, industrial, or manufacturing development. It should be noted that the airport does not have the approval to use undeveloped property for non-aviation purposes at this time. Specific approval from the FAA will be required to utilize undeveloped property for non-aviation uses. This planning document does not gain approval for non-aviation uses, even if these uses are ultimately shown in the master plan and on the ALP. A separate request justifying the use of airport property for non-aviation uses will be required. This study can be a source for developing that justification.

An environmental determination will also be required. While FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, states that a release of an airport sponsor from federal obligations is normally categorically excluded and would not typically require an environmental assessment (EA), the issuance of a categorical exclusion is not automatic and the FAA must determine that no extraordinary circumstances exist at the airport. Extraordinary circumstances would include a potentially significant environmental impact to any of the environmental resources governed by federal law. An EA may be required if there are extraordinary circumstances identified. The generalized land use alternatives to follow outline areas on the airport that could be planned and ultimately developed for non-aviation related uses.

On-Airport Land Use Obligations

The airport has accepted grants for capital improvements from the FAA. As such, the City of Mesquite (airport sponsor) has agreed to certain grant assurances. Grant assurances related to land use assure that airport property will be reserved for aeronautical purposes. If the airport sponsor wishes to sell (release) airport land or lease airport land for a non-aeronautical purpose (land use change), the airport sponsor must petition the FAA for approval. The ALP and the airport property map must then be updated to reflect the sale or land use change of the identified property.

Release of Airport Property

A release of airport property would entail the sale of land that is not needed for aeronautical purposes currently or in the future. The following documentation is required to be submitted to the FAA for consideration of a land release:

1. What is requested
2. What agreement(s) with the United States are involved
3. Why the release, modification, reformation, or amendment is requested
4. What facts and circumstances justify the request
5. What requirements of state or local law or ordinance should be provided for in the language of an FAA-issued document if the request is consented to or granted
6. What property or facilities are involved
7. How the property was acquired or obtained by the airport owner
8. The present condition and what present use is made of any property or facilities involved
9. What use or disposition will be made of the property or facilities
10. The appraised fair market value of the property or facilities; appraisals or other evidence required to establish fair market value
11. What proceeds are expected from the use or disposition of the property and what will be done with any net revenues derived
12. A comparison of the relative advantage or benefit to the airport from the sale or other disposition, as opposed to retention for rental income

Each request should have a scaled drawing attached showing all airport property and facilities that are currently obligated for airport purposes by agreements with the United States. Other exhibits supporting or justifying the request – such as maps, photographs, plans, and appraisal reports – should be attached, as appropriate. No areas of airport property are currently planned for release from obligation and/or sale.

Land Use Change

A land use change permits land to be leased for non-aeronautical purposes; it does not authorize the sale of airport land. Leasing airport land to produce revenue via non-aeronautical uses allows the land to earn revenue for the airport and serve the interests of civil aviation by making the airport as self-sustaining as possible. Airport sponsors may petition for a land use change for the following purposes:

- So that land not needed for aeronautical purposes can be leased to earn revenue from non-aviation uses; this is land that is clearly surplus to the airport's aviation needs

- So that land which cannot be used for aeronautical purposes can be leased to earn revenue from non-aviation uses; this is land that cannot be used by aircraft, or where there are barriers or topography that prevent an aviation use

- So that land not presently needed for aeronautical purposes can be rented on a temporary basis to earn revenue from non-aviation uses

A land use change shall not be approved by the FAA if the land has a present or future airport or aviation purpose, meaning the land has a clear aeronautical use; however, if land is not needed for aeronautical purposes until a long-term condition is met, a land use change may be justified and granted for a short-term use. Ordinarily, land on or in proximity to the flight line and airport operations area is needed for aeronautical purposes and should not be used or planned for non-aviation purposes. The proceeds derived from the land use change must be used exclusively for the benefit of the airport. They may not be used for a non-airport purpose, and they cannot be diverted to the airport sponsor's general fund or for general economic development unrelated to the airport.

Generally, a land use change of airport property will be reviewed on a case-by-case basis at the time the change is necessary; however, the airport land use drawing, which is included as part of the ALP set, shows those areas likely eligible to be released from obligation.

AVIATION ACTIVITY LEVELS

The aviation development areas should be divided into high, medium, and low activity levels at the airport. The high activity area should be planned and developed to provide aviation services on the airport. Examples of high activity areas are the airport terminal and administration building and adjoining aircraft parking apron, which provides tiedown locations and circulation for aircraft. In addition, large conventional hangars used for FBOs, corporate aviation departments, or storing a large number of aircraft would be considered high activity use areas. The best location for high activity areas is along the flight line near midfield for ease of access to all areas on the airfield. All major utility infrastructure would need to be provided to these areas.

The medium activity use category defines the next level of airport use and primarily includes smaller corporate aircraft that may desire private executive hangar storage on the airport. The best location for medium activity use is off the immediate flight line but still readily accessible to aircraft, including corporate jets. Due to an airport's layout and other existing conditions, if this area is to be located along the flight line, it is best to keep it out of the midfield area of the airport to avoid causing congestion with transient aircraft utilizing the airport. Parking and utilities, such as water and sewer, should also be provided in this area.

The low activity use category defines the area for storage of smaller single- and multi-engine aircraft. Low activity users are personal or small business aircraft owners who prefer individual space in linear box hangars or T-hangars. Low activity areas should be in less conspicuous areas. This use category will require electricity, but generally does not require water or sewer utilities.

In addition to the functional compatibility of the aviation development areas, the proposed development concept should provide a first-class appearance for HQZ. As previously mentioned, the airport serves as a vital link to the entire region for both business and pleasure. Consideration to aesthetics should be given high priority in all public areas, as the airport can serve as the first impression a visitor may have of the community.

To allow for maximum development of the airport while continuing to meet mandated safety design standards, it is crucial to devise a plan that allows for the orderly development of airport facilities. Typically, an airport will reserve property adjacent to the runway system exclusively for aviation-related activity, which allows for the location of taxiways, aprons, and hangars.

HANGAR DEVELOPMENT

Analysis in Chapter Three indicated that the airport should plan for the construction of additional aircraft hangars over the next 20 years. Hangar development takes on a variety of sizes corresponding with several different intended uses.

Commercial general aviation activities are essential to providing the necessary services on an airport. This includes privately owned businesses involved with (but not limited to) aircraft rental and flight training, aircraft charters, aircraft maintenance, line service, and aircraft fueling. These types of operations are commonly referred to as fixed base operators (FBOs) or specialized aviation service operators (SASOs). The facilities associated with businesses such as these include large, conventional-type hangars that hold several aircraft. High levels of activity often characterize these operations, with a need for apron space for the storage and circulation of aircraft. These facilities are best placed along ample apron frontage with good visibility from the runway system for transient aircraft. Utility services and vehicle parking areas are needed for these types of facilities.

Aircraft hangars used for the storage of smaller aircraft primarily include T-hangars, shade hangars, or linear box hangars. Because storage hangars often have lower levels of activity, these types of facilities can be located away from the primary apron areas in more remote locations on the airport. Limited utility services are needed for these areas.

Other types of hangar development can include executive hangars for accommodating either one larger aircraft or multiple smaller aircraft. These types of hangars are typically used by corporations with company-owned aircraft or by an individual or group of individuals with multiple aircraft. These hangar areas normally require all utilities and segregated roadway access.

Table 4D summarizes the aircraft hangar types and corresponding size and aviation uses that are typically associated with each facility. Currently, there is approximately 342,600 square feet (sf) of hangar space (including maintenance area) provided on the airport, comprised of a combination of the hangar types previously discussed.

TABLE 4D | Aircraft Hangar Types

Hangar Type	Typical Size	Aviation Uses
Conventional	Clear span hangars greater than 10,000 square feet	FBOs, SASOs, and other commercial aviation activities resulting in high activity uses
Executive	Clear span hangars less than 10,000 square feet	SASOs, corporate flight departments, and private aircraft storage resulting in medium to high activity uses
T-Hangar/Linear Box	Individual storage spaces offering 1,200 - 1,500 square feet	Private aircraft storage resulting in low activity uses

FBO = fixed base operator
SASO = specialized aviation service operator

Currently, there are two primary areas that are ideal for future potential general aviation-related development. These areas include airport property along the west side of the runway to the south of existing development, and on the northeast side of the runway near the threshold of Runway 18. It should be noted that the proposed northeastern development area would require the acquisition of additional property. Given the development potential for these portions of existing and future airport property, the alternatives to follow will detail development options for the areas identified.

LANDSIDE ALTERNATIVES

The following section describes a series of landside alternatives as they relate to considerations detailed above. The alternatives focus on current hangar developments, as well as generalized land use. This is beneficial in that a generalized land use provides flexibility for the development of a site to meet the needs of clients with no predetermined layout constraints. Variations of future hangar developments are also presented to help visualize what future facility developments could look like.

Six alternatives have been prepared: three for the western development area and three for the northeast development area. The northwest side of the airport is largely developed, and with the limitations of space caused by existing landside and vehicle facilities, the focus of the landside alternatives is to the southwest and northeast areas of the airport. The alternatives provide potential development plans aimed at meeting the needs of general aviation through the long-term planning period and beyond.

Alternatives will also consider potential locations to accommodate an AAM facility on existing or future airport property. While still in development and testing phases at the time of this publishment, AAM is forecasted to be the next alternative to personal air travel within cities and regions. It is vital that an airport such as HQZ consider the implications of not having allowances for this type of aviation growth; therefore, reserving area on airport property for the future establishment of AAM infrastructure and facilities can ensure flexibility and continued success for an airport. It should be noted that each location proposed may also require a separate line-of-sight study to ensure proper visibility from the airport traffic control tower (ATCT).

The alternatives to be 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 Mesquite 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 that airport property can be maximized and aviation activity can be protected.

WEST DEVELOPMENT AREA ALTERNATIVES

The existing landside airport infrastructure is located along the northwest side of the runway. Automobile access is provided via Airport Boulevard and existing vehicle parking is provided near the airport terminal building, the ATCT, and the north apron area. The existing level of airside and landside access makes this portion of airport property an ideal location for continued airport development. Alternatives analysis presented on **Exhibit 4D** examines the continued development potential options along the west side of the runway.

West Landside Development Alternative 1

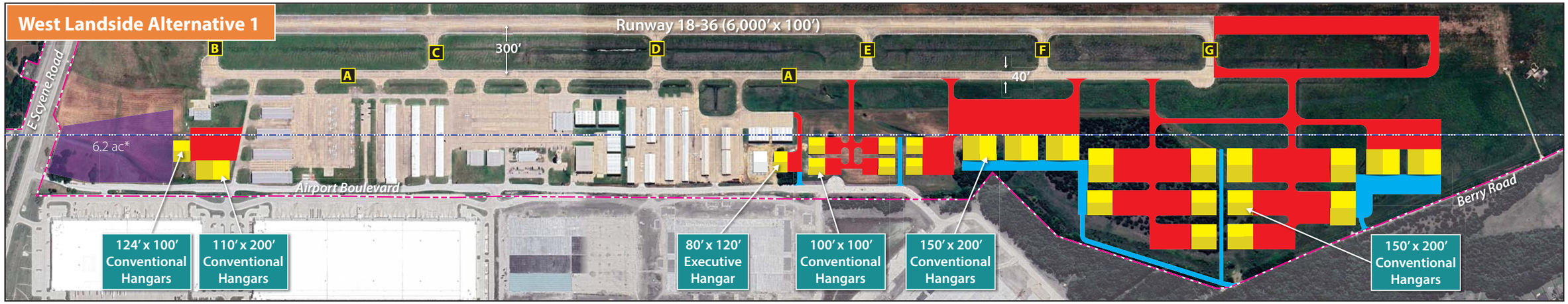
Alternative 1, presented on **Exhibit 4D**, presents a potential layout that carries forward development proposed on the current ALP. On the northern end of the development area, two conventional-style hangars and supporting apron area are proposed. Within existing hangar development, there is little opportunity for infill with additional hangar development; as such, further development is considered to the south of existing development, along the west side of the runway. From north to south, proposed development in this area considers the construction of an 80 x 120-foot executive hangar, six 100 x 100-foot conventional hangars, 10 150 x 200-foot large conventional hangars, and five 150 x 150-foot conventional hangars. Each proposed hangar development is served by appropriate aircraft apron, as well as automobile parking and access. In this alternative, approximately 6.2 acres are reserved for non-aeronautical land use on the northwest corner of airport property.

West Landside Development Alternative 2

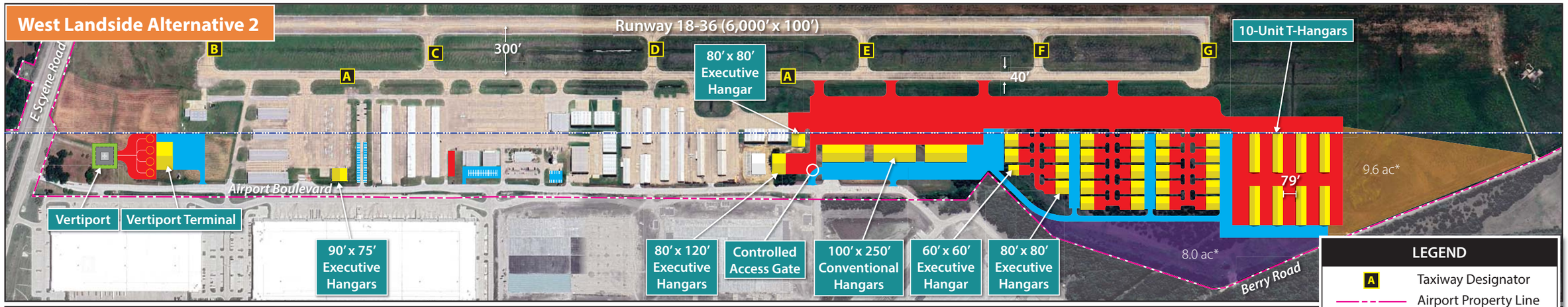
As depicted on **Exhibit 4D**, West Landside Development Alternative 2 focuses on providing additional T-hangar and linear box hangar development on the southern portions of the development area, while larger conventional- and executive-style hangars are proposed along the primary portions of the flight line. Also included in this area is land reserved for the future development of an AAM complex, located at the northwest corner of airport property with automobile access provided via Airport Boulevard.

Beginning on the north side of the development area, proposed hangar development includes a 90 x 75-foot executive hangar located near the existing north apron. Additional automobile parking is considered near the northern apron area, as well as on the north and south sides of the existing terminal building parking lot. Beginning at the southern end of existing hangar development, consideration is given to

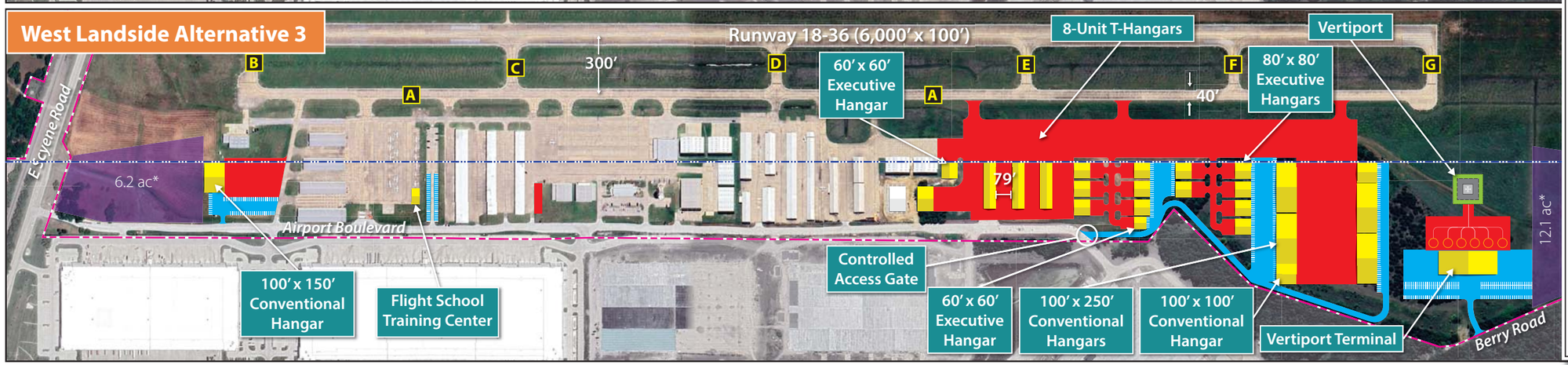
West Landside Alternative 1



West Landside Alternative 2



West Landside Alternative 3



LEGEND

- A — Taxiway Designator
- Airport Property Line
- Building Restriction Line (BRL)
- Ultimate Apron
- Ultimate Road/Parking
- Ultimate Building
- Non-Aeronautical Land Use Reserve
- Future Aeronautical Land Use Reserve

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Photo: Google Earth 7/2023

*Acreage is approximate and intended for planning uses only.

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the construction of 80 x 120-foot and 80 x 80-foot executive-style hangars, three 100 x 250-foot large conventional hangars, one 60 x 60-foot executive hangar, 26 80 x 80 executive hangars, and eight 10-unit T-hangars. Each proposed hangar development is served by appropriate aircraft apron, as well as automobile parking and access. Beyond the proposed T-hangars on the south side of the development area, this alternative considers approximately 9.6 acres of land for future aeronautical reserve, plans for which could be further refined as future demand dictates.

Additionally, this alternative considers land to be reserved for future non-aeronautical use. These portions of airport property are removed from the flight line and do not easily provide airfield access; however, the designated parcels could be set aside for a non-aeronautical land use, which could support airport revenues. This alternative proposes approximately 8.0 acres of non-aeronautical land to be reserved.

West Landside Development Alternative 3

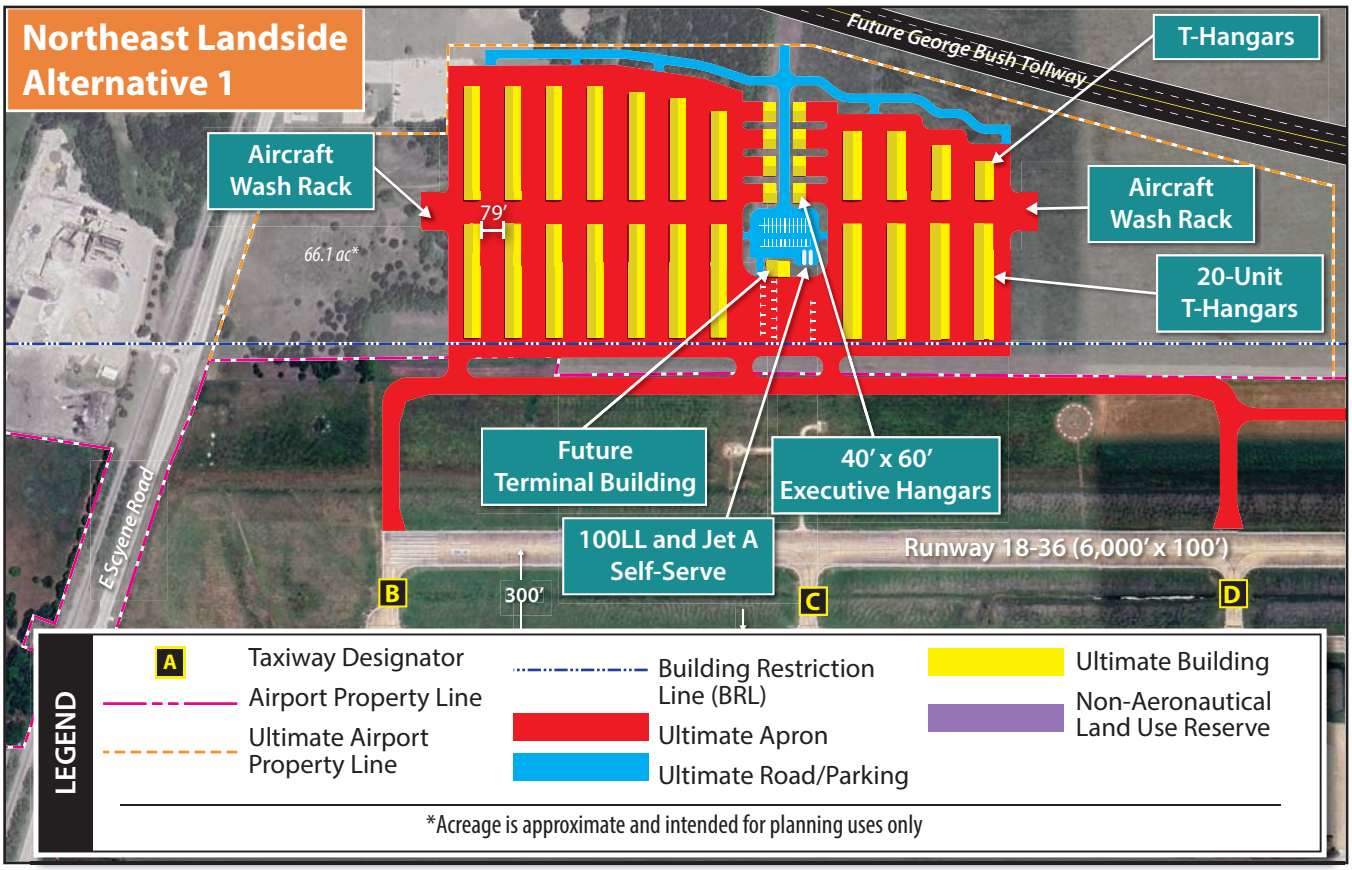
The third and final alternative option, presented on **Exhibit 4D**, considers a 100 x 150-foot conventional hangar, as well as supporting apron and automobile parking, located on the northern side of the existing landside development area. An additional automobile parking area is also considered near the existing north apron area, which could serve a future flight school training center. Furthermore, approximately 6.2 acres in the northwestern corner of existing airport property are proposed to be reserved for non-aeronautical land use.

Beyond the southern end of existing landside development, proposed development includes an 80 x 120-foot executive hangar, two 60 x 60-foot executive hangars, three eight-unit T-hangars, 12 80 x 80-foot executive hangars, two 100 x 100-foot conventional hangars, and four 100 x 250-foot large conventional hangars. Each proposed hangar development is served by supporting apron area and automobile parking and access.

Beyond the south side of the proposed development, this alternative considers the potential for an AAM facility located on the southwest side of the airfield. Automobile parking and access could be provided from existing Berry Road. Furthermore, approximately 12.1 acres could be reserved for future non-aeronautical land use to the south of the proposed AAM facility.

NORTHEAST DEVELOPMENT AREA ALTERNATIVES

The northeast development area is positioned at the northern end of the airfield, to the east of the Runway 18 threshold. It should be noted that development in this location will require the acquisition of approximately 66.1 acres, which is shown on the currently approved ALP. Landside development in this location assumes the construction of a partial parallel taxiway serving the east side of Runway 18-36, at a minimum. Ultimately, a parallel or partial parallel taxiway serving the east side of the runway would provide airside access, while landside access will require a new airport entrance road. Automobile access points for the alternatives to follow, as well as the location for the potential President George Bush Turnpike, have been carried forward from the currently approved ALP. **Exhibit 4E** presents three alternative development options for the proposed area.


Northeast Landside Alternative 1
Future George Bush Tollway
T-Hangars
Aircraft Wash Rack
Aircraft Wash Rack
20-Unit T-Hangars
79'
66.1 ac*
Future Terminal Building
40' x 60' Executive Hangars
100LL and Jet A Self-Serve
Runway 18-36 (6,000' x 100')
E Scyene Road
B
300'
C
D
LEGEND
A Taxiway Designator
Airport Property Line
Ultimate Airport Property Line
Building Restriction Line (BRL)
Ultimate Apron
Ultimate Road/Parking
Ultimate Building
Non-Aeronautical Land Use Reserve
*Acreage is approximate and intended for planning uses only

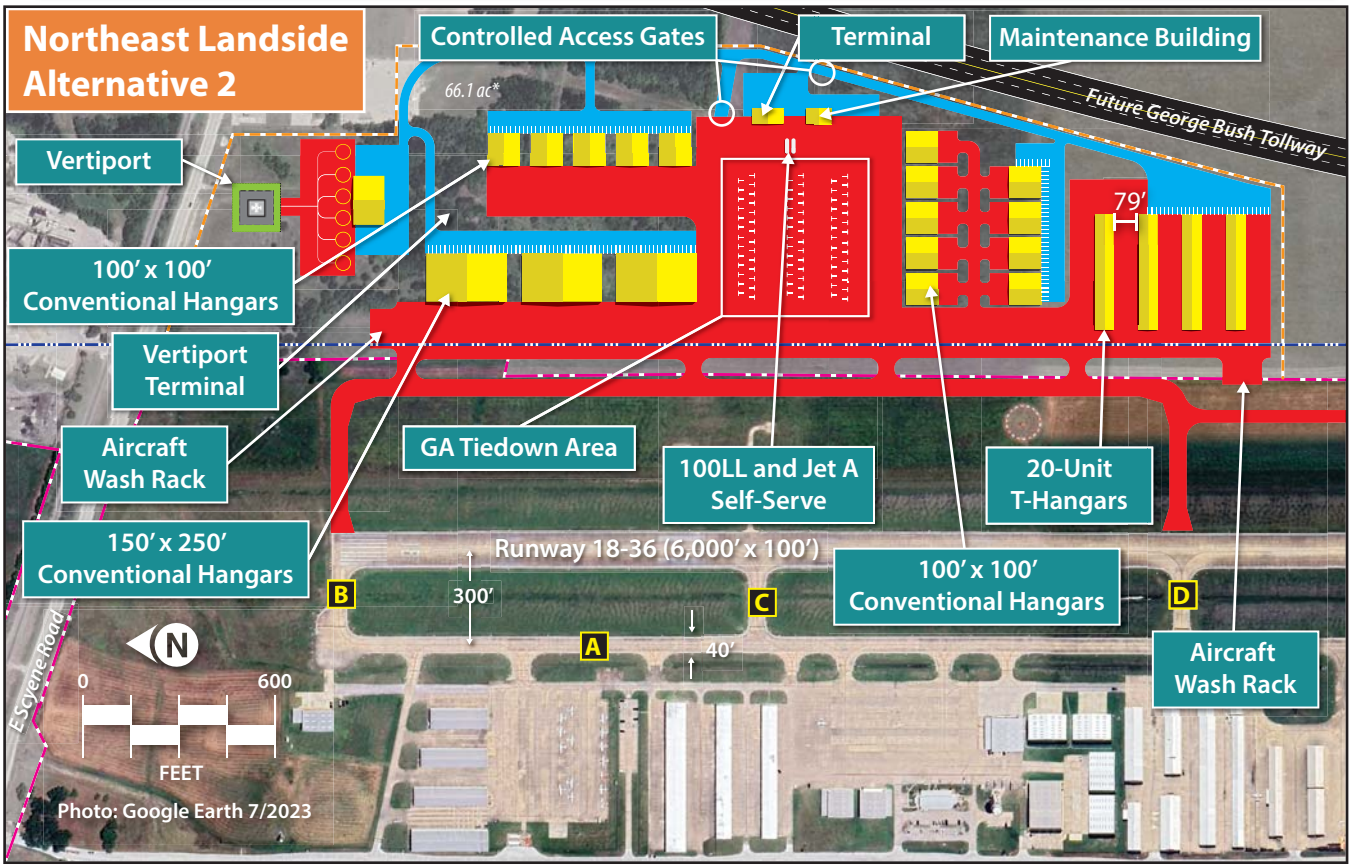

Northeast Landside Alternative 2
Controlled Access Gates
Terminal
Maintenance Building
66.1 ac*
Future George Bush Tollway
Vertiport
100' x 100' Conventional Hangars
Vertiport Terminal
Aircraft Wash Rack
150' x 250' Conventional Hangars
GA Tiedown Area
100LL and Jet A Self-Serve
20-Unit T-Hangars
79'
Runway 18-36 (6,000' x 100')
100' x 100' Conventional Hangars
Aircraft Wash Rack
B
300'
C
D
A
40'
E Scyene Road
N
0
600
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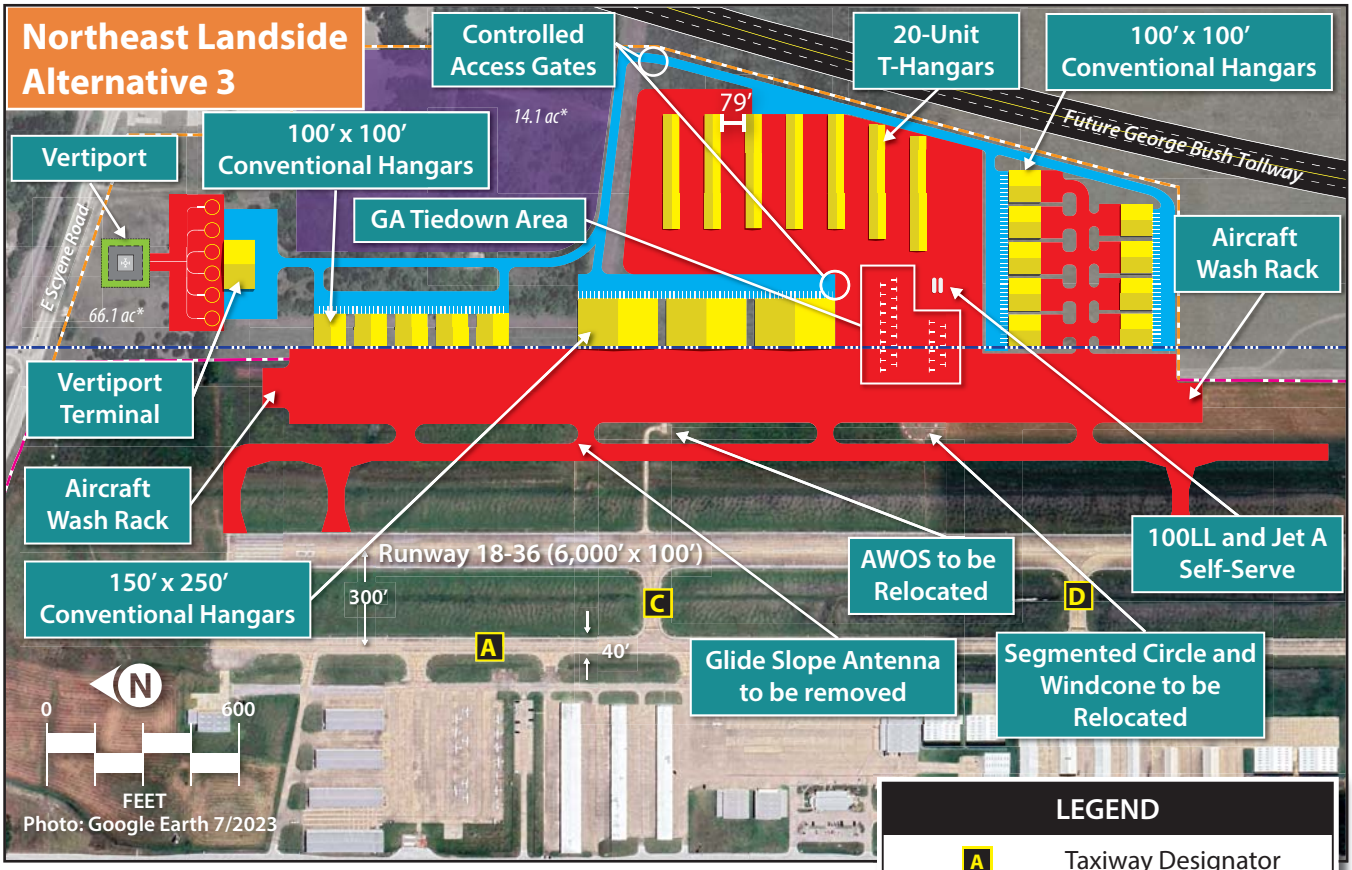
Photo: Google Earth 7/2023



LEGEND

- A — Taxiway Designator
- Airport Property Line
- Ultimate Airport Property Line
- Building Restriction Line (BRL)
- Ultimate Apron
- Ultimate Road/Parking
- Ultimate Building
- Non-Aeronautical Land Use Reserve

*Acreage is approximate and intended for planning uses only

Northeast Landside Development Alternative 1

Northeast Landside Development Alternative 1, presented on **Exhibit 4E**, carries forward the development proposed on the currently approved ALP. This alternative provides automobile access to the future airport property from the east side and continues to the west into an automobile parking area, which is centrally located within the proposed development. Also centrally located are a 2,500-sf terminal building and a 12,000-gallon 100LL self-service fueling area. Further west of these facilities is a designated general aviation aircraft parking and tiedown apron, which provides access to the proposed partial parallel taxiway and ultimately to Runway 18-36. This alternative also considers eight 40 x 60-foot executive hangars, as well as 22 separate T-hangar facilities of varying lengths, widths, and capacities. In addition, two aircraft wash racks are proposed on the north and south sides of the development area.

Northeast Landside Development Alternative 2

Northeast Landside Development Alternative 2 maintains the same automobile access point on the east side of the proposed development area, as shown on the currently approved ALP. Beginning on the north side of the development area, an AAM facility is proposed with automobile parking and access extending from the planned airport entrance road. South of the proposed AAM facility, five 100 x 100-foot conventional hangars are planned, as well as three 150 x 250-foot large conventional hangars located along the flight line. This alternative also considers the construction of a 50 x 100-foot terminal building, a 50 x 80-foot maintenance building, a self-service fueling area with two 12,000-gallon fuel storage tanks (100LL and Jet A), and a large general aviation aircraft apron and tiedown area. The southern portion of the proposed development consists of nine 100 x 100-foot conventional hangars and four 20-unit T-hangars. This alternative also considers the potential for two aircraft wash racks at the north and south ends of the development area.

Airside access to this area is provided via the partial parallel taxiway serving the east side of Runway 18-36, which is based on the proposed taxiway on the currently approved ALP. Each proposed hangar development is served by supporting apron area and automobile parking and access. Automobile access to private hangars and/or apron areas could be regulated through controlled access gates, as shown on **Exhibit 4E**.

Northeast Landside Development Alternative 3

The third and final alternative, presented on **Exhibit 4E**, seeks to maximize the available space to be developed within the ultimate property to be acquired. As such, consideration is given to relocating the AWOS, segmented circle, and wind cone to another location on the airfield that is suitable for their operation. Additionally, the decommissioned glideslope antenna could be removed to make space for a full or partial parallel taxiway serving the east side of Runway 18-36 at the standard runway-centerline-to-taxiway-centerline separation of 300 feet under ultimate RDC C-II-4000 design standards. Ultimately, this will allow additional space for development, as the previous alternatives were shifted further to the east, creating sufficient separation for the existing AWOS and glideslope antenna.

On the north side of the development area, an AAM facility is proposed with automobile parking and access extending from the planned airport entrance road. Additionally, 14.1 acres of property could be reserved for non-aeronautical land use, which could pair well with the proposed AAM facility. Furthermore, this land is largely segregated from the airfield operations area, given the positioning of the proposed entrance road. South of the proposed AAM facility, five 100 x 100-foot conventional hangars are planned, as well as three 150 x 250-foot large conventional hangars located along the flight line. This alternative also considers the implementation of a self-service fueling area with two 12,000-gallon fuel storage tanks (100LL and Jet A), as well as construction of a large general aviation aircraft apron and tiedown area. Seven 20-unit T-hangars are proposed on the east side of the tiedown and fueling area. The southern portion of the proposed development consists of nine 100 x 100-foot conventional hangars. This alternative also considers the potential for two aircraft wash racks at the north and south ends of the development area. Each proposed hangar development is served by supporting apron area and automobile parking and access. Automobile access to private hangars and/or apron areas could be regulated through controlled access gates, as depicted on **Exhibit 4E**.

LANDSIDE SUMMARY

The landside alternatives presented look to accommodate an array of aviation activities that either currently occur or could be expected to occur at HQZ in the future. There is demand for new facilities at HQZ, and with a changing fleet mix of aircraft that includes more sophisticated aircraft, airport management will need to determine how to develop its property in an organized and thoughtful way. Each of the development options considers a long-term vision that would, in some cases, extend beyond the 20-year scope of this master plan; nevertheless, it is beneficial to provide a long-term vision for the airport for future generations.

SUMMARY

This chapter is intended to present 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. FAA design standards are frequently updated, with the intent of improving the safety and efficiency of aircraft movement on and around airports, which can lead to certain pavement geometries now being classified as non-standard when they previously qualified to meet standard.

Several development alternatives related to both the airside and the landside have been presented. For the airside, the major considerations involve correcting non-standard taxiway conditions, as well as extending the length and/or the RDC of Runway 18-36. For the landside, alternatives were presented that included the planned hangar development but also proposed additional aviation development on the western and northeastern areas of the airport. As the airport's fleet mix transitions to include more jets and turboprops, it will be important to clearly delineate development areas for facilities to accommodate those aircraft. Segregating jet and turboprop traffic from small aircraft operators contributes to operational safety and creates a more organized and efficient airport.

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 TxDOT and the FAA may also be required. Once a consolidated development plan is identified, a 20-year capital improvement program – with a list of prioritized projects tied to aviation demand and/or necessity – will be presented. Finally, a financial analysis will be presented to identify potential funding sources and to show airport management what local funds will be necessary to implement the plan.