WICHITA

MID-CONTINENT AIRPORT

CITY OF WICHITA

Wichita Airport Authority

AIRPORT MASTER PLAN

AIRPORT MASTER PLAN

for

WICHITA MID-CONTINENT AIRPORT
Wichita, Kansas

Final Technical Report

Prepared For
THE CITY OF WICHITA
WICHITA AIRPORT AUTHORITY

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Wichita, Kansas

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Chapter One
INVENTORY

Inventory

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The initial step in the preparation of the Master Plan for Wichita Mid-Continent Airport is the collection of information pertaining to the airport and the area it serves. The information summarized in this chapter will be used in subsequent analyses in this study and includes:

- Physical inventories and descriptions of the facilities and services currently provided at the airport, including the regional airspace, air traffic control, and aircraft operating procedures.

- Background information pertaining to the City of Wichita and the metropolitan area, including descriptions of the regional climate, surface transportation systems, the Airport's role in the regional, state, and aviation systems, and development that has taken place recently at the airport.

- Population and other significant socioeconomic data which can provide an indication of future trends that could influence aviation activity at the airport.

The information in this chapter was obtained from several sources, including on-site inspections, interviews with Authority staff and airport tenants, Airport records, related studies, the Federal Aviation Administration (FAA), and a number of internet sites. A complete listing of the data sources is provided at the end of this chapter.

As with any airport planning study, an attempt has been made to utilize existing data, or information in associated planning documents, to the maximum

extent possible. This is particularly true with respect to planning efforts for the passenger terminal building renovation/expansion. This planning study, to be conducted separately from the Master Plan, will examine long term passenger terminal building requirements and determine the terminal's long term configuration, location, design features, and development staging plan.

AIRPORT ADMINISTRATION AND HISTORY

Wichita Mid-Continent Airport is owned by the Wichita Airport Authority and operated by the City of Wichita, pursuant to 1975 authorizing legislation by the State of Kansas. The thirteen-member airport advisory board of directors is responsible for providing overall guidance and direction of airport operations. Final decision-making power rests with the Wichita City Council, doing business as the Wichita Airport Authority. The Wichita Airport Authority also maintains jurisdiction over Colonel James Jabara Airport.

The Authority is funded by leases entered into by the various airport concessions. Revenue is also derived from the Aviation Trust Fund, a specific ticket tax, which is not a general income tax. A Passenger Facility Charge (PFC), instituted in 1994, allows revenue to be used for designated FAA approved projects.

Wichita Mid-Continent Airport was opened for general aviation in 1952 and scheduled passenger service on April 1, 1954, after the federal government appropriated the municipal airport for use as McConnell Army Air Force Base (AFB). Funds received from the federal government were used to purchase the existing property and construct the initial facilities. Early improvements included a new terminal building, dual runway development, and design of a general aviation area.

AIRSIDE FACILITIES

Airside facilities include runways, taxiways, lighting, and navigational aids. Airside facilities are depicted on **Exhibit 1A.** Airfield features are summarized in **Table 1A**.

RUNWAYS

There are three operational runways at Wichita Mid-Continent Airport: Runway 1L-19R, Runway 1R-19L, and Runway 14-32. Runway 1L-19R and Runway 1R-19L are parallel and oriented in a northeast-southwest direction. The Runway 1L-19R and Runway 1R-19L centerlines are separated by 4,400 feet. The east parallel, Runway 1R-19L, is 7,301 feet long, while the west parallel, Runway 1L-19R is 10,301 feet long. The crosswind runway, Runway 14-32, which intersects Runway 1L-19R, is 6,301 feet long, and oriented in a northwest-southeast direction. All runways are 150 feet wide.

All runways are constructed of concrete and have grooved surfaces. The grooved surface consists of a series of small channels embedded in the runway surface which extend laterally across the

Mid-Continent-00MP13-1A-4/4/05

PHOTO DATE: 4-27-04

Hoover Road
Eisenhower Street
Pueblo Drive
Engine Run Up
Cessna Citation Service Center
Localizer
REIL
VASI-4
Blast Pad
Runway 1R-19L (7,301' x 150')
Airport Road
Harry Street
General Aviation
Rotating Beacon
Mid-Continent Drive
U.S. 54 (Kellogg Avenue)
Middle Marker
MALSR
Localizer
N. Air Cargo
S. Air Cargo
Air Carrier Apron
Electrical Vault
REIL
ASOS
VASI-4
ARFF Training
Runway 14-32 (6,301' x 150')
Blast Pad
Glideslope
Flight Safety Learjet
Learjet Way
Abandoned Railroad
Bombardier
VASI-4
REIL
Runway 1L-19R (10,301' x 150')
RVR
RTR
Tyler Road
U.S. Weather Bureau
Tex Consolver Golf Course
City Wastewater Pump Station
Yosemite Drive
ASR
Cessna
Compass Rose
Glideslope
Blast Pad
MALSR
Ridge Road
Airport Maintenance
RTR
K-42 (Southwest Boulevard)
Cowskin Creek
Blast Pad
ALSF-2
Glideslope
Localizer
RTR
Middle Marker
31st South
Mac Arthur Road
Tyler Road

REFER TO: Table 1C for Specific Facility Information

LEGEND

- Airport Property Line
- 60 — Building Identification Number (Refer to Table 1C)

KEY

- **ASOS -** Automated Surface Observation System
- **ASR -** Airport Surveillance Radar
- **ALSF-2 -** Approach Lighting System with Sequenced Flashing Lights
- **REIL -** Runway End Identifier Lights
- **RTR -** Remote Transmitter/Receiver
- **RVR -** Runway Visual Range

0 1,500 3,000
SCALE IN FEET

NORTH

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Exhibit 1A
EXISTING AIRSIDE FACILITIES

width of the runway. The grooved surface reduces ice formation, promotes water drainage, and reduces the risks of hydroplaning.

TABLE 1A
Airside Facilities Data
Wichita Mid-Continent Airport

	Runway 1L-19R		Runway 1R-19L		Runway 14-32	
Runway Length (feet)	10,301		7,301		6,301	
Runway Width (feet)	150		150		150	
Runway Surface Surface Material Surface Treatment	 Concrete Grooved		 Concrete Grooved		 Concrete Grooved	
Load Bearing Strength (lbs.) Single Wheel Loading (SWL) Dual Wheel Loading (SWL) Dual Tandem Wheel (DTL)	 100,000 210,000 300,000		 125,000 240,000 400,000		 100,000 190,000 280,000	
Runway Pavement Edge Lighting	High Intensity		High Intensity		High Intensity	
Taxiway Pavement Edge Lighting	Medium Intensity		Medium Intensity		Medium Intensity	
	1L	**19R**	**1R**	**19L**	**14**	**32**
Runway Pavement Markings	Precision	Precision	Precision	Precision	Nonprecision	Nonprecision
Visual Approach Aids	None	None	None	PAPI-4	PAPI-4	PAPI-4
Approach Lighting	ALSF-2	MALSR	MALSR	MALSR	None	None
Runway End Identifier Lighting	None	None	None	None	REIL	REIL
Other Lighting	Centerline, Touchdown Zone	Centerline	None	None	None	None
Runway Visual Range (RVR)	Touchdown, Midfield, Roll-Out	Touchdown, Midfield, Roll-Out	Touchdown	Touchdown	None	None
Traffic Pattern	Left	Right	Right	Left	Left	Left
Instrument Approach Procedures	ILS-CAT II VOR/DME, RNAV or GPS	ILS VOR/DME, RNAV or GPS	ILS NDB or GPS	ILS LOC or GPS	VOR or GPS	GPS
Weather Reporting	Automated Surface Observation System					
Other Facilities	Airport Beacon, Lighted Wind Cone, Supplemental Wind Cones, Airfield Directional Signage, LAHSO Markings & Signage					
Airport Elevation	1,333 feet mean sea level (MSL)					
Taxiway Markings	Centerline, Hold Positions, Shoulders					

ALSF-2: Approach Lighting System with Sequence Flashing Lights
MALSR: Medium Intensity Approach Lighting System with Sequence Flashing Lights
REIL: Runway End Identifier Lights
PAPI: Precision Approach Path Indicator
VOR: Very High Frequency Omnidirectional Range
DME: Distance Measuring Equipment
GPS: Global Positioning System
NDB: Nondirectional Beacon
RNAV: Area Navigation
LOC: Localizer
BC: Back Course
LAHSO Land and Hold Short Operations

Sources: FAA 5010-1, Airport Master Record Form (Effective 3-17-05); U.S. Terminal Procedures, North Central Volume 2 of 3

Since aircraft landing gear type and configuration dictate how an aircraft's weight is distributed on the pavement, airfield pavement strengths are expressed in terms of the configuration of the main landing gear design on aircraft. Aircraft are typically designed with a tricycle landing gear configuration that consists of a single nose wheel strut and two main landing gear struts located under the wing. Some larger aircraft have a center landing gear strut to distribute weight more evenly. The load bearing strengths for each runway are summarized in **Table 1A**. Single wheel loading (SWL) refers to the design of certain aircraft landing gear that have a single wheel on each main landing gear strut. Dual wheel loading (DWL) refers to the design of certain aircraft landing gear which have two wheels on each main landing gear strut. Dual tandem wheel loading (DTL) refers to the design of certain aircraft landing gear that have two sets of dual wheels on each main landing gear strut.

The Runway 1L, 1R, 19R, and 19L ends are equipped with blast pads. Blast pads are paved areas beyond the runway end intended to reduce soil erosion and damage caused by the jet blast of departing aircraft. This reduces the chances for debris accumulating on the runway.

The parallel runways and taxiway surfaces are equipped with paved shoulders. Paved shoulders reduce the effects of jet blast on the area surrounding the pavement, stabilizing the soil and reducing erosion.

TAXIWAYS

The taxiway system at Wichita Mid-Continent Airport is shown on **Exhibit 1A**. The taxiway system at the airport is comprised of full-length parallel taxiways, partial parallel taxiways, and a series of connecting taxiways extending between the runway and parallel taxiways, and between the parallel taxiways and apron areas. All taxiways servicing commercial operations by large aircraft are 75 feet wide.

Taxiway A lies parallel with Runway 1R-19L and is located 750 feet west of the runway centerline. Taxiway A extends between the air carrier apron and the Runway 19L end. Connecting taxiways A1, A2, A3, A4, A5, A6, A7, and A8 extend between Taxiway A and the general aviation apron areas. Taxiways A2, A5, and A7 extend between Taxiway A and Runway 1R-19L.

Taxiway B extends between the parallel runways in an east-west direction south of the air carrier apron. Taxiway B1 connects Taxiway B with Runway 1R-19L. Taxiway B extends across Runway 1R-19L and connects with Taxiway G, which extends into the Cessna Aircraft manufacturing areas. The Taxiway B/Taxiway B1 intersection with Runway 1R-19L is planned to be redeveloped. The Taxiway B/Runway 1R-19L intersection and Taxiway B1 will be eliminated. This will be replaced by a new perpendicular taxiway connecting with Taxiway B located east of Runway 1R-19L. A holding apron will be developed along this new connecting taxiway.

A holding apron is a paved area that allows an area for aircraft to prepare for departure off the taxiway, thus allowing aircraft ready for departure to pass and depart.

Taxiway C lies parallel with Runway 14-32 and is located 750 feet north of the runway centerline. Taxiway C extends between the air carrier apron and the Runway 14 end. Taxiway C1 connects the air carrier apron to Taxiway C. Taxiway C2 extends between the Taxiway D/Runway 14-32 intersection and Taxiway C.

Taxiway D is the full-length parallel taxiway extending along the east side of Runway 1L-19R. Taxiway D is located 400 feet from the Runway 1L-19R centerline. Taxiways D1, D2, D3, and D4 connect Runway 1L-19R and Taxiway D.

Taxiway E originates at the midpoint of the air carrier apron and extends towards the Runway 1R and Runway 32 ends. Taxiway E1 connects Taxiway E with the Runway 32 end. Taxiway E2 connects Taxiway E with the Runway 1R end. Taxiway E3 serves as a by-pass taxiway at the Runway 1R end. By-pass taxiways allow aircraft ready for departure to pass aircraft awaiting departure clearances at the runway threshold. This serves to increase airfield capacity as well by reducing the amount of time that aircraft must wait for departure clearance.

Taxiway H extends north from Taxiway A and serves general aviation facilities located along Airport Road, north of the Runway 19R end. Taxiway J serves the Bombardier manufacturing facilities located on the west side of the airfield.

Taxiway K is a partial parallel taxiway extending between Taxiway B and Taxiway D. Taxiway K is located 400 feet from Runway 14-32.

Taxiway M is a full-length parallel taxiway located east of Runway 1R-19L. Taxiway M was constructed in 2002. A portion of the taxiway at the north and south ends is located 600 feet from the runway centerline to avoid the glideslope critical area for the Runway 1R Instrument Landing System (ILS) approach and future ILS approach to Runway 19R. The remaining portions of the taxiway are located 400 feet from the Runway 1R-19L centerline. Taxiways M2, M3, and M4 connect Taxiway M with Runway 1R-19L. Taxiway M1 extends to an aviation education center east of the runway.

Taxiway N is a partial parallel taxiway extending between Taxiway B and Taxiway A. Taxiway N is located 450 feet from Runway 1R-19L and 300 feet from Taxiway A.

PAVEMENT MARKINGS

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Precision runway markings identify the runway centerline, designation, touchdown point, thresh-

old, and pavement edge. Nonprecision runway markings identify the runway centerline, threshold, and designation. Runway 1R-19L and Runway 1L-19R are equipped with precision runway markings. Runway 14-32 is equipped with nonprecision runway markings, which also identify the touchdown point.

Taxiway and apron taxilane centerline markings are provided to assist aircraft using these airport surfaces. Centerline markings assist pilots in maintaining proper clearance from pavement edges and objects near the taxilane/taxiway edges. Aircraft hold positions are also marked on all taxiway surfaces. Pavement markings also identify aircraft parking positions.

AIRFIELD LIGHTING

Airport lighting systems extend the capability of airport use into periods of darkness and/or poor visibility. Several lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are described below.

Identification Lighting

The location of the airport at night is universally indicated by the rotating beacon. A rotating beacon displays flashes of alternating white and green lights to identify a public airport. The rotating beacon, illustrated on **Exhibit 1A**, is located approximately midway between the parallel runways, along Harry Street.

Pavement Edge Lighting

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

All runways are equipped with high intensity runway lights (HIRL). Each taxiway is equipped with medium intensity taxiway lighting (MITL).

Additional lighting aids are available for aircraft landing Runways 1L and 19R, particularly during inclement weather conditions when visibility might be reduced. For Runway 1L, the designed touchdown zone and runway centerline is lighted. The runway centerline is lighted along Runway 19R.

Visual Approach Lighting

The landing phase of most flights into Wichita Mid-Continent Airport will be conducted visually. To assist pilots in determining the correct descent path to the touchdown point, visual approach slope guidance aids have been installed at Wichita Mid-Continent Airport. A visual approach slope indicator (VASI)-4L is installed at the Runways 14, 32, and 19L ends. The VASI-4L consists of two individual light units placed in a row near the designed touchdown point along the runway, each containing two lights, which when interpreted by the pilot give him or her an indication of

being above, below, or on the designed descent path to the runway.

Runway End Identification Lighting

Runway end identifier lights (REILs) provide rapid and positive identification of the approach end of a runway. REILs are typically used on runways without more sophisticated approach lighting systems. The REIL systems consist of two synchronized flashing lights, located laterally on each side of the runway facing the approach aircraft. REILs are installed on Runways 14, 19L, and 32.

Approach Lighting Systems

Approach lighting systems consist of a configuration of signal lights extending into the approach area from the runway threshold to aid pilots transitioning from instrument flight to visual flight and landing. A medium intensity approach lighting system with runway alignment indicator lights (MALSR) is installed at Runways 1R and 19R ends to assist pilots in landing to these runway ends during inclement weather conditions. The MALSR extends 1,400 feet from the runway threshold. An Approach Lighting System with Sequenced Flashing Lights (ALSF-2) is installed at Runway 1R. The ALSF-2 allows for lower visibility and cloud ceiling minimums for instrument landings to this runway end.

Airfield Signs

Lighted airfield signs are installed at all taxiway and runway intersections. Airfield identification signs assist pilots in identifying their location on the airfield and direct them to their desired location.

Each runway is equipped with lighted runway distance remaining signs. Placed in 1,000-foot intervals along the runway edge, runway distance remaining signs notify pilots of the amount of usable runway length left in feet.

Airfield Power Distribution

All airfield lighting systems are powered through a single power vault located approximately midway between the parallel runways, east of Runway 14-32. An emergency generator powers airfield lighting systems should commercial electrical service fail.

WEATHER REPORTING

Wichita Mid-Continent Airport is equipped with an automated surface observation system (ASOS). The ASOS provides automated aviation weather observations 24 hours a day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The ASOS system reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting

(barometric pressure), and density altitude (airfield elevation corrected for temperature). The ASOS is located approximately midway between the parallel runways, east of Runway 14-32.

The National Weather Service (NWS), located on the airport, provides Local Airport Advisory services. The purpose of the Local Airport Advisory is to inform airport officials of pending meteorological events that may impact airport operations. For Wichita Mid-Continent Airport, this includes: (1) the initial onset of freezing precipitation; (2) sustained gradient surface winds of 35 knots or gusts to 50 knots; and (3) wind shifts of 60 degrees or more with speeds in excess of 20 knots. This information is disseminated to the airport traffic control tower (ATCT), approach control, and the Airport Authority.

Runway 1L-19R is equipped with runway visual range (RVR) equipment. The RVR consists of a transmissometer located along the runway edge to determine, in feet, the horizontal distance a pilot can see down the runway from the approach threshold.

Each of the parallel runways are also equipped with in-pavement sensors to monitor pavement surface conditions from a remote location.

Wichita Mid-Continent Airport is equipped with several lighted wind socks. The wind socks provide wind direction and speed information to pilots. Seven (lighted) are for general use, while one (lighted) is located at Cessna and two (not lighted) are located at Bombardier/Learjet.

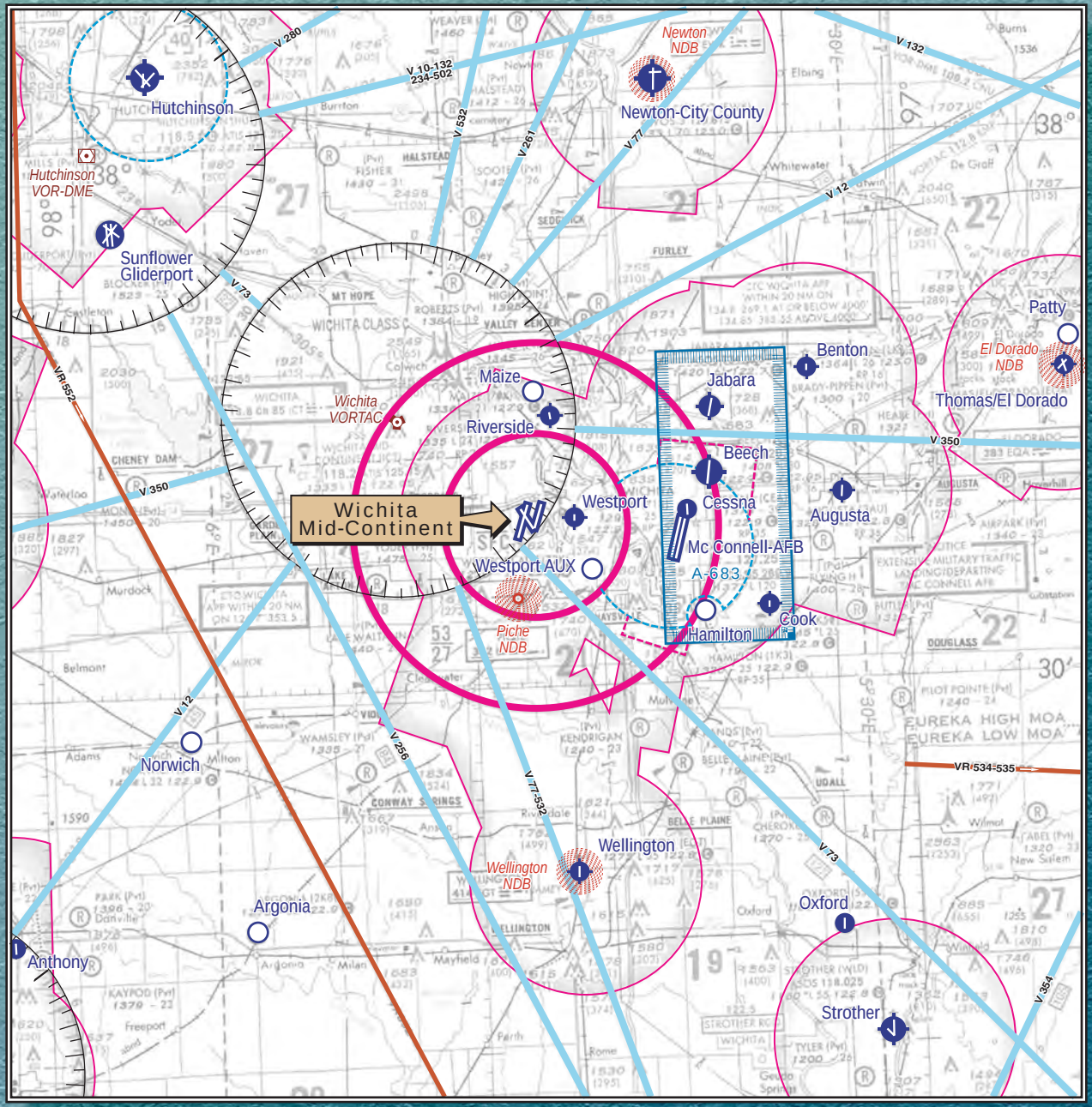
NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies which properly equipped aircraft and pilots translate into point-to-point guidance and position information. The type of navigational aids available for air navigation to and from Wichita Mid-Continent Airport include: the tactical air navigation (TACAN), very high frequency omnidirectional range (VOR) facility, nondirectional beacon (NDB), Loran-C, and global positioning system (GPS).

TACAN is a specific navigational aid for properly equipped military aircraft. TACAN provides azimuth and distance information.

The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility (VOR-DME) to provide distance as well as direction information to the pilot. Military TACANs and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and direction information to civil and military pilots. The Wichita VORTAC, located approximately 10 nautical miles northwest of Wichita Mid-Continent Airport, is primarily used by pilots flying to or from the metropolitan area. **Exhibit 1B** depicts the location of the Wichita VORTAC in relation to Wichita Mid-Continent Airport.

Mid-Continent-00MP13-1B-4/10/03



LEGEND

- Airport with other than hard-surfaced runways
- Airport with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- Non-Directional Radiobeacon (NDB)
- VORTAC
- VHF Omni Range (VOR)
- VOR-DME
- Compass Rose
- Class C Airspace
- Class D Airspace
- Class E Airspace
- Class E Airspace with floor 700 ft. above surface
- Victor Airways
- Military Training Routes
- Prohibited, Restricted, Warning and Alert Area

Source: Wichita Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration January 23, 2003

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Exhibit 1B
VICINITY AIRSPACE AND AIRPORTS

The NDB transmits nondirectional radio signals whereby the pilot of properly equipped aircraft can determine the bearing to or from the NDB facility and then "home" or track to or from the station. Pilots flying to or from the airport can utilize the Piche NDB located approximately five nautical miles south as shown on **Exhibit 1B**.

Loran-C is a ground-based enroute navigational aid which utilizes a system of transmitters located in various locations across the continental United States. Loran-C varies from the VOR as pilots are not required to navigate using a specific facility (with the VOR, pilots must navigate to and from a specific VOR facility). With a properly equipped aircraft, pilots can navigate to any airport in the United States using Loran-C.

GPS is an additional navigational aid for pilots enroute to the airport. GPS uses a system of 24 satellites placed in orbit around the globe to transmit electronic signals which properly equipped aircraft use to determine altitude, speed, and navigational information. GPS is similar to Loran-C as pilots can directly navigate to any airport in the country and are not required to navigate using a specific navigational facility.

GPS was developed and deployed by the United States Department of Defense as a dual-use (civil and military) radio navigation system. The GPS modernization effort also focuses on augmenting the GPS to satisfy requirements for accuracy, coverage, availability, and integrity. For civil aviation use, this includes the development of two separate augmentation systems: the Wide Area Augmentation System (WAAS) and Local Area Augmentation System (LAAS). The WAAS uses a system of reference stations to correct the signal from the GPS satellites for improved navigation and approach capabilities. Where the present GPS provides for enroute navigation and limited instrument approach (nonprecision) capabilities, WAAS will provide for Category I (cloud ceilings 200 feet above the ground and visibilities restricted to one-half mile) approach capability at nearly every runway end equipped with an instrument approach procedure.

The LAAS varies from the WAAS since the corrected GPS signals are broadcast directly to aircraft within line-of-sight of a ground reference station. The LAAS is expected to support approach capability below Category I and be implemented in areas which are not supported by the WAAS upgrade. The LAAS may also be able to support runway incursion warnings, high-speed turnoffs, missed approaches, departures, vertical takeoffs, and surface operations.

Once augmented, GPS will become the primary federally provided radionavigation system. During the transition, the FAA plans to phase-out existing navigational aids as dependence on these systems is reduced by the capabilities of the GPS system.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA using electronic navigational aids that assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. The capability of an instrument is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance that the pilot must be able to see to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for a pilot to complete the approach. If the observed visibility or cloud ceilings are below the minimums prescribed for the approach, the pilot cannot complete the instrument approach.

In basic terms, there are two types of instrument approach procedures: precision and nonprecision. A precision approach provides both course guidance and vertical descent information to pilots. A nonprecision approach provides only course guidance information to a pilot. A circling approach is a specific nonprecision approach that allows pilots to land on any active runway at the airport. While providing flexibility for the pilot to land on the runway most closely aligned with the prevailing wind at that time, a circling approach will have higher visibility and cloud ceiling minimums than other instrument approaches which are aligned with a particular runway end. This is done to provide pilots with sufficient visibility and ground clearance to navigate visually from the approach to the desired runway end for landing.

There are nine published instrument approach procedures for Wichita Mid-Continent Airport. These approaches and their capabilities are summarized in **Table 1B**.

The ILS is an approach landing aid designed to identify the exact approach path and descent to landing for properly equipped aircraft. The ILS includes a combination of on-airport equipment which provides three functions: 1) guidance, provided vertically by a glide slope beacon, and horizontally by a localizer beacon; 2) range, furnished by marker beacons; and 3) visual alignment, supplied by the approach lighting system and runway edge lights (described above).

The localizer (LOC) antennas for each ILS approach are located beyond the far end of the runway. The localizer antenna for Runway 1L is situated on the extended Runway 1L-19R centerline, approximately 1,000 feet north of the Runway 19R threshold. The localizer antenna for Runway 19R is situated along the extended Runway 1L-19R centerline, approximately 1,100 feet south of the Runway 1R threshold. The localizer antenna for Runway 1R is situated along the extended Runway 1R-19L centerline, approximately 1,000 feet north of the Runway 19L threshold. These antennas emit very high frequency (VHF) signals that provide the pilot with course deviation (left or right of the runway centerline and the degree of deviation) information.

TABLE 1B
Instrument Approach Data
Wichita Mid-Continent Airport

	Weather Minimums by Aircraft Type									
	Category A		Category B		Category C		Category D		Category E	
	CH	VIS	CH	VIS	CH	VIS	CH	VIS	CH	VIS
ILS Runway 1L										
Straight-In ILS	200	3/8	200	3/8	200	3/8	200	3/8	200	3/8
Localizer Only	400	1/2	400	1/2	400	1/2	400	3/4	400	3/4
Circling	500	1	500	1	500	1 1/2	600	2	700	2 1/4
ILS Runway 1L (CAT II)										
Straight-In ILS	150	1/4	150	1/4	150	1/4	150	1/4	N/A	
Straight-In ILS	100	1,200 (ft.)	100	1,200 (ft.)	100	1,200 (ft.)	100	1,200 (ft.)	N/A	
ILS Runway 1R										
Straight-In ILS	200	1/2	200	1/2	200	1/2	200	1/2	200	1/2
Localizer Only	400	1/2	400	1/2	400	1/2	400	1	400	1
Circling	500	1	500	1	500	1 1/2	600	2	700	2 1/4
ILS Runway 19R										
Straight-In ILS	200	1/2	200	1/2	200	1/2	200	1/2	200	1/2
Localizer Only	500	1/2	500	1/2	500	3/4	500	1	500	1 1/4
Circling	500	1	500	1	500	1 1/2	600	2	700	2 1/4
SPOIL Intersection Minimums										
Straight-In ILS	400	1/2	400	1/2	400	1/2	400	3/4	400	3/4
Circling	500	1	500	1	500	1 1/2	600	2	700	2 1/4
ILS or LOC Runway 19L										
Straight-In	200	3/4	200	3/4	200	3/4	200	3/4	200	3/4
LOC	400	1	400	1	400	1	400	1 1/4	400	1 1/4
Circling	500	1	500	1	500	1 1/2	600	2	700	2 1/4
VOR/DME RNAV or GPS Runway 1L2										
Straight-In	400	1/2	400	1/2	400	1/2	400	1	N/A	
Circling	500	1	500	1	500	1 1/2	600	2	N/A	
VOR/DME RNAV or GPS Runway 19R										
Straight-In	500	1/2	500	1/2	500	3/4	500	1	N/A	
Circling	500	1	500	1	500	1 1/2	600	2	N/A	
VOR or GPS Runway 14										
Straight-In	900	1	900	1 1/4	900	2 1/2	900	2 3/4	N/A	
Circling	900	1	900	1 1/4	900	2 1/2	900	2 3/4	N/A	
DME/Radar Minimums										
Straight-In	500	1	500	1	500	1 1/4	500	1 1/2	N/A	
Circling	500	1	500	1	500	1 1/2	600	2	N/A	
NDB or GPS Runway 1R										
Straight-In	400	3/4	400	3/4	400	3/4	400	1	N/A	
Circling	500	1	500	1	500	1 1/2	600	2	N/A	

Aircraft Categories are established on the approach speed of the aircraft (1.3 times the stall speed in landing configuration) as follows:

Category A: 0-90 knots
Category B: 91-120 knots
Category C: 121-140 knots
Category D: 141-165 knots
Category E: Above 165 knots

CH – Cloud Height (in feet above the ground)
VIS – Visibility (in statute miles)

Source: U.S. Terminal Procedures, North Central Volume 2 of 3. Runway 19L ILS mins. added 3-17-05.

The ultra high frequency (UHF) glideslope (GS) transmitter for Runway 1L is located on the west side of the runway, approximately 1,000 feet north of the Runway 1L landing threshold, along the prescribed touchdown zone which is marked with two large rectangular boxes on the runway. The glideslope transmitter for Runway 19R is located on the west side of the runway, approximately 1,000 feet south of the Runway 19R landing threshold. The Runway 1R glideslope transmitter is located east of the Runway 1R threshold, approximately 1,000 feet from the landing threshold. These transmitters provide a signal indicating whether the aircraft is above or below the designed glide path.

Each ILS approach is equipped with an outer marker beacon. The Runway 1R and Runway 19L ILS approaches are further supplemented with a middle marker beacon. The Runway 1L approach is further equipped with an inner marker beacon. The marker beacons provide pilots with indications of their distance from the runway end. Pilots are aware of their passing of the marker beacons with both visual and auditory signals in the cockpit. The outer marker for the Runway 1R ILS approach is co-located with the Piche NDB, which is located 4.1 nautical miles from the Runway 1R end. The Runway 1L outer marker is located 4.9 nautical miles from the Runway 1R threshold, the middle marker is located one-half mile from the runway threshold, while the inner marker is located two-tenths of a nautical mile from the runway threshold. The Runway 19L outer marker is located 5.1 Nautical miles from the Runway 19R landing threshold. The middle marker is located one-half mile from the runway threshold.

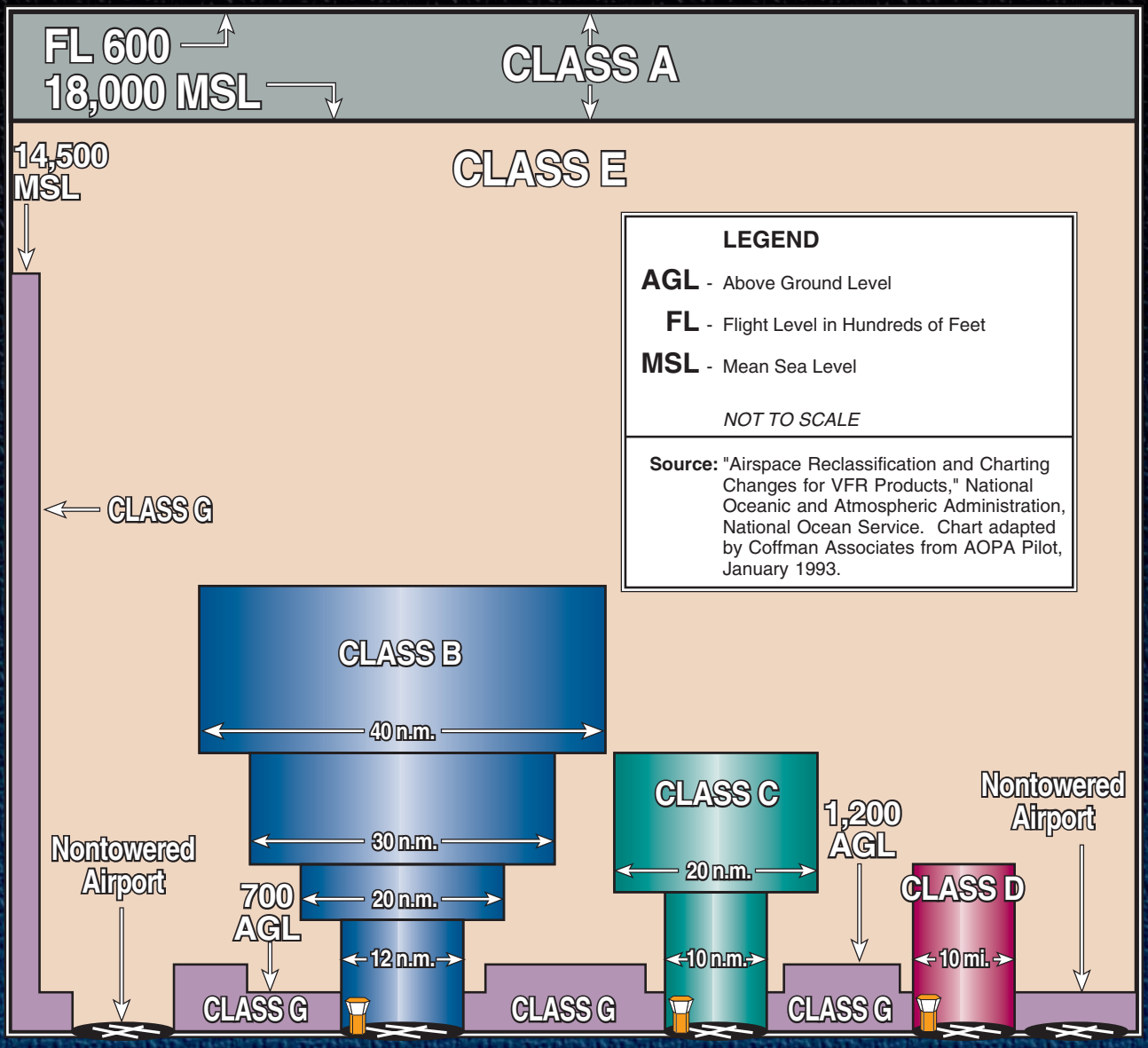
For specifically certified aircraft and pilots, the Runway 1L approach can provide Category II landings. As shown in **Table 1B**, this can allow for landings when cloud ceilings are as low as 100 feet above the ground and visibility is restricted to 1,200 feet. The remaining ILS approaches provide for landings to Category I standards.

The remaining instrument approach procedures utilize the enroute navigational aids described above. These approaches provide different capabilities for aircraft not equipped to utilize the ILS approaches. For these approaches, aircraft can utilize any one of the navigational aids described in the approach description to complete the approach. Aircraft are not required to have capabilities for all the navigational aids to complete the approach.

VICINITY AIRSPACE

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the National Airspace System. The U.S. airspace structure provides for two basic categories of airspace, controlled and uncontrolled, and identifies them as Classes A, B, C, D, E, and G. **Exhibit 1C** graphically depicts the U.S. airspace structure.

Mid-Continent-00MP13-1C-4/19/03



CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600 .
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

CITY OF WICHITA
Wichita Airport Authority

Exhibit 1C
AIRSPACE CLASSIFICATION

Class A airspace is controlled airspace and includes all airspace from 18,000 feet mean sea level (MSL) to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high capacity commercial service airports (i.e. Kansas City International Airport). Class C airspace is controlled airspace surrounding lower activity commercial service (i.e. Wichita Mid-Continent Airport) and some military airports. Class D airspace is controlled airspace surrounding airports with an airport traffic control tower. All aircraft operating within Classes A, B, C, and D airspace must be in contact with the air traffic control facility responsible for that particular airspace. Class E is controlled airspace that encompasses all instrument approach procedures and low altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating within Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist. Class G airspace is uncontrolled airspace that does not require contact with an air traffic control facility.

The airspace in the vicinity of Wichita Mid-Continent Airport is depicted on **Exhibit 1B**. Wichita Mid-Continent Airport is located within Class C airspace. Class C airspace is a two-tier airspace structure designed to manage aircraft arrivals and departures at an airport with an airport traffic control tower, which is served by radar approach control and meets certain passenger enplanement and instrument departure requirements. The inner Class C surface for Wichita Mid-Continent Airport extends for a five-mile radius from the surface to 5,300 feet MSL. The outer service generally extends for at a 10-nautical mile radius from 2,700 feet MSL to 5,300 feet MSL.

Class E airspace that extends from 700 feet above ground level (AGL) to 18,000 feet MSL is located within the Class C airspace and south and northeast of the airport. Outside this level of Class E airspace is Class E airspace which primarily encompasses the low altitude Federal (Victor) Airways. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL, and extend between VOR navigational facilities. The Victor Airways in the vicinity of Wichita Mid-Continent Airport emanate from the Wichita VORTAC.

A number of military training routes are located within the vicinity of Wichita Mid-Continent Airport. Military jets travel on these routes above 10,000 feet MSL at speeds in excess of 250 knots.

LOCAL OPERATING PROCEDURES

Wichita Mid-Continent Airport is situated at 1,333 feet MSL. The traffic pattern altitude for all aircraft at the airport is 2,333 feet MSL (1,000 feet AGL). Runways 1L, 19L, 14, and 32 utilize a left traffic pattern. In this manner, most aircraft approach the desired runway end following a series of left-hand turns. Runways 1R and 19R utilize a right traffic pattern.

Land and Hold Short Operations

Land and hold short operations (LAHSO) have been established for Wichita Mid-Continent Airport. LAHSO operations permit air traffic control personnel to issue landing clearances to aircraft to land and hold short of an intersecting runway, taxiway or other designated point on the runway. LAHSO locations are marked in following areas on the airfield:

- ➢ Runway 1L, prior to the Runway 14-32 intersection; and
- ➢ Runway 32, prior to the Runway 1L-19R intersection.

AIR TRAFFIC CONTROL

The airport traffic control tower (ATCT) is located east of the passenger terminal building. The facility was placed into service in 1984. Owned and operated by the FAA, the ATCT operates 24 hours a day. Tower personnel provide an array of control services for aircraft arriving and departing Wichita Mid-Continent Airport and within the Class C airspace.

Tower personnel also provide an airport traffic information service (ATIS) which is a recorded message, updated hourly. ATIS generally provides pilots with the airport's recent weather conditions and any notices to airmen (NOTAMs) that are pertinent to Wichita Mid-Continent Airport or its environs.

Enroute air traffic control services are provided through the Kansas City Air Route Traffic Control Facility (ARTCC), located in Olathe, Kansas. The Kansas City ARTCC controls aircraft in a large multi-state area.

Wichita Mid-Continent Airport is equipped with an Airport Surveillance Radar (ASR)-9. The ASR-9 is located southwest of Runway 14-32 as shown on **Exhibit 1A**.

LANDSIDE FACILITIES

The landside facilities at the airport can be classified in five broad categories based on their function as follows: commercial airline facilities, air cargo facilities, general aviation facilities, support facilities, and aviation-related commercial facilities. Commercial airline, air cargo, and general aviation facilities are identified on **Exhibit 1D**. **Table 1C** summarizes specific details on the landside facilities at the airport.

COMMERICIAL AIRLINE FACILITIES

The primary commercial airline facilities are located approximately midway between the parallel runways, north of Runway14-32. The commercial airline facilities involve the major functions of the passenger terminal system: access, processing, and flight. The complex is comprised of the following components:

- Passenger Terminal Building
- Terminal Access Roadways
- Vehicle Parking
- Terminal Apron

Mid-Continent-00MP13-1D-4/20/05

PHOTO DATE: 4-27-04

0 600 1,200

SCALE IN FEET

NORTH

LEGEND

Airport Property Line

1 Building Identification Number (Refer to Table 1C)

Runway 1R-19L (7,301' x 150')

Runway 1L-19R (10,301' x 150')

Runway 14-32 (6,301' x 150')

Taxiway H

General Aviation Apron

Rental Car Lot

Toll Booth

Air Carrier Apron

Short Term Parking

Long Term Parking

South Air Cargo Apron

North Air Cargo Apron

Remote Parking Lot

Air Cargo Road

Substation S

Substation A

Rotating Beacon

Airport Road

Midfield Road

Crossfield Road

Mid-Continent Drive

Ridge Road

Learjet Way

U.S. 54 (Kellogg Avenue)

Pueblo Drive

Dugan Rd.

Irving Street

S. Sierra Dr.

Mariposa St.

Montezuma St.

Yucca Street

Harry Street

REFER TO: Table 1C for Specific Facility Information

CITY OF WICHITA
Wichita Airport Authority

Exhibit 1D
EXISTING LANDSIDE FACILITIES

Passenger Terminal Building

The current passenger terminal building was opened in 1954. The elevated concourses were constructed in 1972 (providing Gates 1-10). In 1985, the west ticket wing was added (with Gated 11 and 12). In 1989, the rental car area was expanded. The passenger terminal building is a two-story structure including areas for airline operations, retail/concessions, and passenger handling and servicing. The passenger terminal building encompasses approximately 251,200 square feet.

The main terminal area is constructed in an east-west orientation. The westerly portion of the area is devoted to airline ticketing and baggage make-up. The easterly portion accommodates the bag claim areas and rental cars. Access to the departure concourses is between these functional areas, where the primary retail concessions areas are found. The departure concourses have 12 gate positions; seven are equipped with loading bridges.

Terminal Access Roadway

Primary access to the passenger terminal building is via Mid-Continent Drive from Kellogg Avenue. Westbound traffic accesses Mid-Continent Drive via a fly-over from Kellogg Avenue. Eastbound traffic enters this roadway via an exit from Kellogg Avenue and right-turn from a lighted intersection.

Mid-Continent Drive continues south where it turns to the east in front of the terminal. Circulation within the terminal area is one-way, generally following in a counterclockwise fashion, from west to east across the arrival and departure curbs. At the east end of the terminal, the terminal roadway turns north and continues around the public parking areas where vehicles can return to the terminal or exit the airport via Mid-Continent Drive.

Mid-Continent Drive is a divided four-lane road. Closer to the terminal, the access road narrows to two-lanes; in front of the terminal, the access road expands to three lanes.

Terminal Curb Frontage

The terminal curb is the area for passenger loading and unloading. At Wichita Mid-Continent Airport, the terminal curb is located at ground level and not specifically segregated between arriving and departing passengers (although arriving passengers generally use the eastern portion of the apron as this is closest to the bag claim area and departing passengers use the westerly portion of the apron as this is closest to the ticketing areas). The terminal curb extends approximately 600 feet immediately in front of the terminal. A separate commercial vehicle curb is located across the terminal access road and provides an additional 500 feet of curb frontage.

Vehicle Parking

Vehicle parking in the terminal complex includes public, employee, and rental car space. The primary public parking area is located directly north of the terminal building and is at-grade. Public

parking totals 1,729 spaces. Short term parking encompasses approximately 372 spaces in the parking area closest to the terminal curb. Long term parking encompasses approximately 1,357 spaces in a separate lot north of the short term parking area. Rental car parking encompasses approximately 89 spaces in the easterly portion of the short term parking area with 124 spaces located behind the ATCT. Terminal employee parking is available in two separate lots located west of the terminal access roadway, northwest of the terminal building. Terminal employee parking totals approximately 380 spaces. (Prior to finalizing the master plan, the remote parking lot had been finished providing an additional 446 public spaces.)

Terminal Apron

The terminal apron encompasses approximately 66,000 square yards, surrounding the two separate departure concourses. The apron provides for aircraft parking, access, and circulation for gate positions.

AIR CARGO FACILITIES

The functions of air freight/air mail are accommodated in three separate areas on the airport. Air mail is processed through the U.S. Postal Service facility located along Harry Street, at the north end of the airport. This facility is identified in **Table 1C**.

The 31,640 sq. ft. air freight building and 19,000 sq. yd. south air cargo apron, located west of the passenger terminal building, is used by the major airlines to sort air freight carried by the scheduled passenger airlines. This facility is owned by the Wichita Airport Authority (WAA) and is identified in **Table 1C**.

The dedicated all-cargo carriers operate from the north air cargo apron located east of Runway 1L-19R, at the Runway 19R end. The north air cargo apron encompasses approximately 65,000 square yards for aircraft movement and parking. Ground servicing equipment (GSE) used by the all-cargo airlines to load and unload air freight from aircraft is stored outside along the eastern portion of the apron.

There are two dedicated all-cargo buildings located on the east portion of the north air cargo apron. These facilities are identified in **Table 1C**.

GENERAL AVIATION

Wichita Mid-Continent Airport is a full service airport providing facilities and services for the general aviation community. General aviation facilities at the airport are primarily located west of Runway 1R-19L, along Airport Road. This area provides an aircraft parking apron, storage hangars, and various services. The facilities are identified in **Table 1C**. The general aviation apron encompasses approximately 38,000 square yards, including space for aircraft tiedown and taxilane access.

TABLE 1C
Airport Facility Inventory
Wichita Mid-Continent Airport

Facility No.	Facility Description	Ground Lease (S.F.)	Building Area (S.F.)	Type Of Construction	Auto Parking Spaces	Apron Area (Sq. Yards)
1	Administration Building (Wichita Airport Authority)	---	6,324	Concrete	49	---
2	Safety Building (Crash/Fire/Rescue & Security))	---	8,820		48	---
3	Hangar No. 20 (USAir Express)	45,097	23,255	Metal	25	700
4	Air Cargo (Wichita Airport Authority)	---	31,640	Brick	120	2,200
5	Airline Maintenance Building	---	5,400	Brick	40	18,902
6	Terminal/Concourse	---	194,667	Concrete	1,725	66,000
7	Air Traffic Control Tower (FAA)	25,066	25,066	Concrete	72	---
8	Raytheon Aircraft	299,265	10,510	Metal/Concrete	33	27,735
9	Hangar No. 6 (Raytheon Aircraft)	---	30,000	Metal	13	---
10	Dallas Airmotive	15,926	5,889	Brick	17	---
11	International Flying Farmers/Prof. Insurance Mg.	---	4,213	Brick	21	---
12	Airport Waterworks	---	1,257	Brick	10	---
13	Airport Fuel Station	---	---	Metal	---	3,500
14	Hangar No. 1 (Yingling Aircraft)	291,834	61,387	Metal	107	19,859
15	Collins/Airparts (Warehouse)	41,600	12,084	Brick	12	---
16	FlightSafety (Cessna)	104,250	43,812	Brick	112	---
17	Yingling Aircraft (Office)	16,363	4,358	Brick	8	---
18	Hangar No. 2 (Raytheon Aircraft)	310,825	100,550	Metal/Concrete	166	18,065
19	Hangar No. 3 (Bevan Rabell)	146,380	24,391	Metal	29	7,500
20	T-Hangar No. 11 (Yingling Aircraft)	---	10,400	Metal	3	---
21	T-Hangar No. 12 (Yingling Aircraft)	---	10,400	Metal	3	---
22	T-Hangar No. 14 (Yingling Aircraft)	---	10,400	Metal	3	---
23	T-Hangar No. 15 (Yingling Aircraft)	---	10,400	Metal	3	---
24	Hangar 18 Paint Hangar (Executive Aircraft)	12,850	6,045	Metal	13	---
25	Hangar No. 10 (Cessna)	171,309	24,381	Metal/Concrete	48	10,279
26	Hangar No. 27 (Koch Industries)	180,551	39,140	Metal	78	5,000
27	Hangar 16 (Executive Aircraft)	116,148	28,161	Metal	29	4,500
28	T-Hangar No. 22 (Raytheon Aircraft)	---	10,985	Metal	---	2,400
29	T-Hangar No. 24 (Raytheon Aircraft)	---	10,848	Metal	---	2,400
30	T-Hangar No. 26 (Raytheon Aircraft)	---	10,464	Metal	---	2,400
31	T-Hangar No. 21 (Yingling Aircraft)	---	10,985	Metal	---	2,400
32	T-Hangar No. 23 (Raytheon/Yingling)	---	13,851	Metal	---	2,400
33	T-Hangar No. 25 (Raytheon/Yingling)	---	18,542	Metal	---	2,400
34	Hangar No. 17 (Executive Aircraft)	180,306	27,151	Metal	40	8,688
35	Hangar No. 19 (Executive Aircraft)	53,272	32,490	Metal	59	5,678
36	Collins Aviation (Office Building)	180,384	37,140	Brick	201	---
37	Automated Flight Service Station (FAA)	104,344	13,600	Brick	77	---
38	FAA Offices	157,467	44,475	Brick	168	---
39	FlightSafety Citation (Office Building)	123,619	41,664	Brick	126	---
40	FlightSafety Maintenance	50,063	16,740	Brick	66	---
41	Hilton Inn Airport	588,931	71,900	Brick	367	---
42	AON Risk Services (Office Building)	80,509	15,765	Brick	100	---
43	Pratt and Whitney Aircraft	71,589	9,985	Brick	27	---
44	Honeywell	70,095	7,220	Brick	33	---
45	Budget Car Rental	153,124	7,675	Brick	96	---
46	Hertz Car Rental	219,247	4,706	Brick	87	---
47	Avis Car Rental	114,226	1,625	Brick	98	---
48	American Bonanza Society (Office)	45,383	3,142	Brick	12	---
49	Maintenance Building No. 1 (South Yard) (WAA)	---	8,000	Metal	---	---
50	Maintenance Building No. 2 (South Yard) (WAA)	---	8,000	Metal	---	---
51	Maintenance Building No. 3 (South Yard) (WAA)	---	8,000	Metal	---	---
52	Airborne Express	126,319	20,800	Metal	61	10,250
53	Federal Express	106,459	13,500	Concrete	62	10,250

TABLE 1C (Continued)
Airport Facility Inventory
Wichita Mid-Continent Airport

Facility No.	Facility Description	Ground Lease (S.F.)	Building Area (S.F.)	Type Of Construction	Auto Parking Spaces	Apron Area (Sq. Yards)
54	U.S. Post Office	936,540	172,800	Metal/Concrete	378	---
55	Hangar No. 28 (Executive Aircraft)	500,370	50,040	Metal	104	5,530
56	Hangar No. 32 (Ballard/Eagle Med)	70,434	23,000	Metal	34	2,172
57	USD 259 Board of Education Center	308,083	31,804	Metal	80	2,800
58	Flight Safety Learjet	85,000	13,683	Concrete	70	241,008
59	National Weather Bureau (Office)	70,000	5,117	Brick	27	---
60	Vacant	32,903	3,140	Brick	14	---
61	Airfield Electrical Vault	---	4,417	Concrete	6	---
62	Learjet Hangar (Completion)	144,465	67,900	Metal	25	---
63	Learjet Hangar (Customer Service)	750,000	---	Metal	56	---
64	FAA Warehouse	---	2,079	Brick	---	---
65	Cessna Modular Offices (Annex 4) Lease 8 & 9	1,466,229	45,042	Metal	501	---
66	Cessna C-6 (ACC Hangar) Lease 8	1,642,212	---	Metal	215	7,615
	1st Floor Hangar	---	42,082	---	---	---
	1st Floor Shop	---	15,607	---	---	---
	1st Floor Offices and Break Area	---	7,071	---	---	---
	1st Floor ARFF Foam Fire Suppression	---	1,033	---	---	---
	1st Floor Warehouse – Shipping/Receiving	---	10,678	---	---	---
	1st Floor Mechanical Space	---	730	---	---	---
	2nd Floor Warehouse	---	7,230	---	---	---
	2nd Floor Shop	---	13,860	---	---	---
	2nd Floor Offices	---	---	---	---	---
67	Cessna C-16 (ACC Hangar) Lease 2	296,972	---	Concrete/Metal	---	16,380
	1st Floor Hangar	---	74,463	---	---	---
	1st Floor Shop and Mechanical Space	---	1,309	---	---	---
	2nd Floor Offices	---	1,113	---	---	---
68	Cessna C-12 (Hangar) Lease 2	239,009	38,709	Concrete/Metal	---	12,595
	1st Floor Hangar	---	35,613	---	---	---
	1st Floor Offices	---	2,515	---	---	---
	2nd Floor Offices	---	1,737	---	---	---
69	Cessna Delivery Hangar C-2 Lease 2	144,981	19,551	Concrete/Metal	---	8,590
	1st Floor Hangar	---	11,098	---	---	---
	1st Floor Mockup Showroom & Connecting Link	---	8,097	---	---	---
	1st Floor Offices	---	3,166	---	---	---
	2nd Floor Customer Area	---	3,842	---	---	---
	3rd Floor Offices	---	2,423	---	---	---
70	Cessna Marketing & Corporate Offices C-1 Lease 2	796,732	24,320	Metal	302	---
	Lower Level Marketing Offices	---	25,333	---	---	---
	Ground Floor Customer Center & MKT Offices	---	25,333	---	---	---
	2nd Floor Customer Center & Corp. Offices	---	25,333	---	---	---
71	Cessna Fire Pump & Mech. Facility C-4 Lease 5	10,631	5,260	Concrete/Metal	---	---
	Fire Pump Room	---	1,030	---	---	---
	Mechanical and Maintenance Space	---	4,230	---	---	---
72	Cessna ACC & Marketing Delivery C-3 Lease 5	614,891	109,237	Concrete/Metal	471	10,899
	1st Floor Hangar	---	80,880	---	---	---
	1st Floor Offices	---	28,357	---	---	---
	2nd Floor Hangar Offices	---	1,051	---	---	---
	2nd Floor Offices and Cafeteria	---	28,357	---	---	---
73	Cessna Citation Service Center C-5 (Hangar) Lease 6	1,986,728	137,700	Concrete/Metal	421	28,655
	1st Floor Hangar	---	105,076	---	---	---
	1st Floor Shops	---	10,268	---	---	---
	1st Floor Offices	---	22,442	---	---	---
	1st Floor Warehouse	---	15,135	---	---	---

TABLE 1C (Continued)
Airport Facility Inventory
Wichita Mid-Continent Airport

Facility No.	Facility Description	Ground Lease (S.F.)	Building Area (S.F.)	Type Of Construction	Auto Parking Spaces	Apron Area (Sq. Yards)
	2nd Floor Offices, Shops, Training, Storage, Cafeteria	---	36,094	---	---	---
	Warehouse Mezzanine	---	4,703	---	---	---
74	Cessna Depaint Facility C-7 Lease 3	127,077	---	Metal	---	---
75	Cessna C-13 Hangar Lease 3	119,952	---	Metal	---	---
	1st Floor Hangar	---	27,449	---	---	---
	1st Floor Offices, Mechanical & Storage	---	2,958	---	---	---
	2nd Floor Offices and Mezzanine	---	2,958	---	---	---
76	Cessna Marketing & Air Trans C-14 Lease 3	173,325	---	Metal	86	---
	1st Floor Offices	---	12,065	---	---	---
	2nd Floor Offices	---	3,290	---	---	---
77	Cessna Blast Fence & Run-up Area Lease 4, 2, & 7	396,093	---	---	---	21,000
78	Cessna Compass Rose East Lease 7	270,000	---	---	---	---
79	Cessna Compass Rose West Lease 7	350,000	---	---	---	---
80	Cessna Citation Service Center C10 Lease 10	---	---	---	---	---
81	Airport South Yard Storage (Lean-To)	---	6,147	---	---	---
82	Airport Underground Bulk Fuel Station	---	---	---	---	---
83	Learjet Blast Fence and Run-up Area	400,000	---	---	---	---
84	Lift Station	35,841	---	---	---	---

Source: Wichita Airport Authority

Fixed Base Operators

The airport is currently supported by three fixed base operators (FBOs): Yingling Aviation, Raytheon Aircraft Services, and Executive Aircraft Corporation. The facilities associated with these operators and their locations on the airport were previously identified on **Exhibit 1D** and **Table 1C**.

Hangars

General aviation hangar facilities at Wichita Mid-Continent Airport fall into two categories: conventional and T-hangar. There are 13 general aviation conventional hangars totaling 454,050 square-feet. There are 11 T-hangar complexes totaling 166,500 square feet. These totals exclude the Cessna Aircraft and Bombardier Aircraft manufacturing hangars and are limited to the hangar facilities located along Taxiway A and Taxiway H.

SUPPORT FACILITIES

Several support facilities serve as critical links in providing the necessary efficiency to aircraft ground operations such as aircraft rescue and firefighting (ARFF), snow removal equipment, and airport maintenance.

Aircraft Rescue and Firefighting Facilities (ARFF)

Wichita Mid-Continent Airport operates as an air carrier facility under certification by the U.S. Department of Transportation. The Code of Federal Regulations (CFR) 14, Part 139, governs the operation of land airports serving DOT certificated air carrier activities. Within these regulations, specific requirements for operation of airport rescue and firefighting equipment and services have been established.

CFR Part 139.49 presents a categorical index of the various levels of Part 139 certified airports. This index is based on the number of departures conducted at a particular airport by aircraft within specific length categories. Wichita Mid-Continent Airport operates as an Index "C" facility.

The airport owns and operates four firefighting vehicles. The following describes their capabilities and identifications.

Rapid Response Vehicle

Vehicle Number: Safety One
1997 Ford F-Super Duty Rapid Intervention Vehicle
300 gallons water/40 gallons aqueous film forming foam (AFFF)
Turret discharge rate: 300 gallons per minute
Carries 450 pounds dry chemical

Primary Vehicles

Vehicle Number: Safety Two
1990 Oshkosh T1500
1,500 gallons water/205 gallons AFFF
Discharge rate: 300 GPM for roof turret
300 GPM for bumper turret
60 GPM for hose reel
Carries 750 pounds dry chemical

Vehicle Number: Safety Three
1990 Oshkosh T1500
1,500 gallons water/205 gallons AFFF
Discharge rate: 300 GPM for roof turret
300 GPM for bumper turret
60 GPM for hose reel

Backup Vehicle

Vehicle Number: Safety Four
1972 Oshkosh M1500
1,500 gallons water/180 gallons AFFF
Discharge rate: 300 GPM for roof turret
300 GPM for bumper turret

The ARFF facility is located east of the airport administration building. An access road connects this building with Taxiway C and Taxiway K for quick access to the airfield.

Snow Removal Equipment

The WAA owns the following snow and ice control equipment:

- Three 1983 Oshkosh P2330 19-ft. blade snow plows
- One 2001 Oshkosh HB-Series 18-ft. broom with snow blower attachment
- One 1997 Oshkosh HB-Series 18-ft. broom with 19-ft. plow attachment
- One 1962 Snowblast rotary snow blower
- One 1995 Kodiak rotary snow blower
- Six 1985-1997 Ford F-700/F-800 dump trucks; three with 12-ft. plows, 2 with 10-ft. plows
- Four sand spreaders one with liquid capabilities (mounted in above dump trucks)
- One 1997 Case five-yard loader with 14-ft. plow attachment
- One 1999 JCB two-yard loader
- One 1997 Chevy 2200 gallon deicing truck
- One 2000 Batts 3000-gallon deicing truck
- One 1999 John Deere all wheel drive 14-ft. grader with ice blades
- One 1986 Chevy 4x4 with plow and sand spreader w with liquid capabilities
- Three 1993-1995 Excel 4400 with 3-ft. plows; two have small spreaders
- One 1979 Chevy 2000-gallon deicing truck
- Two 2004 Oshkosh P-series 22 ft. plow blades
- One 2004 Oshkosh H-series 22 ft. broom

Airport Maintenance

The airport maintenance facilities are located at the southern end of the airport along K-42. Airport maintenance equipment storage and operations are conducted from three separate buildings. Specifics for these facilities were summarized in **Table 1C**. The location of these facilities on the airport is shown on **Exhibit 1A**.

UTILITIES

Utility companies serving the airport include Westar, the electric company which supplies bulk electricity to the airport. All services to the airport are from overhead lines and then buried while on airport property. Gas services are tapped into a pipeline owned by Kansas Gas Service. The airport's water and sanitary sewer services are furnished by the city's municipal systems. The major water supply sources are reservoirs supplied by local rivers and deep wells. Sewage treatment is supplied by facilities on the airport connecting it with municipal sanitary sewer lines west of Hoover Road.

COMMUNITY PROFILE

This section brings together individual studies and data to provide an understanding of the characteristics of the local area. Within this section is a historical summary of the local economy and demographics, a description of the ground access systems near the airport, competitive transportation modes, land use, and local climate.

REGIONAL SETTING, ACCESS, AND TRANSPORTATION

As depicted on **Exhibit 1E**, Wichita Mid-Continent Airport is located in the

southwestern section of the City of Wichita. The City of Wichita is located in the east central portion of Sedgwick County. The City of Wichita serves as the county seat and is the regional and economic hub of south central Kansas and northern Oklahoma.

Regionally, the City of Wichita is located approximately 140 statute miles (sm) southwest of Topeka, Kansas; 160 sm north of Oklahoma City, Oklahoma; 175 sm northwest of Tulsa, Oklahoma; and 200 sm southwest of Kansas City, Missouri. Regional access to the airport is via U.S. Highway 54 (Kellogg Avenue) to Mid-Continent Drive.

COMPETITIVE MODES

In addition to the competition posed by private automobiles, a number of other transportation modes also compete with air service at Wichita Mid-Continent Airport. Among these are buses, motor or truck freight lines, and railroads. Many of the nation's largest truck lines serve the Wichita metropolitan area. Amtrak furnishes passenger rail service with a stop in Newton. Cargo rail service is also provided. Bus service, operated by national carriers, is provided to the Wichita metropolitan area.

CLIMATE

Weather conditions are important to the planning and development of an airport. Temperature is an important factor in determining runway length requirements, while wind direction and speed are used to determine optimum runway orientation. The need for navigational aids and lighting is determined by the percentage of time that visibility is impaired due to cloud coverage or other conditions.

The climate of Wichita is typical of the Midwest. Summers vary from dry weather with low relative humidity and southerly winds to periods of high precipitation. Temperatures in the summer typically range from 60 to 100 degrees. Winters average about 50 degrees cooler than summers, with cold fronts accompanied by strong north/northwesterly winds. Annual precipitation averages 31 inches, the majority of which falls during the months of April through September. **Table 1D** summarizes climatic data for regional area.

AIRPORT SYSTEM PLANNING ROLE

Airport planning exists at local, regional, and national levels. Each level has a different emphasis and purpose. The Airport Master Plan is the primary local planning document.

At the regional level, it is the responsibility of the Tri-County Airport System Plan to identify airports in Sedgwick, Harvey, and Butler counties that make up the airport system that provides for aviation needs in this region. The Tri-County Airport System Plan Update of 1992 has affirmed that the five public airports that make up the Tri-County Airport System include Wichita Mid-Continent, Augusta Municipal, Colonel James Jabara, Newton City-County, and El Dorado Airports. The Plan has further confirmed that three of these airports (Augusta Municipal, Colonel James Jabara, and Newton City-County Airports) are suited to serve as relievers to Wichita Mid-Continent Airport.

Mid Continent-00MP13-1E-4/4/05

Exhibit 1E
AIRPORT VICINITY MAP

TABLE 1D
Climatological Summary

	Monthly Averages		Precipitation
Month	**Maximum**	**Minimum**	**Mean (inches)**
January	40° F	20° F	0.84
February	47° F	25° F	1.02
March	57° F	34° F	2.71
April	67° F	44° F	2.57
May	76° F	54° F	4.16
June	87° F	64° F	4.25
July	93° F	69° F	3.31
August	92° F	68° F	2.94
September	82° F	59° F	2.96
October	70° F	47° F	2.45
November	55° F	34° F	1.82
December	43° F	24° F	1.35
Annual	67° F	45° F	31.00

Source: www.weather.com
* Averages are based on a 30-year period.

At the national planning level, Wichita Mid-Continent Airport is included in the *National Plan of Integrated Airport Systems (NPIAS)*. The primary purpose of the NPIAS is to identify the airports that are important to national transportation and, therefore, eligible to receive grants under the Airport Improvement Program (AIP). Wichita Mid-Continent Airport is designated in the NPIAS as a primary commercial service airport.

The FAA further classifies Wichita Mid-Continent Airport for the distribution of federal grant funds through the AIP. Based upon the annual passenger enplanement levels (air carrier aircraft boardings), the FAA further classifies Wichita Mid-Continent Airport as a small hub airport. As a small hub airport, Wichita Mid-Continent Airport is eligible to receive an annual entitlement through AIP and 90 percent funding for eligible AIP projects.

HEIGHT AND HAZARD ZONING

Height and hazard zoning establishes height limits for new construction near the airport and within the runway approaches. It is based upon an approach plan which describes imaginary surfaces defining the edges of airspace which are to remain free of obstructions for the purpose of safe air navigation. It requires that anyone who is proposing to construct or alter an object that could potentially affect these areas to notify the Federal Aviation Administration prior to its construction. Wichita Mid-Continent Airport's height and hazard zoning is found in the *Wichita City Code*, Chapter 28, Section 08.060. Sedgwick County incorporated the same requirements through Resolution No. 277-1995.

SOCIOECONOMIC CHARACTERISTICS

For an airport master plan, socioeconomic characteristics are collected and examined to derive an understanding of the dynamics of growth within the study area. This information is essential in determining aviation service level requirements, as well as forecasting the number of based aircraft and aircraft activity at the airport. Aviation forecasts are typically related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time.

Population

The size and structure of the local communities and the service area that the airport supports are important factors to consider when planning airport facilities. These factors provide an understanding of the economic base that is needed to determine future airport requirements.

According to the U.S. Census Bureau, the population of Kansas reached nearly 2.7 million in 2000. Over 1.1 million of those people live within 100 miles of Wichita and about 665,000 reside within 50 miles. The Wichita Metropolitan Statistical Area (MSA), which consists of Sedgwick, Butler, and Harvey counties, had a population of 545,220 in 2000. It is estimated that more than four-fifths of MSA residents live within Sedgwick County and approximately 327,000 live within the Wichita city limits.

Historical population totals and annual growth rates for the City of Wichita, Sedgwick County, the Wichita MSA, and the State of Kansas are presented in **Table 1E**. As shown in the table, Wichita had an average annual growth rate of 1.3 percent between 1990 and 2000, which is nearly double the growth rate of Kansas (0.8 percent). The growth rates of the county and the MSA were identical at 1.2 percent.

TABLE 1E
Historical and Forecast Population

	HISTORICAL			FORECAST			
Area	1990	2000	Avg. Ann. Growth Rate 1990-2000	2008	2013	2023	Avg. Ann. Growth Rate 2000-2023
Wichita	304,011	344,284	1.3%	355,200	365,700	392,000	0.6%
Sedgwick Co.	403,662	452,869	1.2%	477,500	495,400	534,700	0.7%
Wichita MSA	485,270	545,220	1.2%	580,300	604,300	655,500	0.8%
Kansas	2,477,574	2,688,418	0.8%	2,858,900	2,965,700	3,179,400	0.7%

Source: Historical – U.S. Census Bureau; Forecasts – Interpolated from forecasts by the Kansas Water Office (1999).

Population projections were interpolated from the Kansas Water Office, which provides projections through the year 2040. These projections have been endorsed as the official Kansas population projections by the Kansas Division of the Budget.

As shown in the table, Kansas' population is expected to reach over 3.1 million by the end of the planning period. Sedgwick County is expected to remain the most populated county in the state, with a projection of 534,700 residents by the year 2023.

Employment

Analysis of a community's employment base can be valuable in determining the overall well-being of that community. In most cases, the community make-up and health is significantly impacted by the number of jobs, variety of employment opportunities, and types of wages provided by local employers. **Table 1F** provides historical employment characteristics for the Wichita MSA.

TABLE 1F
Employment Characteristics
Wichita MSA

	1992	1994	1996	1998	2000	2002
Civilian Labor Force	290,580	284,460	288,320	268,040	268,120	268,180
Total Employment	274,640	272,490	278,870	256,430	251,060	256,930
Unemployment	15,940	11,970	9,450	11,610	17,060	11,250
Unemployment Rate	5.5%	4.2%	3.3%	4.3%	6.4%	4.2%

Source: Center for Economic Development and Business Research.

Wichita area unemployment seldom exceeds the national level, usually averaging nearly two percent lower than the national rate. As shown in the table, there were 15,940 unemployed in the Wichita MSA in 1992, which represented a 5.5 percent unemployment rate. The unemployment rate fell over the next few years, reaching a low of 3.3 percent in 1996. In 2000, the area's unemployment rate reached a high of 6.4 percent. This number has since decreased, falling to 4.2 percent for 2002.

Employment by economic sectors, both historical and forecast data, has been reviewed for Sedgwick County and is presented in **Table 1G**. This information was obtained from the *Complete Economic and Demographic Data Source* (CEDDS) 2002. As shown in the table, the services, manufacturing, and retail trade industries dominated the county's total employment in 2000. Services accounted for the largest share (92,320 jobs), capturing nearly 30 percent of all employment. Manufacturing, dominated by the aviation industry, accounted for the second largest sector of employment in the county (69,770 jobs), capturing more than 22 percent of total employment. Retail trade contributed 16 percent (50,770) of the total. The current industry projections for Sedgwick County, for the period 2000-2022, indicate that total employment will increase by at least 79,150, or 1.0 percent. The services, manufacturing, and retail trade industries will continue to dominate employment, accounting for approximately 70 percent of all employment in Sedgwick County by 2023.

Wichita's employment includes a broad mix of business types, with a strong

base of relatively high paying manufacturing jobs. According to a recent study by the American Cities Business Journals Research, the Wichita area has the second highest concentration of manufacturing jobs and skilled labor in the country.

TABLE 1G
Employment by Economic Sector
Sedgwick County

Economic Sector	2000	% of Total Employment 2000	2023	Average Annual Growth Rate (2000-2023)
Total Employment	313,570	100.0%	397,220	1.0%
Mining	3,680	1.2%	4,730	1.1%
Construction	17,660	5.6%	20,610	0.7%
Manufacturing	69,770	22.3%	80,150	0.6%
Transportation & Public Utilities	11,670	3.7%	11,520	-0.1%
Wholesale Trade	15,420	4.9%	18,150	0.7%
Retail Trade	50,770	16.2%	64,080	1.0%
Finance, Insurance, & Real Estate	19,320	6.2%	23,220	0.8%
Services	92,320	29.4%	133,680	1.6%
Government	32,960	10.5%	41,080	1.0%

Source: CEDDS Woods and Poole (2002), Forecasts Interpolated by Coffman Associates.

Table 1H presents the 15 largest employers (private industry) in Wichita. As shown in the table, four of the top five employers in Wichita are aircraft manufacturers. Combined, these four employers (Boeing, Cessna, Raytheon, and Bombardier Aerospace Learjet) supply more than half of the world's general aviation and military aircraft. With three businesses among the top ten employers in Wichita, the healthcare industry is also a major part of Wichita's economy.

A more detailed analysis of Wichita's four main aircraft manufacturers was also examined. This information was obtained from the Center for Economic Development and Business Research. As previously mentioned, aircraft manufacturing represents the largest sector of employment in Wichita. However, following the events of September 11th, 2001, all four of these aircraft manufacturers experienced immediate and continuing order cancellations, resulting in reduced production schedules in 2002, as well as reduced employment levels.

Boeing laid off approximately 5,200 employees beginning in December 2001, based on expectations of deliveries falling from 538 to 500 for 2001 and projections of less than 300 aircraft deliveries for 2002 and 2003. Raytheon delivered 411 airplanes in 2001, compared with 525 in 2000. In late October 2002, Raytheon lowered its delivery forecast to 339 aircraft for 2003. However, a new U.S. Air Force contracted issued in December 2001 will provide funding for 615 airplanes.

Cessna maintained a full staff until late in 2002, when they downsized by 1,000 employees through attrition and early retirements. And in September of 2002, Cessna announced plans to lay off approximately 400 workers, based on pro-

jected deliveries 15 percent below earlier estimates. Bombardier laid off a total of 700 workers in 2002 and announced plans to interrupt production of the Learjet 45 and 60 models. However, plans still continue for full production of the new Challenger 300 upon its certification.

Further reductions by all four aircraft manufacturers are expected during 2003, but at a much lower level as the economy improves.

TABLE 1H
Major Employers in Wichita (2002)

Employer Name	Type of Business	# of Full-Time Employees
Boeing Aircraft Wichita	Aircraft Manufacturing	13,650
Cessna Aircraft Company	Aircraft Manufacturing	11,400
Raytheon Aircraft Company	Aircraft Manufacturing	8,100
Via Christi Regional Medical Center	Hospital/Medical	3,415
Bombardier Aerospace Learjet	Aircraft Manufacturing	3,152
Koch Industries, Inc.	Oil Equipment	1,972
Wesley Medical Center	Hospital/Medical	1,755
The Coleman Company, Inc.	Outdoor Supplies	1,355
Catholic Diocese of Wichita	Church	1,343
Wichita Clinic	Hospital/Medical	1,133

Source: Wichita Area Chamber of Commerce.

However, not all the news in 2002 was bad for the aircraft manufacturers in Wichita. The city won the opportunity to be home for Airbus Industrie of France's wing design facility. The design facility opened in the spring, hiring approximately 60 engineers and 15 to 20 administrative staff. Airbus has also announced plans to expand, hiring an additional 80 employees by June 2003. Cessna proceeded with its plans to build a Citation Service Center at Wichita Mid-Continent Airport, which will employ up to 800 people.

Income

Table 1J compares per capita personal income (PCPI), adjusted for 1996 dollars, for Sedgwick County, the Wichita MSA, the State of Kansas, and the United States. As shown in the table, PCPIs for both Sedgwick County and the Wichita MSA have remained slightly below the national average since 1990. Although Kansas had the most significant growth rate of the four areas (1.9%) between 1990 and 2000, their PCPI remains the lowest. However, forecasts project the highest growth rate (1.3%) for the state through 2023, raising Kansas' PCPI above that of the Wichita MSA.

SUMMARY

The information discussed on the previous pages is intended to provide an overview of the airport facilities. It is not intended to be all-inclusive of data which was available or collected to-date for this planning effort. In the following chapters, additional information will be presented to supplement this data in

support of planning analyses. Initially, in the development of aviation demand forecasts (Chapter Two), a more comprehensive overview of historical activity statistics will be presented, while in the facility requirements analysis (Chapter Three), a more comprehensive overview of terminal functional areas, parking, and hangar storage areas will be presented. The information and data presented through these first three chapters will define the airport and the airport's ability to accommodate projections of aviation demand.

TABLE 1J
Personal Income Per Capita (1996 $)

	HISTORICAL			FORECAST			
Area	1990	2000	Annual Increase 1990-2000	2008	2013	2023	Annual Increase 2000-2023
Sedgwick Co.	$22,960	$26,610	1.5%	$28,720	$30,200	$33,430	1.0%
Wichita MSA	$22,450	$26,340	1.6%	$28,450	$29,920	$33,160	1.0%
Kansas	$21,230	$25,680	1.9%	$28,570	$30,430	$34,340	1.3%
United States	$22,870	$27,000	1.7%	$29,560	$31,250	$34,890	1.1%

Source: CEDDS Woods and Poole (2002), Forecasts Interpolated by Coffman Associates.

DOCUMENT SOURCES

A variety of sources were used during the inventory process. The following listing reflects a partial compilation of these sources. It should be recognized that operational statistics, airport tenants, and community information continues to change over time. The following documents were referenced in the initial preparation of this chapter:

AirNav Airport Information, web site: *www.airnav.com*

Airport Facility Directory, North Central U.S., U.S. Department of Commerce, National Oceanic and Atmospheric Administration, January 23, 2003.

Airport Master Plan, Wichita Mid-Continent Airport, 1998.

Aviation Database, web site: *www.avweb.com*

City of Wichita, website: *www.wichita.gov*

FAA Aerospace Forecasts, Fiscal Years 2002-2013, Office of Aviation Policy and Plans, Federal Aviation Administration, March 2002.

G.C.R. & Associates, Inc. web site: *www.gcr1.com*

Kansas Water Office, website: *www.kwo.org*

Wichita Sectional Aeronautical Chart, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, January 23, 2003.

Tri-County Airport System Plan, Wichita-Sedgwick County Metropolitan Area Planning Department, 1992.

U.S. Terminal Procedures, North Central U.S., U.S. Department of Commerce, National Oceanic and Atmospheric Administration, January 23, 2003.

Wichita Mid-Continent Airport, web site: *www.flywichita.com*

Airport Certification Manuel, Wichita Mid-Continent Airport.

Chapter Two
AVIATION DEMAND FORECASTS

Aviation Demand Forecasts

CITY OF WICHITA
Wichita Airport Authority

Facility planning must begin with a definition of the demand that may reasonably be expected to occur at the facility over a specific period of time. For Wichita Mid-Continent Airport, this involves forecasts of aviation activity through the year 2023. In this master plan, forecasts of passenger enplanements, air cargo, and annual aircraft operations will serve as the basis for facility planning.

It is virtually impossible to predict, with any certainty, year-to-year fluctuations of activity when looking 20 years into the future. Because aviation activity can be affected by many influences at the local, regional, and national levels, it is important to remember that forecasts are to serve only as guidelines and planning must remain flexible enough to respond to unforeseen facility needs.

The following forecast analysis examines recent developments, historical

information, and current aviation trends to provide an updated set of aviation demand projections for Wichita Mid-Continent Airport. The intent is to permit the City of Wichita and Wichita Airport Authority to make planning adjustments necessary to ensure that the facility meets projected demands in an efficient and cost-effective manner.

The demand-based manner in which this master plan is being prepared is intended to accommodate variations in demand at the airport. Demand-based planning relates capital improvements

to demand factors, such as based aircraft or passengers, instead of points in time. This allows the airport to address capital improvement needs according to actual demand occurring at the airport. Therefore, should growth in passengers, cargo, aircraft operations, or based aircraft slow or decline, it may not be necessary to implement some improvement projects. However, should the airport experience accelerated growth, the plan will have accounted for that growth and will be flexible enough to respond accordingly.

Forecasts will be developed for the following categories:

- Commercial (passengers, operations, and mix).
- Air freight (volume and operations under a normal growth scenario).
- General aviation (operations and mix).
- Military (operations).
- Peaking characteristics (commercial and general aviation categories).
- Annual instrument approaches (all categories).

The forecasts will provide the basis for planning horizon milestones for use in examining aviation facilities development over the planning period.

NATIONAL AVIATION TRENDS

Each year, the Federal Aviation Administration (FAA) publishes its national aviation forecast. Included in this publication are forecasts for air carriers, regionals/commuters, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and by the general public. The current edition when this chapter was prepared was *FAA Aerospace Forecasts-Fiscal Years 2002-2013*, published in March 2002. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

In 2002, the overall demand for aviation services was expected to decline significantly. Positive growth was not expected to be achieved until 2003, and even then the level of enplanements was not expected to return to, or surpass, those of 2001 until 2004. While the majority of this decline was forecast to occur with the large air carriers, the regional airline industry was expected to achieve small levels of growth in 2002, possibly returning to its long-term historical growth trend in 2003. Air cargo traffic was expected to grow at rates similar to those predicted for passenger traffic.

After 2004, general aviation is expected to achieve low to moderate increases in the active fleet and hours flown, with most of the growth occurring in business/corporate flying. Combined aviation activity at FAA and contract facilities is expected to increase at significantly higher rates

than those predicted for general aviation.

The forecasts prepared by the FAA assume that aviation demand will follow a similar path to recovery, as with previous terrorist or war-related incidents. In each instance, traffic and revenue growth resumed within a year. However, the events of September 11th, 2001 had a much more significant effect on the aviation industry, and therefore, must be taken into consideration in the following forecasts. The successful prosecution of the war on terrorism and no further incidences of terrorist activity will set the tone for recovery.

COMMERCIAL AVIATION

The events of September 11th, 2001 had a profound effect on U.S. airlines, both domestically and internationally. While domestic capacity was up 0.9 percent for the entire year, it was down 19.0 percent in September, wiping out most of the gains recorded in the previous 11 months. Prior to this event, the commercial aviation industry recorded its seventh consecutive year of strong traffic growth in 2000. Domestic passenger enplanements declined 1.8 percent in 2001, while domestic load factors averaged 69.7 percent, down 1.2 percent from the previous year.

The year 2001 would also prove to have a disastrous effect on airline profits, with U.S. air carriers reporting operating losses of $4.3 billion, ($3.2 billion occurred in the July-September quarter). This is down $12.2 billion from the previous year. This is a dramatic turnaround from the previous seven years (1994-2000), when U.S. air carriers reported operating profits totaling $47.6 billion. However, losses in 2001 would have been significantly higher if the federal government had not approved a $5.0 billion emergency aid package for U.S. airlines. This aid package is included in most air carriers' financial statements for the July-September quarter.

Following the events of September 11th, many of the larger air carriers grounded a number of their older, less efficient aircraft, and deferred aircraft that were scheduled for delivery in 2002 and 2003. Orders for commercial jet aircraft totaled 851 in the first three quarters of 2001. This is a decrease of 40.6 percent from the same period in 2000. Regional jet orders were down 50.1 percent from the 659 aircraft ordered during the first nine months of 2000. However, the 2,301 orders over the past 19 quarters show that the regional jets will continue to be the fastest growing segment of the aviation industry over the next several years. The number of large passenger jets (more than 70 seats) is forecast to decline by 0.3 percent (13 aircraft) in 2002. Over the 12-year forecast period, the number of large passenger jet aircraft is expected to increase from 4,069 in 2001 to 5,606 in 2013. This represents an annual average increase of 2.7 percent, or 128 aircraft per year. The demand for narrow body aircraft will continue to outpace the demand for the wide body fleet. The narrow body fleet is forecast to grow by 107 aircraft annually, and the wide body fleet by 21 aircraft a year.

The FAA's projection for domestic and international commercial service passenger enplanements indicate relatively strong growth. However, air carrier operations are not expected to return to pre-September 11th activity levels until 2005. Domestic enplanements are projected to grow at an annual average rate of 3.1 percent over the 12-year forecast period, while international enplanements are projected to grow at an annual average rate of 4.7 percent.

REGIONAL/ COMMUTER AIRLINES

The regional/commuter airline industry, defined as air carriers providing regularly scheduled passenger service and fleets composed primarily of aircraft having 60 seats or less, continues to be the strongest growth sector of the commercial air carrier industry. Dramatic growth in code-sharing agreements with the major carriers, followed by a wave of air carrier acquisitions and purchases of equity interests, has resulted in the transfer of large numbers of short-haul jet routes to their regional partners, fueling the industry's growth.

Despite the events of September 11th, many regionals/commuters were able to maintain their previous flight schedules. Many have even increased their flight schedules in response to the transfer of additional routes from their larger code-sharing partners. Regional/commuter capacity and traffic continued to grow in 2001, enplaning 79.37 million passengers in the fiscal year. This is an increase of 0.8 percent more than 2000. The regionals/commuters achieved a load factor of 58.6 percent in 2001, an increase of 0.3 percent over the previous year.

Industry growth is expected to outpace that of the larger commercial air carriers. The introduction of new state-of-the-art aircraft, especially high-speed turboprops and regional jets with ranges of up to 1,000 miles, is expected to open up new opportunities for growth in non-traditional markets. The regional airline industry will also continue to benefit from continued integration with the larger air carriers. The further need for larger commercial air carriers to reduce costs and fleet size will insure that these carriers continue to transfer smaller, marginally profitable routes, to the regional air carriers.

Likewise, the increased use of regional jets is expected to lead to another round of route rationalization by the larger commercial carriers, particularly on low-density routes in the 500-mile range. Regional jet aircraft can serve these markets with the speed and comfort of a large jet, while at the same time providing greater service frequency that is not economically feasible with the speed and comfort of a large jet. This is expected to contribute to strong growth during the early portion of the planning period, although this phenomenon is expected to diminish during the mid-to-latter portion of the planning period.

Passenger enplanements are expected to increase at an average annual rate of 5.5 percent during the FAA's 12-year forecast period, from 79.7 million

in 2001 to 151.5 million in 2013. In 2013, regionals/commuters are expected to transport 16.6 percent of all passengers in scheduled domestic air service. This is an increase of 12.7 percent from 2001. This greater use of regional jets results in the average seating capacity of the regional fleet increasing from 39.9 seats in 2001 to 48.4 seats in 2013. **Exhibit 2A** depicts forecasts of passenger enplanements for the U.S. commercial and regional/commuter markets.

GENERAL AVIATION

Following more than a decade of decline, the general aviation industry was revitalized with the passage of the *General Aviation Revitalization Act* in 1994, which limits the liability on general aviation aircraft to 18 years from the date of manufacture. This legislation sparked an interest to renew the manufacturing of general aviation aircraft, due to the reduction in product liability, as well as renewed optimism for the industry. The high cost of product liability insurance was a major factor in the decision by many American aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

According to a report released by the General Aviation Manufacturers Association (GAMA), aircraft shipments were down 13.4 percent for the third quarter, and 6.2 percent year-to-date. The Aerospace Industries Association of America (AIAA) expects general aviation shipments to decline for the first time since 1994, down 8.8 percent, to 2,556 aircraft. The number of general aviation hours flown is projected to decline by 2.2 percent in 2002, and increase by only 0.4 percent the following year.

At the end of 2001, the total pilot population, including student, private, commercial, and airline transport, was estimated at 649,957. This is an increase of 3.9 percent, or 24,000 pilots, from 2000. Student pilots were the only group to experience a decrease in 2001, down 6.6 percent from 2000. The number of student pilots is projected to decline by 4.5 percent in 2002, and an additional 1.2 percent the following year. After 2004, the number of student pilots is expected to increase at an average annual rate of 1.0 percent, totaling 90,000 in 2013, which is less than the number recorded in 2000 (93,064).

The increased security measures placed on commercial flights after September 11th have increased interest in fractional and corporate aircraft ownership, as well as on-demand charter flights for short-haul routes. This is reflected in the forecast of active general aviation pilots, excluding air transport pilots, to increase by 54,000 (0.8 percent annually) over the forecast period.

The most notable trend in general aviation is the continued strong use of general aviation aircraft for business and corporate uses. According to the FAA, general aviation operations and general aviation aircraft handled at enroute traffic control centers increased for the ninth consecutive year, signifying the continued growth in the use of more sophisticated general

aviation aircraft. The forecast for general aviation aircraft assumes that business use of general aviation will expand much more rapidly than personal/sport use, due largely to the expected growth in fractional ownership.

In 2000, there was an estimated 217,533 active general aviation aircraft, representing a decrease of 0.9 percent from the previous year, and the first decline in five years. **Exhibit 2B** depicts the FAA forecast for active general aviation aircraft in the United States. The FAA forecasts general aviation aircraft to increase at an average annual rate of 0.3 percent over the 13-year forecast period. Single-engine piston aircraft is expected to decrease from 149,422 in the short-term, and then begin a period of slow growth after 2004, reaching 152,000 in 2013. Multi-engine piston aircraft is expected to remain relatively flat throughout the forecast period. Turbine-powered aircraft are expected to grow at an average annual rate of 2.1 over the forecast period, faster than all other segments of the national fleet. Turbojet aircraft are expected to provide the largest portion of this growth, with an annual average growth rate of 3.4 percent. This strong growth projected for the turbojet aircraft can be attributed to the growth in the fractional ownership industry, new product offerings (which include new entry level aircraft and long-range global jets), and a shift from commercial travel by many travelers and corporations. Turboprop aircraft, on the other hand, are projected to grow at an average annual rate of only 0.2 percent over the forecast period.

Manufacturer and industry programs and initiatives continue to revitalize the general aviation industry with a variety of programs. Manufacturer and industry programs include the "No Plane, No Gain" program promoted jointly by the General Aviation Manufacturers Association (GAMA) and the National Business Aircraft Association (NBAA). This program was designed to promote the use of general aviation aircraft as an essential, cost-effective tool for businesses. Other programs are intended to promote growth in new pilot starts and to introduce people to general aviation. These include, "Project Pilot," sponsored by the Aircraft Owners and Pilots Association (AOPA), "Flying Start", sponsored by the Experimental Aircraft Association (EAA), "Be a Pilot," jointly sponsored and supported by more than 100 industry organizations, and "Av Kids," sponsored by the NBAA. Over the years, programs such as these have played an important role in the success of general aviation, and will continue to be vital to its growth in the future.

LOCAL DEMOGRAPHICS AND AIR SERVICE AREA

While population within the Wichita Metropolitan Statistical Area (MSA) is currently estimated at 560,910, and within Sedgwick County at 465,530 by Woods & Poole Economics, Inc., a broader service (or catchment) area has been defined in the *Wichita Air Passenger Demographic and Travel Pattern Analysis*, which was produced by Sabre Consulting in August 2001.

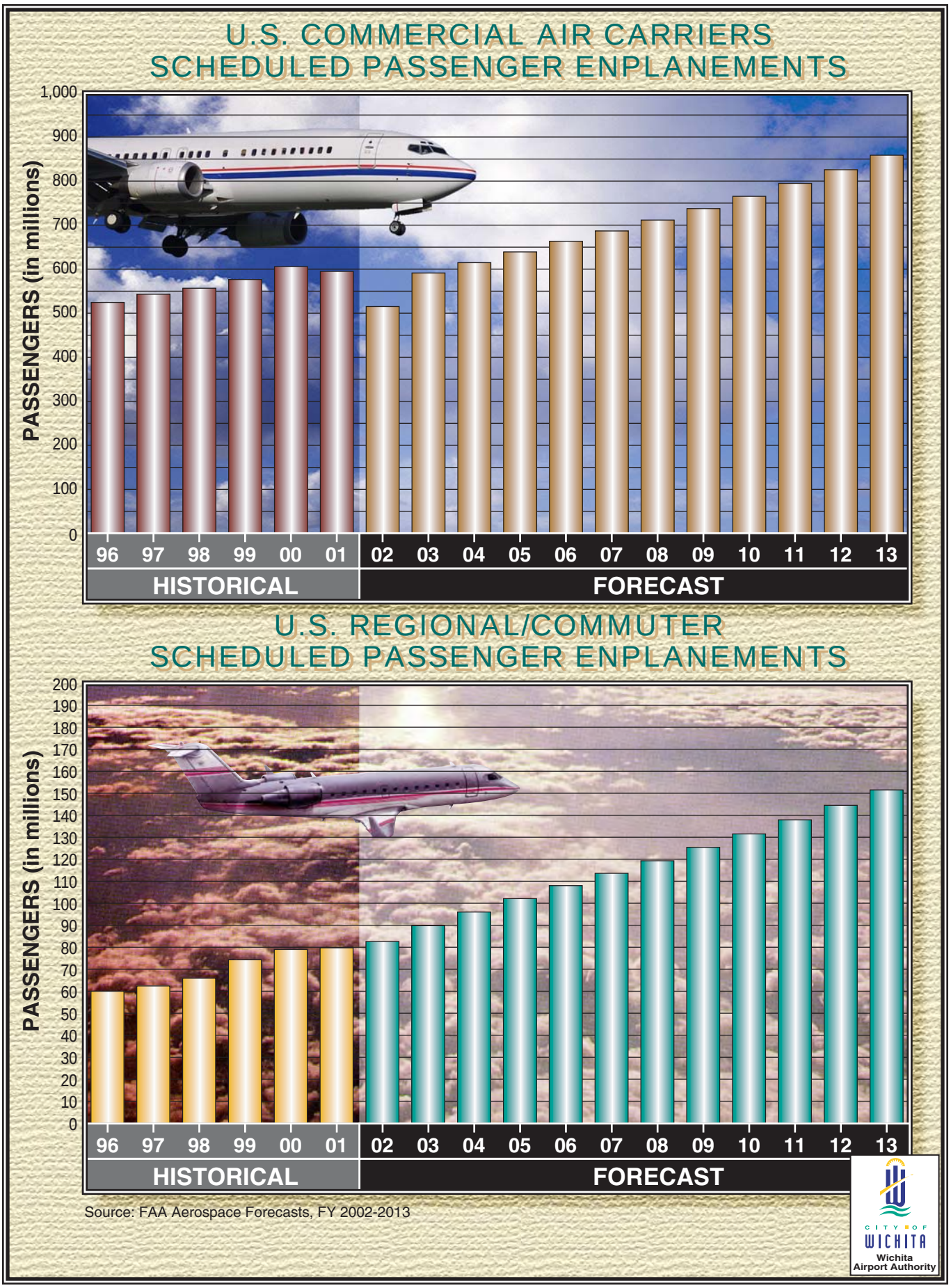
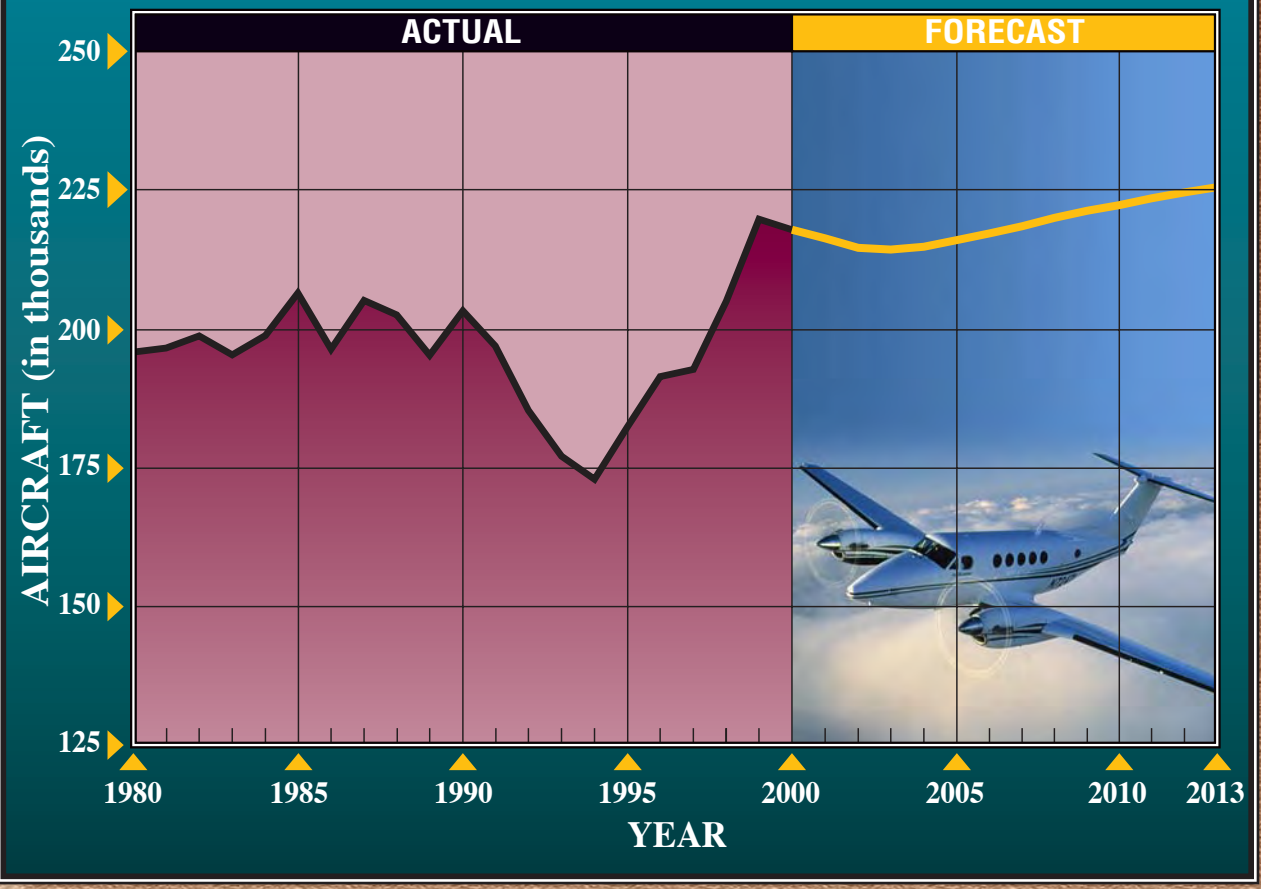


Exhibit 2A
FORECAST PASSENGER ENPLANEMENTS

Mid Continent-00MP13-2B-4/12/03

ACTIVE GENERAL AVIATION AIRCRAFT



U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

As of Dec. 31	FIXED WING								
	PISTON		TURBINE		ROTORCRAFT				
	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine	Experimental	Other	Total
2000	149.4	21.1	5.8	7.0	2.7	4.5	20.4	6.7	217.6
2003	146.0	20.7	5.7	7.5	2.6	4.3	20.4	6.7	213.9
2008	148.7	20.7	5.8	9.6	2.8	4.5	20.8	6.8	219.7
2013	152.0	20.7	5.9	10.9	2.9	4.6	21.4	6.9	225.3

Sources: FAA General Aviation and Air Taxi Activity (and Avionics) Surveys.
FAA Aerospace Forecasts, Fiscal Years 2002-2013.

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

CITY OF WICHITA
Wichita Airport Authority

Exhibit 2B
U.S. ACTIVE GENERAL AVIATION AIRCRAFT FORECASTS

The catchment area was defined to encompass areas where the drive time to Wichita Mid-Continent Airport (ICT) was less than the drive time to other regional airports (defined as Kansas City, Tulsa, Oklahoma City, and Amarillo). The total population within this potential catchment area (which was defined as 432 separate zip code areas) was 1.3 million. Geographically, this catchment area was bounded by Garden City, Colby, Beloit, Junction City, Emporia, Burlington, Parsons, and Ponca City.

From a commercial service perspective, the decision to fly out of ICT is affected by numerous factors in addition to drive time to other airports. These other factors include the availability of flights and equipment, airfares, and the type of air traveler (business vs. pleasure). However, the air service area is generally considered to capture a larger area with the availability of low-fare airlines. For these reasons, the City of Wichita, with the support of dozens of communities and business organizations, launched a campaign to expand service and lower airfares for passenger airline service at ICT in August 2001. The broad strategy involved increasing competition at ICT by attracting three quality discount airlines to Wichita, and providing nonstop service to a higher number of Wichita's top 25 markets in the United States.

Local businesses and organizations were asked to commit a portion of their annual air travel budgets to the discount airlines through the Fair Fares Travel Purchase Program. The commitments which were made are designed to ensure passenger ridership during the most critical phase of new service start-up. The Fair Fares Travel Purchase Program allows local businesses to actively take part in attracting quality, stable, low-fare air service.

As a result of these air service efforts, AirTran Airways initiated service to ICT in May 2002, with service to Atlanta and Chicago (terminated in February 2003). Frontier JetExpress initiated service to ICT in September 2002, with service to Denver. Allegiant Air added service to Las Vegas in late February 2003.

The airport also functions as a regional air cargo hub. This is due in part to the all-weather capabilities of the airport, excellent highway system, and local businesses requiring expedited domestic and international services.

With service and test facilities for Cessna Aircraft (a division of Textron) on the east side of the airfield, and test facilities for business and regional jets for Bombardier on the west side of the airfield, ICT has significant general aviation activities. Over the next couple of years, Cessna Aircraft will open a new service center for the Citation business jet fleet, contributing to an increase in operations within this category.

HISTORICAL AVIATION ACTIVITY

The Wichita Mid-Continent Airport Master Plan Update published in Feb-

ruary 1998 utilized calendar year 1993 as a base year, with estimated activity for 1994. Therefore, updated information was collected for calendar years beginning in 1994 from the Wichita Airport Authority for enplaned and deplaned passengers, air carrier/air taxi, general aviation and military operations, and enplaned and deplaned air freight. The information has been presented in **Table 2A**.

TABLE 2A
Historical Activity
Wichita Mid-Continent Airport

	Passenger Enplanements/ Deplanements		Aircraft Operations				Freight Activity[1] (1,000 – Pound Units)		
Calendar Year	Total Enplanements	Total Deplanements	Air Carrier/ Air Taxi	Military	General Aviation	Total Operations	Air Freight Enplaned	Air Freight Deplaned	Total Freight (Enpl/Depl)
1984	586,300	589,309	50,197	900	129,502	180,599	2,959	4,101	7,060
1985	655,122	656,260	49,153	967	123,215	173,335	3,304	3,983	7,287
1986	702,714	714,090	50,475	1,001	122,567	174,043	2,708	3,445	6,153
1987	710,771	712,773	50,162	1,374	109,582	161,118	7,499	8,901	16,400
1988	678,198	678,123	45,401	1,900	121,218	168,519	8,707	9,164	17,871
1989	650,286	649,552	44,380	1,492	127,019	172,891	9,431	10,148	19,579
1990	613,087	608,816	43,184	2,035	129,851	175,070	8,681	9,070	17,751
1991	590,556	586,480	40,418	1,474	131,221	173,113	10,092	9,966	20,058
1992	640,450	642,125	41,948	1,500	136,218	179,666	13,938	13,861	27,799
1993	637,985	637,384	42,974	1,715	130,285	174,974	13,114	14,564	27,678
1994	585,383	582,530	42,772	1,569	121,782	166,123	27,582	31,286	58,878
1995	648,411	645,955	47,232	2,485	132,880	182,597	25,918	31,620	57,538
1996	714,217	713,325	48,793	2,479	125,783	177,055	36,768	42,716	79,484
1997	704,317	710,017	46,907	2,047	145,579	194,533	38,322	39,152	77,474
1998	666,506	666,442	47,432	3,076	156,260	206,768	36,250	37,040	73,290
1999	621,378	626,951	47,733	7,704	162,651	218,088	25,712	28,228	53,940
2000	609,449	617,634	46,767	10,965	160,493	218,225	22,064	28,848	50,912
2001	563,883	565,498	50,180	15,369	151,103	216,652	23,468	26,370	49,838
2002	670,833	666,437	57,107	9,153	137,747	204,007	33,680	35,806	69,486
2003[2]	717,741	713,869	56,413	10,342	117,260	184,015	16,272	17,390	33,662
2004[2]	749,416	749,333	58,825	11,010	106,254	176,089	17,260	20,067	37,328

Sources: Airport Master Plan, 1998 (Years 1984-1993), Wichita Airport Authority Aviation Activity Reports (Years 1994-2004).
[1] Excludes mail activity. [2]2003/2004 data added prior to final printing in 2005.

COMMERCIAL FORECASTS

As of April 2003, ICT was served by 15 airlines, with nonstop service to 11 cities. Of the 49 daily departures on the schedule, 78 percent were performed by regional jet aircraft. The updated schedule in April 2005 has been reproduced in **Table 2B**. The airport is currently served by 13 airlines, providing nonstop service to 14 cities.

While the airport has experienced periods when passenger volumes increased for extended periods (reaching nearly 1.5 million total passengers in 1987 and 1996), the growth has not been sustained over a long period of time. In fact, after the recent declines in 2001, the airport handled its lowest passenger volumes in 20 years. However, after introduction of low fare service in May 2002, and the introduction of non-stop service to additional cities, the passenger volumes began to significantly rebound, exceeding levels not seen since the mid-to-late 1990s. A comparison of monthly statistics through 2001 and 2002 has been provided in **Table 2C**. If recent trends

continue, the airport should be able to break previous records, and handle nearly 1.5 million total passengers in 2003-04. The previous peak year was 1996, when 1,427,542 passengers were handled through ICT. For comparative purposes, the monthly statistics for 1996 are also provided in the table.

TABLE 2B
Scheduled Passenger Airlines
April 2005
Wichita Mid-Continent Airport

Airline	Gate	Daily Nonstop Service	Daily Departures	Aircraft Equipment Operated
Air Tran Airways	12	Atlanta	3	Boeing 717
		Orlando	Sat. only	Boeing 717
Allegiant Air	10	Las Vegas	1	MD-83
America West Express (Operated by Mesa Airlines)	1	Phoenix	2	Canadair Regional Jet
American Airlines	5	Dallas/Ft. Worth	2	MD-80
American Airlines (Operated by American Eagle)	5	Dallas/Ft. Worth	5	Embraer Regional Jet 145
	5	Dallas/Ft. Worth	1	Embraer Regional Jet 140
	5	Chicago	2	Embraer Regional Jet 145
	5	Chicago	2	Canadair Regional Jet 700
	5	Chicago	1	Embraer Regional Jet 140
American Airlines (Operated by Chatauqua)	5	St. Louis	3	Embraer Regional Jet 140
Continental Express (Operated by ExpressJet Airlines)	3	Houston	4	Embraer Regional Jet 145
Delta Air Lines (Operated by Sky West)	11	Salt Lake City	3	Canadair Regional Jet
Delta Air Lines (Operated by Atlantic Southeast)	11	Atlanta	4	Canadair Regional Jet
	11	Atlanta	2	Canadair Regional Jet 700
Delta Air Lines (Operated by Comair)	11	Cincinnati	3	Canadair Regional Jet
Northwest Airlines (Operated by Pinnacle Airlines)	2	Memphis	3	Canadair Regional Jet
	2	Minneapolis	3	Canadair Regional Jet
	2	Detroit	2	Canadair Regional Jet
United Airlines (Operated by Skywest)	10	Chicago	1	Canadair Regional Jet
	10	Denver	2	Canadair Regional Jet
	10	Denver	1	Canadair Regional Jet 700
United Airlines	10	Denver	1	Boeing 737-300

Source: www.flywichita.org

To determine the types and sizes of facilities necessary to properly accommodate present and future airline activity, two elements of commercial service must be forecast: annual enplaned passengers and annual aircraft operations. Of these, annual enplaned passengers is the most basic indicator of demand for commercial service activity. The term "enplanement" refers to a passenger boarding an airline flight, while "deplanement" refers to the arrival passenger. Since deplanements at ICT have historically mirrored enplanements, future enplanements are assumed to equal deplanements. From a forecast of annual enplanements, operations and peak period activity can be projected based on the specific characteristics of passenger demand at ICT.

TABLE 2C
Monthly Total Passenger Comparisons
Wichita Mid-Continent Airport

	2001	2002	Percent Change	1996	2004*
January	87,194	73,766	-15.4	103,112	108,913
February	81,838	74,683	-8.74	99,342	99,773
March	107,069	96,747	-9.64	122,646	126,101
April	94,875	88,930	-6.27	111,391	118,153
May	112,788	122,598	+8.7	129,913	140,399
June	112,015	129,962	+16.02	127,126	145,636
July	111,076	139,064	+25.2	130,628	142,907
August	109,261	132,074	+20.88	128,552	127,104
September	61,406	108,715	+77.04	111,095	115,794
October	81,783	122,305	+49.55	119,558	125,824
November	83,378	113,336	+35.93	115,688	123,543
December	86,698	135,090	+55.82	128,491	124,602
Totals	1,129,381	1,337,270	+18.4	1,427,542	1,498,749

* 2004 data added prior to final printing in 2005. Total passengers in 2004 surpassed the previous peak year (1996) by 5 percent.

Based upon the cyclical nature of historical passenger enplanement activity at ICT, it is not possible to employ typical analytical techniques for projection purposes. Time-series analysis, regression analysis, and market share analysis all employ relationships of passenger activity to variables which are increasing over time. Since the local passenger activity has not increased over time, these relationships are meaningless. However, the relationships of enplanements to local population (or local travel propensity) may provide an indication of the potential for growth in enplanements. A comparison with several other cities of similar size is provided in **Table 2D**. The travel propensity factor (TPF) was lower for Wichita than many of the other cities included in this comparison for calendar year 2000. However, if a projected enplanement figure for 2003 is used, the TPF for Wichita increases to 1.33. Increasing this factor further will require a continuing program to recapture market share, while holding onto the recaptured passenger traffic over an extended time period. *It is believed that the added security and time required by passengers to be processed through commercial airports will increase the propensity of the public to drive shorter distances (under 250 miles).*

The *Wichita Air Passenger Demographic and Travel Pattern Analysis* estimated that 44 percent of the travel which is booked within the ICT catchment area diverts to other regional airports, with 34 percent going to Kansas City. Southwest Airlines benefits most by the diversion from ICT, attracting 31 percent of all lost passengers. With better airfares and service to a higher number of top destinations, it was felt that ICT should strive to retain 80-85 percent of traffic booked within the catchment area. It

was assumed that greater than 50 percent of passenger demand generated from areas equidistant between ICT and Kansas City would continue to divert to Kansas City. However, in areas affected by other regional airports, a higher percentage of traffic could be expected to be captured. If low cost carriers would enter the top 10 most opportunistic markets, ICT's total passenger traffic could grow by 69 percent (to 2.0 million total passengers). Of this growth, approximately 20 percent would be due to market stimulation, while 70 percent would be due to a reduction in leakage to other regional airports (dropping the annual rate from 44 percent to 15 percent). *However, while this analysis has provided the airport with an estimate of market potential, it has not been used to justify forecasts for this master plan.*

TABLE 2D
Travel Propensity Comparisons
Wichita Mid-Continent Airport

City – MSA	2000 MSA Population[1]	Calendar Year 2000 Enplanements[2]	Travel Propensity Factor (TPF)
Boise, ID	435,390	1,524,458	3.5
Des Moines, IA	457,210	843,290	1.8
Lexington, KY	480,850	507,334	1.1
Ft. Wayne, IN	502,940	351,623	0.7
Colorado Springs, CO	519,750	1,205,552	2.3
Wichita, KS	**546,280**	**584,160**	**1.1**
Charleston, SC	550,060	834,787	1.5
Little Rock, AR	585,010	1,276,145	2.2
Baton Rouge, LA	604,080	417,716	0.7
Knoxville, TN	689,040	863,539	1.3
Omaha, NE	718,170	1,861,057	2.6

Sources: [1] 2002 Woods & Poole Economics, Inc.
[2] FAA DOT/TSC CY 2000 ACAIS Database.

In developing a forecast for this master planning effort, several assumptions were made with regard to the rate of change in the TPF. The more conservative forecast presents a static rate of change in the TPF, with long-term passenger growth reflecting population growth rates in the Wichita MSA. *(It should be noted that the Wichita MSA population has been used rather than the larger catchment area population discussed in preceding paragraphs.)* Two projections were developed with an increasing TPF. The more optimistic of the two provides higher growth rates over the first five years of the plan, but reflects overall population growth rates through the intermediate and long-term planning periods. A steady increase in the TPF provides a more uniform growth pattern throughout the planning period. The latter two projections reflect enplanement levels increasing to slightly over 1.0 million, while the static projection provides long-term enplanement levels of 0.9 million. The selected planning fore-

cast reflects an average of these operations with a long-term level of 0.95 million.

The projections have been compared to the *FAA Terminal Area Forecasts* in **Table 2E**, while the forecasts are presented graphically on **Exhibit 2C**.

TABLE 2E
Summary of Enplaned Passenger Forecasts
Wichita Mid-Continent Airport

		Enplaned Passengers (Boarding)				
Year	Wichita MSA Population[2]	Static TPF[2] (1.33)	Increasing TPF (Short Term Only)	Increasing TPF (Long Term Increase)	Selected Forecast	FAA TAF[3]
2003	561,000	750,000	1.33 – 750,000	1.33 – 750,000	750,000	*618,177*
2008	585,000	778,000	1.5 – 878,000	1.37 – 802,000	825,000	*725,287*
2013	612,000	814,000	1.5 – 918,000	1.41 – 863,000	875,000	*832,398*
2023	670,000	891,000	1.5 – 1,005,000	1.50 – 1,005,000	950,000	*1,074,382*

[1] Source: Woods & Poole Economics, Inc. Estimates, Interpolated by Coffman Associates
[2] Travel Propensity Factor (Ratio of Annual Enplaned Passengers to MSA Population)
[3] *Reflect actual activity through FY 2001. Extrapolated to 2023 by Coffman Associates.*

FLEET MIX AND OPERATIONS FORECASTS

The commercial service fleet mix defines a number of key parameters in airport planning, including critical aircraft, stage length capabilities, and terminal area gate configurations. A fleet mix projection for ICT has been developed after reviewing the changes which have taken place over the past few months in fleet composition, and recent information which was reviewed on fleet transitions taking place within the airline industry.

The Wichita market has transitioned heavily to the regional jet, with 78 percent of daily departures on various models of this aircraft. In addition, service is also provided on a variety of larger narrow body aircraft, such as the Boeing 717, MD-83, Fokker 100, and 737-500. A limited number of operations are also provided on 30-passenger turboprops. With the U.S. airline industry continuing to hemorrhage cash, many orders for aircraft have fallen off or been delayed. Furthermore, large numbers of aircraft have been parked in the desert as capacity has been dramatically reduced. Many of these aircraft are economically viable aircraft, but will not reenter the market until the airlines feel the need to increase the number of aircraft seats in the marketplace.

The downturn in the airline industry has been worsened by increasing consumer cost sensitivity, which has helped the low fare carriers increase market share. While the hub and spoke system continues to dominate the industry, major carriers are changing their approach to using the hubs, to improve frequency and efficiency. A good example is American's recent change to "rolling hubs", which have de-peaked Dallas/Fort Worth and Chicago O'Hare, and reduced their block time (and costs). Another change, as

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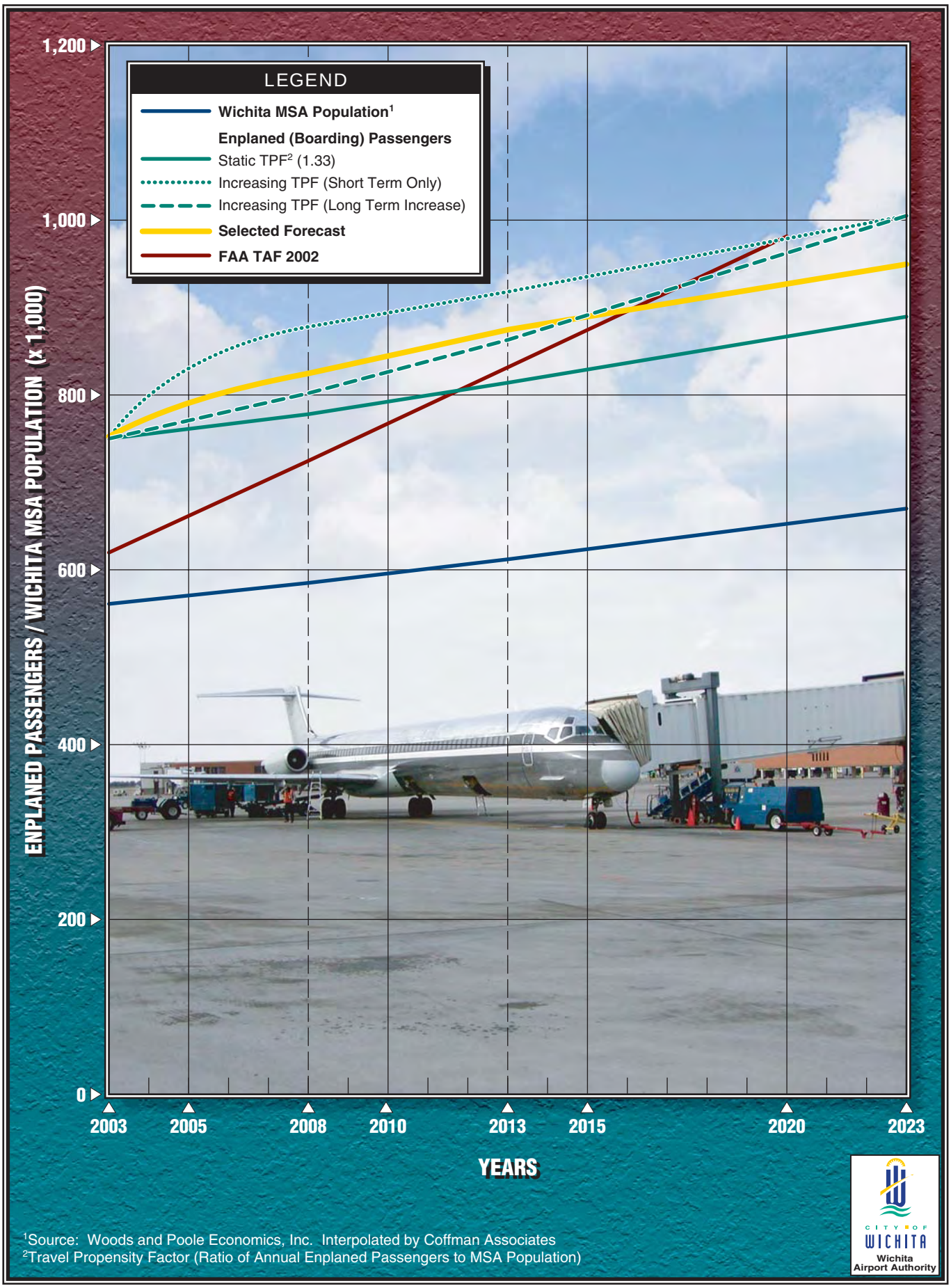

Exhibit 2C
ENPLANED PASSENGER VS.
MSA POPULATION FORECASTS

noted with the service changes experienced at Wichita with the substitution of regional jets, is outsourcing of routes by the major carriers to their regional subsidiaries to reduce capacity and operating costs. Since rolling hubs depend on frequency and high utilization of equipment, the transition favors the use of high numbers of regional jets. However, pilot union scope clause agreements have limited the number of orders for the 70-110 seat regional jets, dampening demand for regional jets.

Many experts believe that the industry will not fully recover for several more years. Therefore, capacity will be added slowly as load factors on flights once again begin to increase. It is anticipated that the Wichita market will continue to be dominated by regional jets with varying seating capacities, and larger narrow body aircraft on the higher origin-destination city pairs. While there are limited turboprops in the current schedule, they continue to provide the best economics on short routes of 250 miles or less. However, few are being ordered by the regional airlines at this time, and they are not expected to have a significant influence on the local mix.

The current consolidated airline schedule lists 340 flights that depart the airport each week. The fleet mix projections, and calculations for annual departures and operations, have been summarized in **Table 2F**. As the fleet transitions into slightly larger aircraft, the average number of seats per departure will increase. It has been assumed that the boarding load factor will also increase slightly through the planning period. The combination of increasing fleet size and boarding load factor creates a 50 percent increase in commercial operations through the planning period.

AIR FREIGHT FORECASTS

Air freight and air mail is currently being handled by the scheduled airlines and all-cargo carriers. The total amount of air mail handled through ICT in 2002 was less than 700 tons. This has been excluded from the air freight figures presented earlier in **Table 2A** and from the following forecast analysis. The all-cargo carriers handling air freight at ICT include: FedEx, United Parcel Service, Airborne, and Emery. The amount of air freight handled through ICT over the past decade has increased more than three-fold. However, total volume is still below the peak year of 1996, and total air freight declined over the 1999-2001 period until rebounding in 2002. This mirrors some slow growth in the air cargo industry overall, which had grown consistently over the past 30 years until the Asian financial meltdown in 1998, followed by the recession in the U.S. beginning in 2001.

TABLE 2F
Airline Fleet Mix and Operations Forecast
Wichita Mid-Continent Airport

Seating Range	2003	2008	2013	2023
> 130 (e.g., MD83)	2%	2%	3%	5%
105-129 (e.g., 717-200)	10	10	12	12
81-104 (e.g., F100, 737-500)	6	8	10	13
40-80 (e.g., Regional Jets)	78	80	75	70
< 40 (e.g., Brasilia)	4	0	0	0
	100%	100%	100%	100%
Seats per Departure	69	71	74	76
Boarding Load Factor	.60	.57	.58	.60
Enplanements per Departure	41	40	43	46
Annual Enplanements	750,000	825,000	875,000	950,000
Annual Departures	18,200	20,400	20,500	20,700
Annual Operations	36,400	40,800	41,000	41,400

Despite these recent declines in the industry, the future remains very optimistic for the air freight industry. It is anticipated that long-term growth rates may range from 3.5 to 6.0 percent. The *FAA Aerospace Forecasts Fiscal Years 2002-2013* predicts an average growth rate of 3.9 percent through the period, which has been applied to ICT and summarized in **Table 2G**. The level of growth will be tied closely to economic development, enhanced security measures, and the ability of expedited express carriers such as FedEx and UPS to curb the loss of market share to expedited trucking services in the U.S.

TABLE 2G
Enplaned and Deplaned Freight Forecast
Wichita Mid-Continent Airport

		Forecasts		
Freight Activity	2002[1]	2008	2013	2023
Enplaned Tons	16,840	21,200	25,700	37,600
Deplaned Tons	17,903	22,500	27,300	40,000
Total	34,743	43,700	53,000	77,600

[1] Source: Wichita Airport Authority Aviation Activity Report.

The current schedule maintained by the all-cargo carriers includes 164 weekly operations, by a mix of 757, 727, DC-9, and turboprop aircraft. The jet mix is currently 43 percent. It has been assumed that the aircraft mix will transition in the future as passenger-to-freighter conversions are undertaken and transferred into the freighter fleet. Aircraft currently in the passenger airline fleet that are expected to transition to freighter use include narrow body aircraft such as the 737-300/400 series, 757-200s, and A320s, and wide body aircraft such as the 767 and A300. In addition to jet

conversions, turboprops are also expected to be converted, including the ATR 42/72, BAE ATP, EMB-120, and Saab 340. Many of these aircraft are expected to be used in the local mix at ICT.

In developing projections of future operations, the current mix is used to calculate average aircraft lift capacity, and actual recorded freight activity is used to determine the existing load factor. It has been assumed that the load factor will increase over time to absorb some of the available capacity, while the fleet transitions into a slightly heavier mix. The projections have been summarized in **Table 2H**.

TABLE 2H
All-Cargo Fleet Mix and Operations Forecast
Wichita Mid-Continent Airport

	Forecasts			
Payload Capacity (lbs.)	**2003**	**2008**	**2013**	**2023**
> 100,000 (e.g. DC-10F)	0%	0%	0%	0%
70,000 – 100,000 (e.g. 757-200F)	6%	7%	8%	8%
50,000 – 70,000 (e.g. 727-200F)	24%	26%	28%	30%
25,000 – 50,000 (e.g. DC9)	13%	12%	11%	10%
< 25,000 (e.g. turboprops)	57%	55%	53%	52%
	100%	100%	100%	100%
Average Capacity (lbs.)	27,800	29,400	30,900	31,700
Load Factor	0.30	0.35	0.37	0.40
Pounds per Departure	8,400	10,300	11,400	12,700
Annual Deplaned Tons	17,900	22,500	27,300	40,000
Annual Departures	4,260	4,380	4,780	6,320
Annual Operations	8,520	8,760	9,560	12,640

It should be recognized that air freight volume is very sensitive to the contracts which individual carriers may have from time to time with local companies, or decisions the cargo carriers may make with regard to using Wichita as a collection and distribution point for air freight.

GENERAL AVIATION AND MILITARY OPERATIONS FORECASTS

Table 2A summarized the historical operations at ICT since 1984 by each of the categories recorded by the airport traffic control tower at the airport: air carrier/air taxi, general aviation, and military. This activity may be further differentiated as local or itinerant operations in the general aviation and military categories. Local operations are landings and takeoffs by aircraft which remain in the local traffic pattern and are generally characterized as training operations. The general aviation and military operational activity over the past decade is presented in **Table 2J**.

The level of general aviation training operations declined in 2001 and 2002, while the level of itinerant activity has remained near levels the airport has witnessed since the mid-1990s. Military activity increased in the late

1990s and remains well above earlier levels; however, it has moderated somewhat over the past six months.

The FAA's latest *Terminal Area Forecast* (2002) anticipates modest growth in general aviation activity over the next 17 years, while military activity is projected at a static level. Since current military activity is below the FAA's 2002 estimate, a slightly lower projection has been used for this analysis.

TABLE 2J
General Aviation and Military Activity, 1993-2002
Wichita Mid-Continent Airport

	General Aviation			Military		
Year	**Itinerant**	**Local**	**Total**	**Itinerant**	**Local**	**Total**
1993	91,932	38,353	130,285	1,182	533	1,715
1994	84,021	37,761	121,782	1,122	447	1,569
1995	94,386	38,494	132,880	1,494	991	2,485
1996	100,347	25,436	125,783	1,551	928	2,479
1997	107,886	37,693	145,579	1,327	724	2,047
1998	109,868	46,392	156,260	1,569	1,507	3,076
1999	112,706	49,945	162,651	3,375	4,329	7,704
2000	104,182	56,311	160,493	4,992	5,973	10,965
2001	102,974	48,129	151,103	6,170	9,199	15,369
2002	103,521	34,226	137,747	4,111	5,042	9,153
2003	86,072	31,188	117,260	4,523	5,819	10,342
2004	82,202	24,052	106,254	5,962	5,980	11,942

Source: Wichita Airport Authority Aviation Activity Report and www.faa.gov
2003/2004 data added prior to final printing in 2005.

The latest general aviation projections for ICT in the *Terminal Area Forecast* assumed an average annual growth rate of 2.3 percent. Based upon past trends, this projection appears to be a reasonable planning projection for normal growth. However, Cessna Aircraft's current expansion will influence overall operational demands on the airfield and effect these projections.

Cessna Aircraft (based upon information which was provided to the consultants) anticipates an increase of 124 average daily operations on the airfield with the completion of their service center for Citation business jets in a couple of years. This incremental increase has been added to the FAA's forecast of normal growth, with the incremental increase remaining constant throughout the planning period. Benefit-cost studies recently completed for the construction of the full-length parallel taxiway (M) along the east side of the airfield have taken this operational adjustment into consideration.

Projections of general aviation and military operations, based upon the preceding assumptions, have been summarized in **Table 2K**. A small number of miscellaneous air taxi operations are assumed within the general aviation itinerant category in the forecasts.

TABLE 2K
General Aviation and Military Operations Forecast
Wichita Mid-Continent Airport

	General Aviation			Military		
	Itinerant	**Local**	**Total**	**Itinerant**	**Local**	**Total**
EXISTING						
2002	103,521	34,226	137,747	4,111	5,042	9,153
FORECASTS						
2008	184,600	48,100	232,700	4,000	5,000	9,000
2013	201,000	54,000	255,000	4,000	5,000	9,000
2023	237,300	66,800	304,100	4,000	5,000	9,000

Simulation modeling, using the FAA's Airport and Airspace Simulation Model, was undertaken in 2001 in support of benefit-cost studies for the Taxiway M project. This modeling of the airfield operation required a data-gathering phase over multiple days in mid-summer which provided an opportunity to review the current operational mix on the airfield. This is especially helpful in master planning, since operational mix provides the basis for airfield capacity analysis. In the absence of more verifiable data, the operational mix must frequently be approximated based upon the mix of based aircraft. For ICT and the prominent use of the airfield for testing by aircraft manufacturing and services companies, the number and/or mix of based aircraft do not provide a strong correlation with the operational mix.

For the simulation modeling, the operational mix for general aviation activities was verified for existing conditions, and future projections were developed based upon FAA activity projections and input from Cessna and Bombardier. The operational mix has been presented in **Table 2L**.

TABLE 2L
Operational Mix Forecast – General Aviation
Wichita Mid-Continent Airport

Type	2003	2008	2013	2023
Single-Engine	25%	22%	21%	22%
Multi-Engine	16%	14%	13%	14%
Turbine	59%	64%	66%	64%
Totals	100%	100%	100%	100%

Source: Benefit-Cost Analysis for Taxiway M, Coffman Associates, Inc., December 2001.

BASED AIRCRAFT MIX

When the forecasts for the last master plan were undertaken in 1994, the general aviation based aircraft count was 188. By 2003, the total number of corporate and private general aviation aircraft reported on the Airport Master Record had declined to 150. There has been an overall decline in all cate-

gories with the exception of helicopters.

The decision to base an aircraft at a given airport is defined by the owner's proximity to other airports and the facilities provided. There are numerous airfields in the Wichita area for small aircraft, and opportunities for tie-down, aircraft storage, fueling, and repair. This availability would appear to have resulted in the transfer of aircraft to other airfields in the area. Therefore, it has been assumed that the level of based aircraft at ICT will remain relatively unchanged through the planning period. The current/projected mix is summarized in **Table 2M**.

TABLE 2M
Based Aircraft Mix
Wichita Mid-Continent Airport

Aircraft Type	2003
Single Engine Piston	92
Multi-Engine/Turboprop	38
Jet	15
Helicopter	5
Total	150

Source: Airport Master Record

ANNUAL INSTRUMENT APPROACHES

Levels of annual instrument approaches (AIAs) provide guidance in determining the airport's requirements for navigational aid facilities. This information is recorded by aircraft category: air carrier/air taxi, general aviation, and military. The information was obtained from the FAA for the period since 1994 and has been summarized in **Table 2N**. Projections have been developed using average ratios of AIAs to itinerant operations through the time period in each of the operational categories.

PEAKING CHARACTERISTICS

Most facility planning relates to levels of peak activity. The following planning definitions apply to the peak periods:

- **Peak Month** - The calendar month for peak passenger enplanements or operations.

TABLE 2N
Annual Instrument Approach (AIA) Forecast
Wichita Mid-Continent Airport

Historical	Air Carrier/ Air Taxi	General Aviation	Military	Total
1994	995	1,206	14	2,215
1995	2,346	2,933	45	5,324
1996	1,807	2,124	39	3,970
1997	1,886	2,299	33	4,218
1998	2,497	3,362	41	5,900
1999	1,747	2,672	77	4,496
2000	1,467	2,210	62	3,739
2001	1,466	1,745	138	3,349
2002	2,719	2,961	110	5,790
FORECASTS				
2008	1,930	4,250	80	6,260
2013	1,970	4,620	80	6,670
2023	2,110	5,460	80	7,650

- **Design Day** - The average day in the peak month.
- **Busy Day** - The busy day of a typical week in the peak month.
- **Design Hour** - The peak hour within the design day.

For commercial airline activity, the consolidated airline schedule provides the distribution of arrivals and departures through the day. With the significant schedule changes which have taken place over the past nine months, the current (February) schedule was applied to this analysis. The schedule indicates that the peak arrival period is in the late evening, when the last bank of flights arrive. The peak departure period is in the early morning, when the first bank of flights depart. The busiest hour is late afternoon, when 10 percent of the daily operations are recorded over a one-hour period. The current schedule indicates that the flights are well distributed throughout the day. Several flights are not operated on Saturday or Sunday.

The peak month for passenger enplanements in 2002 was July, with 10.3 percent of the yearly total. While June, July, or August usually appear as the peak month in a given year, last year's peak (2002) appears to be skewed by the new service which was introduced. Reviewing the peaks during 1996, the previous peak year, and comparing updated 2004 data, the peak month was 9.2 percent (1996) and 9.7 percent (2004) of the yearly total. Therefore, peaking projections were developed using these peaking characteristics. The design hour enplanements were estimated at 15 percent of the design day.

The peak month for general aviation operations in 2002 was June, with 10.1 percent of the annual total. In 2001, the peak month was recorded in March, with 9.9 percent of the annual total. While higher local operations totals are generally recorded in the summer months, the itinerant operations are frequently higher in the spring or fall. Higher, the total general aviation operations peaks appear to remain near 10 percent on a year-to-year basis, which has been applied to the forecasts. The forecast for busy day operations was calculated at 1.25 times the design day operations. Design hour has been estimated at 15 percent of the design day. The peak period forecasts have been summarized in **Table 2P**.

FORECAST SUMMARY

The aviation demand forecasts have been summarized in **Exhibit 2D**. The following chapter will apply these projections to the existing capacities of the airside and landside elements, to provide a quantification of facility needs over the next twenty years.

TABLE 2P
Peak Period Forecasts
Wichita Mid-Continent Airport

		FORECASTS		
	2002	**2008**	**2013**	**2023**
AIRLINE ENPLANEMENTS				
Annual	670,833	825,000	875,000	950,000
Peak Month (9.2%)	69,341	75,900	80,500	87,400
Design Day	2,310	2,530	2,680	2,910
Design Hour (15%)	350	380	400	440
AIRLINE OPERATIONS				
Annual	36,400	40,800	41,000	41,400
Peak Month (8.3%)	3,030	3,400	3,420	3,450
Design Day	100	113	114	115
Design Hour (10%)	10	11	11	12
GENERAL AVIATION OPERATIONS				
Annual	137,747	232,700	255,000	304,100
Peak Month (10%)	13,973	23,270	25,500	30,410
Design Day	470	780	850	1,010
Busy Day (125%)	590	980	1,060	1,260
Design Hour (15%)	70	120	130	150

FORECAST ADDENDUM

Prior to finalizing the master plan in March 2005, year-end information was available for 2004 which may be compared against base year figures in this chapter. This information is summarized as follows.

	2004
Passenger Enplanements	749,416
Annual Operations	
Commercial	58,825
Military	11,010
General Aviation	106,254
Total	176,089
Air Freight	
Enplaned Tons	17,260
Deplaned Tons	20,067
Total	37,328

The year-end passenger enplanements were at the same level as the 2003 base year used for the master plan forecasts. Annual operations are 14 percent below the master plan base year, while air freight tonnage is 8 percent above the master plan base year.

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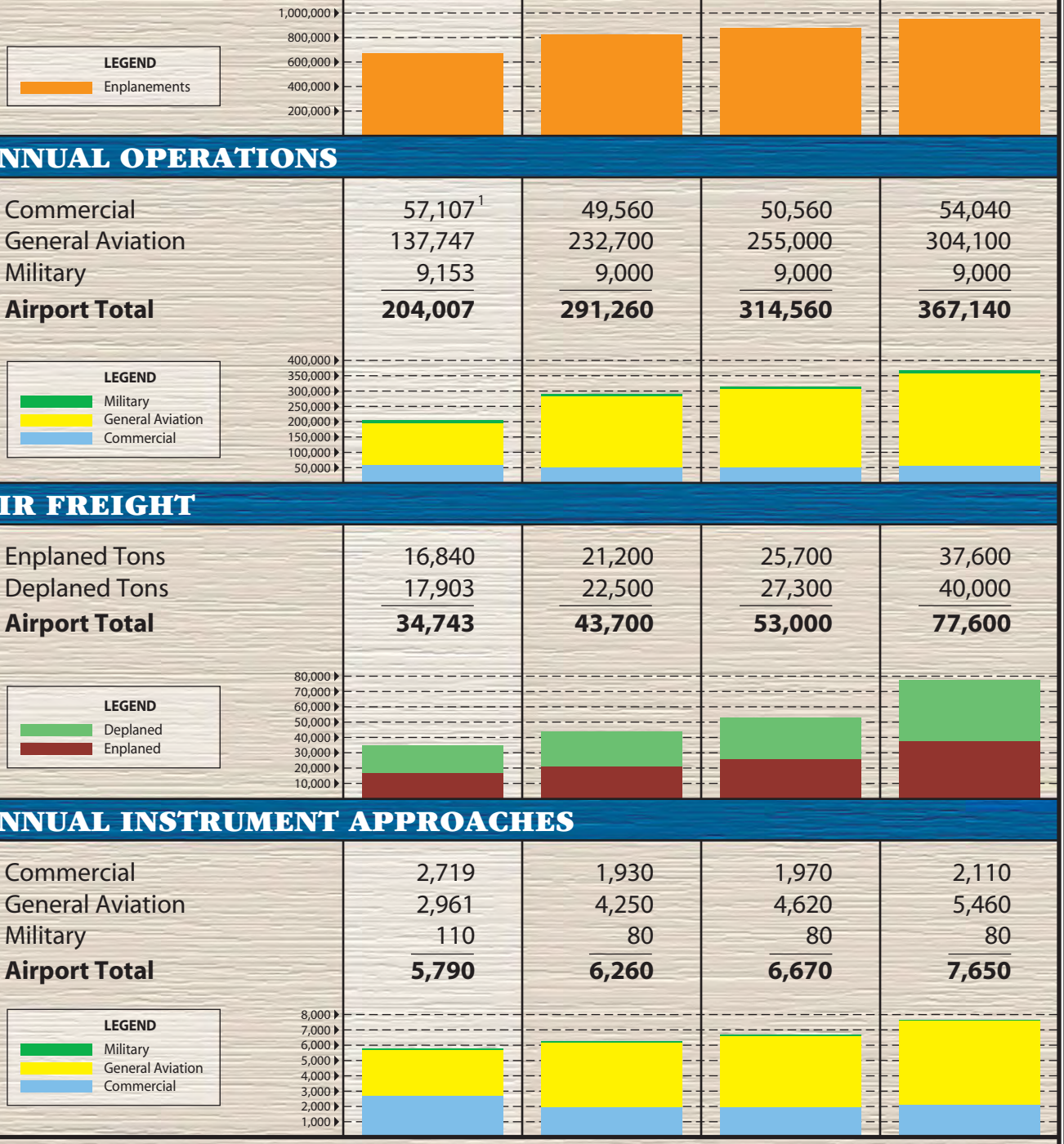
	HISTORICAL	FORECAST		
	2002	2008	2013	2023
ANNUAL ENPLANEMENTS				
Airport Total	**670,833**	**825,000**	**875,000**	**950,000**
ANNUAL OPERATIONS				
Commercial	57,107[1]	49,560	50,560	54,040
General Aviation	137,747	232,700	255,000	304,100
Military	9,153	9,000	9,000	9,000
Airport Total	**204,007**	**291,260**	**314,560**	**367,140**
AIR FREIGHT				
Enplaned Tons	16,840	21,200	25,700	37,600
Deplaned Tons	17,903	22,500	27,300	40,000
Airport Total	**34,743**	**43,700**	**53,000**	**77,600**
ANNUAL INSTRUMENT APPROACHES				
Commercial	2,719	1,930	1,970	2,110
General Aviation	2,961	4,250	4,620	5,460
Military	110	80	80	80
Airport Total	**5,790**	**6,260**	**6,670**	**7,650**



[1] Miscellaneous air taxi included in GA category for future years.

CITY OF WICHITA
Wichita Airport Authority

Exhibit 2D
SUMMARY OF AVIATION FORECASTS

Chapter Three
AVIATION FACILITY REQUIREMENTS

Aviation Facility Requirements

CITY OF WICHITA
Wichita Airport Authority

In this chapter, existing components of the airport are evaluated so that the capacities of the overall system are identified. Once identified, the existing capacities are compared to the forecast activity levels prepared in Chapter Two to determine where deficiencies currently exist or may be expected to materialize in the future. Once deficiencies in a component are identified, a more specific determination of the approximate sizing and timing of the new facilities can be made.

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

Recognizing that the need to develop facilities is determined by demand, rather than a point in time, the requirements for new facilities have been expressed for the short, intermediate, and long term planning horizons, which roughly correlate to the 2008, 2013, and 2023 projections prepared in the previous chapter. Future facility needs will be related to these activity levels rather than a specific year. **Table 3A** summarizes the activity levels that define the planning horizons used in the remainder of this master plan.

TABLE 3A
Planning Horizon Activity Levels

	Existing (2002)	Short Term Planning Horizon	Intermediate Term Planning Horizon	Long Term Planning Horizon
Enplaned Passengers	670,833	825,000	875,000	950,000
Enplaned Air Freight	16,840	21,200	25,700	37,600
Annual Operations	204,007	291,260	314,560	367,140

AIRFIELD CAPACITY

An airport's airfield capacity is expressed in terms of its annual service volume. Annual service volume is a reasonable estimate of the maximum level of aircraft operations that can be accommodated in a year. Annual service volume accounts for annual differences in runway use, aircraft mix, and weather conditions. The airport's annual service volume was examined utilizing Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*.

FACTORS AFFECTING ANNUAL SERVICE VOLUME

Exhibit 3A graphically presents the various factors included in the calculation of an airport's annual service volume. These include: the airfield characteristics, meteorological conditions, aircraft mix, and demand characteristics (aircraft operations). These factors are described below.

Airfield Characteristics

The layout of the runways and taxiways directly affects an airfield's capacity. This not only includes the location and orientation of the runways, but the percent of time that a particular runway or combination of runways is in use and the length, width, weight bearing capacity, and instrument approach capability of each runway at the airport. The length, width, weight bearing capacity, and instrument approaches available to a runway determine which type of aircraft may operate on the runway and if operations can occur during poor weather conditions.

- RUNWAY CONFIGURATION

The existing runway configuration includes three runways, two of which are parallel to each other. Runway 1L-19R and Runway 1R-19L are parallel to each other. The runway centerlines are separated by 4,400 feet. Runway 14-32 is the crosswind runway. Runway 14-32 and Runway 1L-19R physically intersect approximately 3,000 feet from the Runway 19R threshold and approximately 1,500 feet from the Runway 14 threshold. While Runway 14-32 does not physically intersect Runway 1R-19L, the extended approach path for Runway 14 and Runway 1R intersect.

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AIRFIELD LAYOUT

Runway Configuration

Runway Use

Number of Exits

WEATHER CONDITIONS

VFR

IFR

PVC

AIRCRAFT MIX

A&B

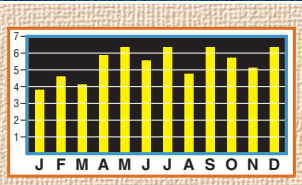
C

D

OPERATIONS

Arrivals and Departures

Total Annual Operations



Touch-and-Go Operations

CITY OF WICHITA
Wichita Airport Authority

Exhibit 3A
AIRFIELD CAPACITY FACTORS

The parallel runway configuration and distance between each runway centerline (4,400 feet) maximizes airfield capacity. This configuration allows for simultaneous approaches to both parallel runways in both visual weather conditions and inclement weather conditions when pilots must rely on instrument navigation.

Airfield capacity is diminished slightly when wind conditions dictate using Runway 14-32 as Runway 14-32 physically intersects Runway 1L-19R and the extended centerline (or approach surface) of Runway 14-32 extends across the Runway 1R approach. The primary reasons for the capacity constraints are the additional aircraft handling and spacing required to ensure the safety of aircraft operations by air traffic control for operations to intersecting runway. While it would be preferable to use only Runway 14-32 during certain wind conditions, one of the parallel runways can be used in conjunction with Runway 14-32 most of the time Runway 14-32 is in use. In many instances two runway orientations are always available for use when wind conditions may dictate using Runway 14-32. For example, aircraft can depart Runway 32 while aircraft are landing or departing Runway 1R as these operations would not intersect.

Aircraft can also land to Runway 32 and 1L simultaneously using land and hold short operations (LAHSO). The LAHSO procedures have been established at Wichita Mid-Continent Airport to reduce capacity loss by allowing for simultaneous operations to Runway 1L and Runway 32. Aircraft landing Runway 1L are issued LAHSO instructions to not cross Runway 14-32 when landing. Aircraft landing Runway 32 are issued LASHO instructions to not cross Runway 1L-19R when landing. These instructions essentially allow for simultaneous landings to intersecting runways. While capacity is diminished from simultaneous operations to the parallel runways, using Runway 14-32 in conjunction with one of the parallel runways improves airfield capacity when there are strong winds from the northwest or southeast.

Each runway is served either full-length or partial parallel taxiway access. This maximizes airfield capacity and safety as aircraft are not required to taxi on the active runway surface to gain access to a runway end.

- RUNWAY USE

Runway use relates to type of aircraft operating to a runway and the time that that runway orientation is in use. Aircraft operations to a particular runway are determined by the weight bearing capacity of the runway, instrument approach capability, and wind conditions. Wind conditions are examined for both visual and inclement weather conditions.

Maximum runway capacity is achieved when all runways at an airport are able to accommodate the entire fleet mix of aircraft. Each runway has the necessary weight bearing capacity to accommodate all aircraft that operate at the airport. Therefore, there are no limitations on runway use based on this criterion. This

maximizes airfield capacity for Wichita Mid-Continent Airport.

Maximum runway capacity is achieved in situations when more than one runway can be used simultaneously in all weather conditions. As discussed above, airfield capacity at Wichita Mid-Continent Airport is maximized by the parallel runway configuration. Intersecting Runway 14-32, limits capacity slightly in crosswind conditions as aircraft handling and spacing efforts increase to ensure proper clearance between aircraft. Simultaneous operations are limited as well (e.g. a take off on one runway and a landing on the other runway.)

Runway use is normally dictated by wind conditions. The direction of take-offs and landings are generally determined by the speed and direction of wind. It is generally safest for aircraft to takeoff and land into the wind, avoiding crosswind (wind that is blowing perpendicular to the travel of the aircraft) or tailwind components during these operations. Prevailing winds are in a north-south direction at the airport leading to a greater use of Runways 1L-19R and 1R-19L. However, during light wind conditions or situations when the crosswind to the parallel runways exceeds allowable thresholds (primarily for small general aviation aircraft [aircraft under 12,500 pounds]), Runway 14-32 is used simultaneously with one of the parallel runways.

Each runway end is equipped with an instrument approach procedure. However, the most capable instrument approach procedure is available to Runway 1L followed by Runways 1R and 19L. Therefore, during the lowest visibility and cloud ceiling situations only the parallel runway system can be used. Since the parallel runways are separated by 4,400 feet, both runways can be used simultaneously during inclement conditions. This maximizes airfield capacity for the airport. For the capacity analysis, it is assumed that the parallel runways are used during all inclement weather conditions. For weather conditions below 200 foot cloud ceilings and ½ mile visibility, only Runway 1L is assumed to be in use.

- EXIT TAXIWAYS

Exit taxiways have a significant impact on airfield capacity since the number and location of exits directly determines the occupancy time of an aircraft on the runway. The airfield capacity analysis gives credit to exits located within a prescribed range from a runway's threshold. This range is based upon the mix index of the aircraft that use the runway. The exits must be at least 750 feet apart to count as separate exits. Under this criteria both Runway 1L-19R and Runway 1R-19L are credited with three exits, while Runway 14-32 is credited with two exits.

Meteorological Conditions

Weather conditions can have a significant affect on airfield capacity. Airport capacity is usually highest in clear weather, when flight visibility is at its best. Airfield capacity is dimin-

ished as weather conditions deteriorate and cloud ceilings and visibility are reduced. As weather conditions deteriorate, the spacing of aircraft must increase to provide allowable margins of safety. The increased distance between aircraft reduces the number of aircraft which can operate at the airport during any given period. This consequently reduces overall airfield capacity.

There are three categories of meteorological conditions each defined by the reported cloud ceiling and flight visibility. Visual flight rule (VFR) conditions exist whenever the cloud ceiling is greater than 1,000 feet above ground level, and visibility is greater than three statute miles. VFR flight conditions permit pilots to approach, land, or take off by visual reference and to see and avoid other aircraft.

For the capacity analysis, instrument flight rule (IFR) conditions exist when the reported ceiling is less than 1,000 feet above ground level and/or visibility is less than three statute miles. Under IFR conditions pilots must rely on instruments for navigation and guidance to the runway. Other aircraft cannot be seen and safe separation between aircraft must be assured solely by following air traffic control rules and procedures. As mentioned, this leads to increased distances between aircraft which diminishes airfield capacity. For the capacity analysis, poor visibility conditions (PVC) exist when cloud ceilings are less than 500 feet above the ground and visibility is less than one mile.

According to data recorded at the airport for the past 10 years, VFR conditions have occurred approximately 90 percent of the time, whereas IFR conditions and PVC conditions have occurred 5 percent of the time each, respectively.

Aircraft Mix

Aircraft mix refers to the speed, size, and flight characteristics of aircraft operating at the airport. As the mix of aircraft operating at an airport increases to include larger aircraft, airfield capacity begins to diminish. This is due to larger separation distances that must be maintained between aircraft of different speeds and sizes.

Aircraft mix for the capacity analysis is defined in terms of four aircraft classes. Classes A and B consist of single and multi-engine aircraft weighing less than 12,500 pounds. Aircraft within these classifications are primarily associated with general aviation operations, but this classification does include some air taxi and regional airline aircraft (i.e. Cessna Caravan used for air cargo service). Class C consists of multi-engine aircraft weighting between 12,500 and 300,000 pounds. This is broad classification that includes business jets, turboprops, and large commercial airline aircraft. All the scheduled airline and cargo aircraft operating from the airport are included within Class C. Class D includes all aircraft over 300,000 pounds and includes widebodied and jumbo jets. There are no

Class D aircraft operating from the airport. **Exhibit 3A** depicts representative aircraft in each aircraft class. The existing and projected operational fleet mix for the airport is summarized in **Table 3B**.

TABLE 3B
Aircraft Operational Mix
Wichita Mid-Continent Airport

Weather	Year	A & B	C	D
VFR (Visual)	Existing (2002)	64.7%	35.3%	0%
	Short Term	65.0%	35.0%	0%
	Intermediate Term	66.6%	33.4%	0%
	Long Term	72.1%	27.9%	0%
IFR (Instrument)	Existing (2002)	55.8%	44.2%	0%
	Short Term	56.1%	43.9%	0%
	Intermediate Term	57.8%	42.2%	0%
	Long Term	63.9%	36.1%	0%

For the capacity analysis, the percentage of Class C and D aircraft operating at the airport is critical in determining the annual service volume as these classes include the larger and faster aircraft in the operational mix. The percentage of Class C aircraft is higher during IFR conditions since some general aviation operations are suspended. This is due to the fact that some general aviation aircraft are not equipped to operate during poor weather conditions. The percentage of Class C and D aircraft to operate at the airport is expected to decline slightly over time as the mix of aircraft operating at the airport will include higher portions of light business jet aircraft primarily associated with the Cessna Citation service center. The percent C and D for Wichita Mid-Continent Airport is summarized in **Table 3C**.

TABLE 3C
Percent C+D Mix

Existing	Short Term	Intermediate Term	Long Term
VFR (Visual)			
35.3%	35.0%	33.4%	27.9%
IFR (Instrument)			
44.2%	43.9%	42.2%	36.1%

Demand Characteristics

Operations, not only the total number of annual operations, but the manner in which they are conducted, have an important effect on airfield capacity. Peak operational periods, touch-and-go operations, and the percent of arrivals impact the number of annual operations that can be conducted at the airport.

Peak Period Operations

For the airfield capacity analysis, average daily operations and average peak hour operations during the peak month is calculated based upon data recorded by the air traffic control tower. These operational levels were calculated previously in Chapter Two for existing and forecast levels of operations. Typical operational activity is important in the calculation of an airport's annual service level as "peak demand" levels occur sporadically. The peak periods used in the capacity analysis are representative of normal operational activity and can be exceeded at various times through the year.

- TOUCH-AND-GO OPERATIONS

A touch-and-go operation involves an aircraft making a landing and an immediate take-off without coming to a full stop or exiting the runway. These operations are normally associated with general aviation training operations and are included in local operations data recorded by the air traffic control tower.

Touch-and-go activity is counted as two operations since there is an arrival and a departure involved. A high percentage of touch-and-go traffic normally results in a higher operational capacity because one landing and one takeoff occurs within a shorter time than individual operations. Touch-and-go operations are recorded by the air traffic control tower and currently account for approximately 16 percent of annual operations.

- PERCENT ARRIVALS

The percentage of arrivals as they relate to the total operations in the design hour is important in determining airfield capacity. Under most circumstances, the lower the percentage of arrivals, the higher the hourly capacity. However, except in unique circumstances, the aircraft arrival-departure split is typically 50-50. At Wichita Mid-Continent Airport, traffic information indicated no major deviation from this pattern, and arrivals were estimated to account for 50 percent of design period operations.

CALCULATION OF ANNUAL SERVICE VOLUME

The preceding information was used in conjunction with the airfield capacity methodology developed by the FAA to determine airfield capacity for Wichita Mid-Continent Airport.

Hourly Runway Capacity

The first step in determining annual service volume involves the computation of the hourly capacity of each runway in use configuration. The percentage use of each runway configuration in VFR and IFR weather, the amount of touch-and-go training activity, and the number and locations of runway exits become important factors in determining the hourly capacity of each runway configuration.

Considering the existing and forecast aircraft mix and the additional factors discussed above, the hourly capacity of each runway configuration was computed. The use of the parallel runways in VFR weather conditions results in the highest hourly capacity of the airfield (143 hourly operations).

During IFR conditions, the hourly capacity of the runway system in IFR weather is less than during VFR conditions due to increases in aircraft handling and separation. The IFR hourly capacity of the parallel runway system is calculated to be 106 operations per hour. For PVC conditions, the hourly capacity is reduced to 54 as only Runway 1R can be used in this situation.

As the mix of aircraft operating at an airport changes to include a decreasing percentage of Class C aircraft operating at the airport as a percentage of total operations, the hourly capacity of the runway system will increase slightly by the long term planning horizon. As mentioned previously, the increases in light business aircraft use of the airport will reduce the overall percentage of Class C operations as a percentage of total operations at the airport over the planning period.

Annual Service Volume

Once the weighted hourly capacity is known, the annual service volume can be determined. Annual service volume is calculated by the following equation:

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

The ratio of annual demand to average daily demand was computed as 333. The ratio of average daily demand to average peak hour demand was computed as 10.0. Using this data, the current annual service volume for Wichita Mid-Continent Airport is estimated at 422,000 operations. The decreasing percentage of Class C aircraft over the planning period will contribute to an increase in the annual service volume in the long term planning horizon, to 427,000 annual operations.

Table 3D summarizes annual service volume values. **Exhibit 3B** compares annual service volume to existing and forecast operational levels. The 2002 total of 204,007 operations represented 48.3% of the existing annual service volume. By the end of the planning period total annual operations are expected to represent 86% of annual service volume.

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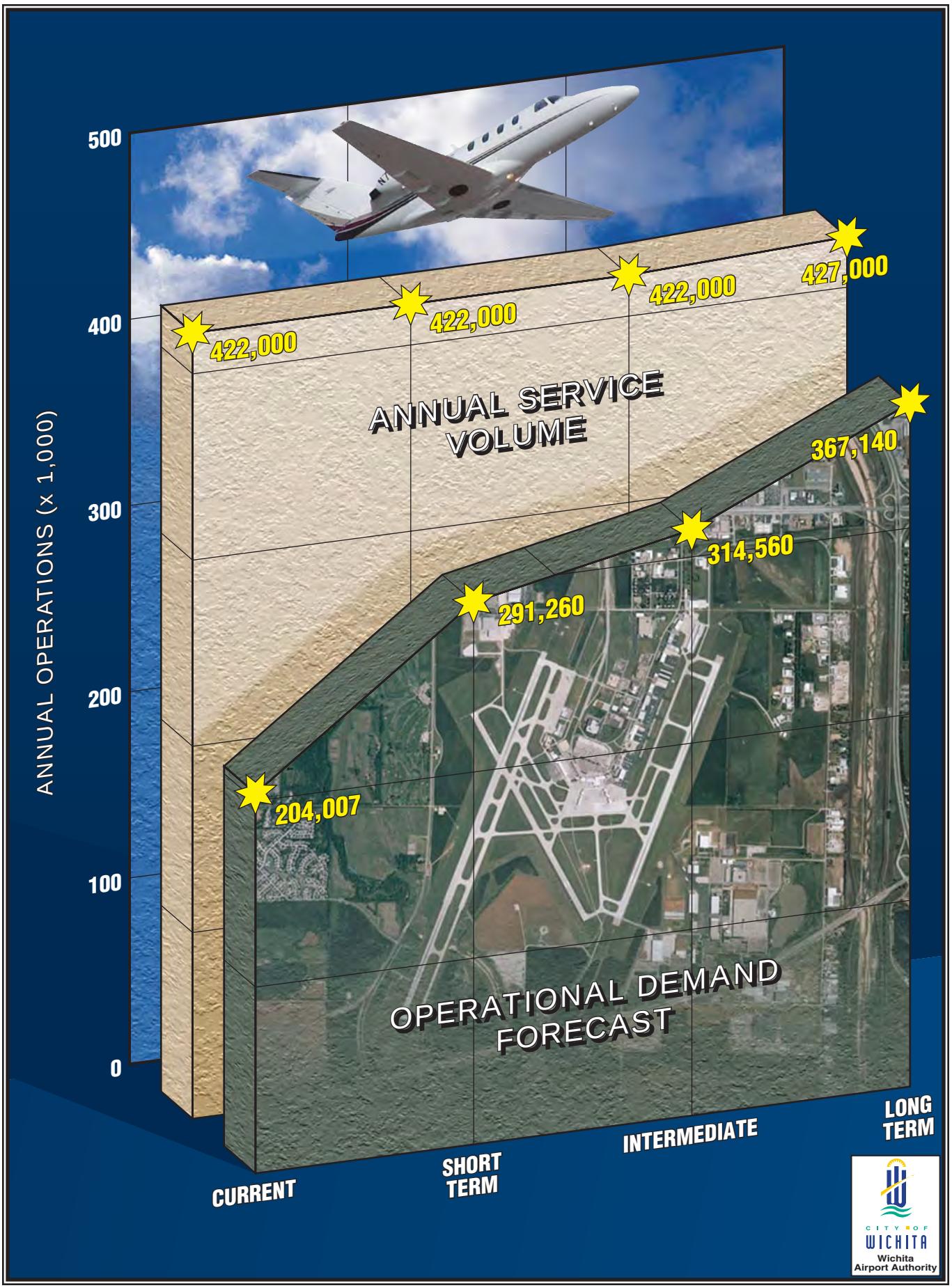


Exhibit 3B
DEMAND/CAPACITY

TABLE 3D
Annual Service Volume and Delay Summary

	Annual Operations	Weighted Hourly Capacity	Annual Service Volume	Percent Capacity	Total Annual-Hours of Aircraft Delay
Existing (2002)	204,007	126	422,000	48.3 %	1,020
Short Term	291,260	126	422,000	69.0 %	2,912
Intermediate Term	314,560	126	422,000	74.5 %	4,194
Long Term	367,140	128	427,000	86.0%	8,566

Delay

As the number of annual aircraft operations approaches the airfield's capacity, increasing amounts of delay to aircraft operations begin to occur. Delays occur to arriving and departing aircraft in all weather conditions. Arriving aircraft delays result in aircraft holding outside of the airport traffic area. Departing aircraft delays result in aircraft holding at the runway end until released by the airport traffic control tower.

Currently, total annual delay at the airport is minimal and is estimated at 1,020 hours. This can be attributed to peak period arrival and departure delays that are typical of any airport with this level of operations. Based upon the projected increases in aircraft operations, annual delay can be expected to reach 8,566 hours in the long range planning horizon.

It should be recognized that the level of calculated delay in this analysis is relatively small for each aircraft operation. The current delay equates to approximately 18 seconds per aircraft operation. In the long term planning horizon this would equate to approximately 84 seconds, or a minute and a half per aircraft operation. Some inherent delay is inevitable in aircraft operations and cannot be removed entirely from the airport operating environment.

Conclusions

FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), indicates that improvements for airfield capacity purposes should be considered when operations reach 60 percent of the annual service volume. As indicated by this capacity analysis the airport could be expected to exceed this threshold above short term planning horizon activity levels.

The FAA 2002 *Aviation Capacity Enhancement Plan* details many of the capacity improvements that can be considered at airports. The improvements are classified as airfield, facilities and equipment, or operational improvements. Airfield improvements are related to the construction of new facilities such as:

- a new runway,
- a third parallel runway,
- a fourth parallel runway,
- relocation of a runway,
- a new taxiway,
- a runway extension,
- a taxiway extension,
- new angled exits,
- adding holding aprons,
- terminal expansion.

Facilities and equipment improvements include:

- installing/upgrading an instrument landing system (ILS),
- installing/upgrading runway visual range (RVR) equipment,
- installing/upgrading lighting
- installing/upgrading a very high frequency omnidirectional range facility (VOR),
- upgrading Terminal Approach Radar,
- installing airport surface detection equipment (ASDE),
- installing/upgrading Precision Runway Monitoring systems,
- a new airport traffic control tower,
- installing a wake vortex advisory system.

Operational improvements include:

- airspace restructure/analysis,
- new instrument approach procedures,
- departure sequencing,
- reduced separation between arrivals,
- intersecting operations with wet runways,
- expanded terminal radar approach control (TRACON)/ establishing a terminal control area (TCA),
- segregating traffic,
- de-peaking airline schedules,
- enhancing reliever and general aviation airport system.

Facility/equipment and/or operational capacity improvements should be considered prior to the development of new runways to improve airfield capacity. Any of these capacity improvements must be considered in cooperation with the FAA and are outside the scope of this master plan. **Table 3E** summarizes capacity improvements that might be applicable to Wichita Mid-Continent Airport in the future. As operational levels grow at the airport it will be necessary to reexamine airfield capacity to determine capacity and delay and the ability of these types of improvements to enhance capacity.

A few of the improvements do not apply to Wichita Mid-Continent Airport. These include the PRM. PRM is used for simultaneous IFR operations at airports with parallel runways separated by less than 4,300 feet. The parallel runways at Wichita Mid-Continent Airport are separated by 4,400 feet. A wake vortex advisory system is installed at airports with operations by large wide body aircraft in an effort to reduce the separation between arriving aircraft. Hazardous wake vortexes are generated by large wide body aircraft in Class D. Since these aircraft do not operate, and are not expected to operate at the airport through the planning period, this system would provide no capacity enhancements for the airport.

TABLE 3E
Potential Capacity Improvements
Wichita Mid-Continent Airport

Capacity Improvement	Applicability to Wichita Mid-Continent Airport
Airfield Improvements	
New Runway	No
Construct 3rd Parallel Runway	No
Construct 4th Parallel Runway	N/A
Relocate Runway	No, proper separation now
New Taxiway	Yes, new parallel taxiways
Runway Extension	Yes, Runway IR-19L
Taxiway Extension	Yes, extend Taxiway N (south of Taxiway B)
Angled Exits/Improved Staging	Yes, more runway exits
Holding Pads/Improved Staging	Yes, at Runway 1L and 19L ends
Terminal Expansion	Yes
Facilities and Equipment Improvements	
Install/Upgrade Instrument Landing System (ILS)	Yes, Runway 19L ILS (complete 2004)
Install/Upgrade Runway Visual Range (RVR)	Yes, Runway 1R-19L (complete 2004)
Install/Upgrade Lighting	Yes, Runway 1R-19L centerline lighting and touchdown zone lighting
Install/Upgrade very high frequency omnidirectional range facility (VOR)	No, VOR already installed
Upgrade Terminal Approach Radar	Additional Study Required
Install Automated Surface Detection Equipment (ASDE)	Additional Study Required
Install/Upgrade Precision Runway Monitoring (PRM)	No, proper parallel runway separation
New Airport Traffic Control Tower	Additional Study Required
Wake Vortex Advisory System	N/A
Operational Improvements	
Airspace Restructure/Analysis	Additional Study Required
Instrument Approach Procedures	Yes, New ILS to Runway 19L (complete 2004)
Departure Sequencing	Additional Study Required
Reduced Separation Between Arrivals	Additional Study Required
Intersecting Operations with Wet Runways	Additional Study Required
Expand TRACON/Establish TCA	Additional Study Required
Segregate Traffic	Additional Study Required
De-peak airline schedules	N/A
Enhance reliever and general aviation (GA) airport System	Yes, encourage use of GA airports

Several improvements have merit for Wichita Mid-Continent Airport. This includes upgrading instrument approach capability to include a Category I ILS to Runway 19L. The Category I ILS will allow for simultaneous operations for instrument arrivals when the wind is from the south. This would improve PVC operating conditions. An ASDE may improve taxi times by improving air traffic ground control. Holding aprons at each runway end or by-pass taxiways would reduce departure delays at each runway end. New angled/high speed exits could reduce the amount of time an

aircraft occupies the runway after landing. Finally, focusing more general aviation activity at Colonel James Jabara Airport, the reliever airport for Wichita Mid-Continent Airport would also enhance capacity. Colonel James Jabara Airport is designed to accommodate small general aviation aircraft operations. Focusing these type of aircraft operations at the reliever airport instead of Wichita Mid-Continent Airport would improve capacity immensely by first reducing the number of operations at the airport and secondly, eliminating the smaller slower general aviation aircraft from the mix at Wichita Mid-Continent Airport.

AIRFIELD REQUIREMENTS

Airfield facilities include those facilities that are related to the arrival, departure, and ground movement of aircraft. Theses components include:

- Runways
- Navigational Approach Aids and Instrument Approaches
- Taxiways
- Airfield Lighting, Marking, and Signage

The adequacy of existing airfield facilities at Wichita Mid-Continent Airport is analyzed from a number of perspectives within each of these components, including (but not limited to): runway orientation, runway length, runway pavement strength, FAA design standards, airfield lighting, airfield signage, and pavement markings.

RUNWAY ORIENTATION

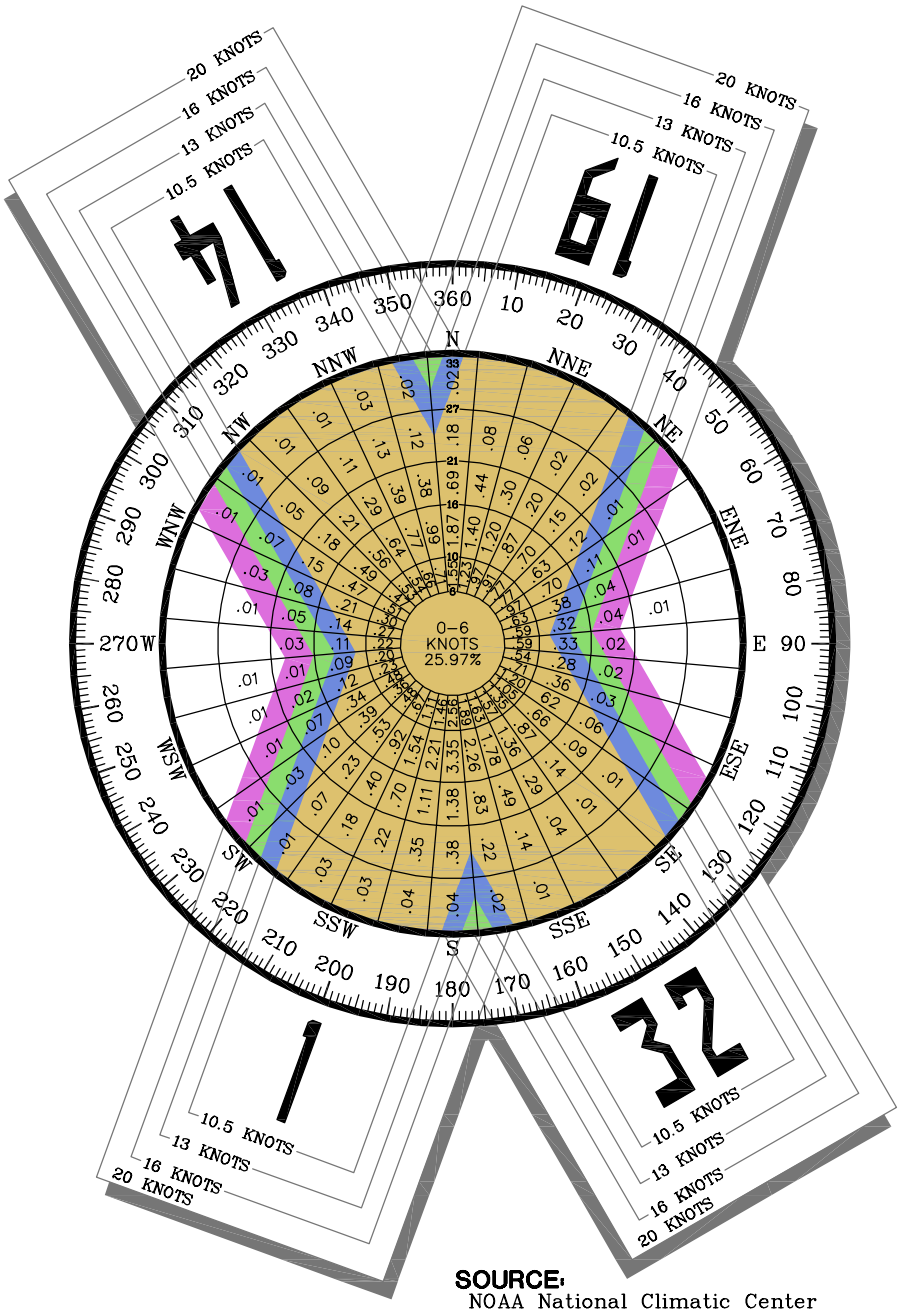
For the operational safety and efficiency of an airport, it is desirable for the primary runway of an airport's runway system to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off (defined as a crosswind).

FAA design standards specify that additional runway configurations are needed when the primary runway configuration provides less than 95 percent wind coverage at specific crosswind components. The 95 percent wind coverage is computed on the basis of crosswinds not exceeding 10.5 knots for small aircraft weighing less than 12,500 pounds and from 13 to 16 knots for aircraft weighing over 12,500 pounds. **Exhibit 3C** depicts the wind rose for Wichita Mid-Continent Airport and summarizes wind coverage for the airport.

As shown in the table on the exhibit, Runway 1L-19R and Runway 1R-19L provide greater than 95 percent wind coverage for both the 16 knot and 20 knot crosswind components. The parallel runways provide only 89.07 percent wind coverage for the 10.5 knot crosswind component and 94.33 percent coverage in the 13 knot crosswind component. While Runway 14-32 alone does not provide 95 percent wind coverage for the 10.5 and 13 knot

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 01-19	89.07%	94.33%	98.10%	99.45%
Runway 14-32	85.63%	92.39%	97.33%	99.30%
Combined	97.74%	99.24%	99.81%	99.96%



NORTH

Magnetic Variance
5° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Wichita Mid Continent Airport
Wichita, Kansas

OBSERVATIONS:
84,241 All Weather Observations
1990-1999

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Exhibit 3C
ALL WEATHER WIND ROSE

crosswind components, when considered in conjunction with the parallel runways, the combined wind coverage exceeds 95 percent coverage for all crosswind components. Therefore, based on this analysis, the runway system at the airport is properly oriented to prevailing wind flows and aircraft operational safety is maximized. No new runway orientations are needed at the airport.

PHYSICAL PLANNING CRITERIA

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using, or are expected to use, the airport. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These standards must be determined now since the relocation of these facilities would likely be extremely expensive at a later date. The most important characteristics in airfield planning are the approach speed and wingspan of the critical design aircraft anticipated to use the airport now and in the future.

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This code, referred to as the airport reference code (ARC), has two components: the first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group (ADG) and relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 7, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.
Category B: Speed 91 knots or more, but less than 121 knots.
Category C: Speed 121 knots or more, but less than 141 knots.
Category D: Speed 141 knots or more, but less than 166 knots.
Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan. The six ADGs used in airport planning are as follows:

Group I: Up to but not including 49 feet.
Group II: 49 feet up to but not including 79 feet.
Group III: 79 feet up to but not including 118 feet.
Group IV: 118 feet up to but not including 171 feet.

Group V: 171 feet up to but not including 214 feet.
Group VI: 214 feet or greater.

Exhibit 3D presents a summary of representative aircraft by ARC. As indicated with the large crossed-out red circle, aircraft within ARC D-V are not expected to comprise the critical design aircraft at the airport. While aircraft within this ARC may occasionally use the airport, their use of the airport is expected to be less than 500 annual operations. As mentioned previously, the FAA has established that aircraft within a particular ARC must conduct 500 annual operations to be considered the critical design aircraft.

In order to determine airfield facility requirements, an ARC should first be determined, and then appropriate airport design criteria can be applied. This begins with a review of the type of aircraft using and expected to use Wichita Mid-Continent Airport.

Wichita Mid-Continent Airport is currently used by a wide variety of aircraft, ranging from aircraft used for scheduled airline service, to air freight, and general aviation recreational aircraft, general aviation business aircraft, and a limited number of helicopters. Helicopters are not included in this determination as they are not assigned an ARC.

Commercial Aircraft

Aircraft used for scheduled airline service in 2002 included a mix turboprop commuter aircraft, regional jets, and large transport aircraft. Turboprop aircraft comprised the Saab 340 and Embraer 120 Brasilia both within ARC B-II. Regional aircraft included the Embraer 135 and 145 Regional Jets and Canadair Regional Jets, all within ARC C-II. Larger transport aircraft included the Boeing 717, 737, and MD-80 and the Fokker 100, all within ARC C-III. Therefore, the critical design aircraft for scheduled airline service fall within ARC C-III.

Air Freight

Aircraft used in scheduled air freight service included a mix of piston-engine, turboprop, and large transport aircraft. The Rockwell International Aero Commander (ARC B-I) and Cessna 208 Caravan (ARC B-II) are used for regular feeder service. Large transport aircraft included the Boeing 727-200 and DC-9 (both with ARC C-III) and the Boeing 757 (ARC C-IV). Within the air freight segment of aircraft activity at Wichita Mid-Continent Airport, the Boeing 757 comprises the critical design aircraft.

General Aviation

General aviation aircraft using the airport include small single and multi-engine aircraft (which fall within approach categories A and B and ADG I) and business turboprop and jet aircraft (which fall within approach categories B, C, and D and ADGs I and II). A wide range of transient business jets operate at the airport. These include aircraft within the Cessna Citation family of business jets, and Bombar-

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A-I

Beech Baron 55
Beech Bonanza
Cessna 150
Cessna 172
Piper Archer
Piper Seneca

B-I
less than 12,500 lbs.

Beech Baron 58
Beech King Air 100
Cessna 402
Cessna 421
Piper Navajo
Piper Cheyenne
Swearingen Metroliner
Cessna Citation I

B-II
less than 12,500 lbs.

Super King Air 200
Cessna 441
DHC Twin Otter
Cessna Caravan

B-I, II
over 12,500 lbs.

Super King Air 300
Beech 1900 Series
Jetstream 31
Falcon 10, 20, 50
Falcon 200, 900
Citation II, III, IV, V
Saab 340
Embraer 120

A-III, B-III

DHC Dash 7
DHC Dash 8
DC-3
Convair 580
Fairchild F-27
ATR 72
ATP

C-I, D-I

Lear 25, 35, 45, **55**, 60
Israeli Westwind
HS 125-400/600
Beechjet 400
Sabreliner 60, 75

C-II, D-II

Gulfstream II, **III**, IV
Canadair 600
Canadair Regional Jet
Lockheed JetStar
Super King Air 350
Cessna Citation X

C-III, D-III

Boeing Business Jet
B 727-200
B 737-300 Series
MD-80 Series, DC-9
Fokker 70, 100
A319, A320
Gulfstream V
Global Express

C-IV, D-IV

B-757
B-767
DC-8-70
DC-10
MD-11
L1011

D-V

B-747 Series
B-777

Note: Aircraft pictured is identified in bold type.

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Exhibit 3D
REPRESENTATIVE AIRCRAFT
BY AIRPORT REFERENCE CODE

dier family of jets including the Lear jet models and Canadair aircraft. The aviation demand forecasts projected business jet activity to increase through the planning period including aircraft within Approach Category D. This is expected to include business aircraft within ARC C-III which is typified by the Boeing Business Jet (a variant of the Boeing 737) and Airbus Corporate Jetliner (a variant of the Airbus A319)

Critical Design Aircraft Conclusion

The critical design aircraft is defined as the most demanding category of aircraft which conduct 500 or more operations per year at the airport. In some cases, more than one aircraft comprise the airport's critical aircraft. One aircraft may be the most critical for runway length, while another is most critical for runway/taxiway width and separation distances. This is the case for Wichita Mid-Continent Airport. The most demanding approach category for Wichita Mid-Continent Airport is approach category D due to the extensive number of operations by business jets within this design category, specifically, aircraft associated with Bombardier activity at the airport. The most demanding ADG was ADG IV. This is the result of the operations of the Boeing 757 used for regularly scheduled air cargo service.

Therefore, the design standards for the airport are defined by several aircraft. Business jets define the operational design standards such as runway safety standards, while runway and taxiway width and separation distances are defined by the Boeing 757. Combining the operational requirements of the business jets with the wingspan requirements of the Boeing 757, the ARC for the airport is best described as ARC D-IV. This design category is expected to remain the same for the airport through the planning period as the airport is not expected to accommodate regular operations by wide-body aircraft which would be within the next ADG.

AIRFIELD SAFETY STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These include the runway safety area (RSA), object free area (OFA), obstacle free zone (OFZ), and runway protection zone (RPZ).

The RSA is defined as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." The OFA is defined as "a two dimensional ground area surrounding runways, taxiways, and taxilanes which is clear of objects except for objects whose location is fixed by function." The OFZ is defined as a "defined volume of airspace centered above the runway centerline whose elevation is the same as the nearest point on the runway centerline and extends 200 feet beyond each runway end." The RPZ is a two-dimensional

trapezoidal-shaped surface located along the extended runway centerline to protect people and property on the ground.

The FAA expects these areas to be under the control of the airport and free from obstructions. The dimensional requirements for ARC D-IV are summarized on **Exhibit 3E** for each runway at the airport. A cursory review of these design requirements at Wichita Mid-Continent Airport indicates that these design requirements are fully met at the airport. Design standards will be more fully reviewed within the Alternatives Analysis (Chapter Four).

RUNWAY LENGTH

The determination of runway length requirements is based upon five primary factors:

- Critical aircraft type expected to use the runway,
- Stage length of the longest non-stop trip destination,
- Mean maximum temperature of the hottest month,
- Airport elevation, and
- Runway gradient (difference in elevation of each runway end).

Aircraft performance declines as elevation, temperature, and runway gradient factors increase. For calculating runway length requirements at the airport, airport elevation is 1,333 feet above mean sea level (MSL), the mean maximum daily temperature of the hottest month (July) is 93 degrees Fahrenheit. For runways accommodating Approach Category C and D aircraft, a maximum of 1.5 percent runway gradient is allowed. The existing runway gradients on each of the airport's runways are below the FAA design requirement.

As mentioned, the current mix of commercial passenger aircraft operating at the airport includes newer Stage 3 jet aircraft such as the Boeing 737-200, MD-80, and 717 and the Fokker 100. The potential change in commercial airline aircraft would include larger narrow body aircraft such as the Boeing 757, which is currently using the airport as air freighter.

The current mix of commercial air freight aircraft includes the newer Stage 3 Boeing 757, and older Stage 2 aircraft such as the Boeing 727-200, and Boeing DC9-30/40. Air freight aircraft which have the potential to use the airport in the future include the Boeing DC8-73F, Boeing 767-200, and Airbus A300-600.

Table 3F lists current non-stop destinations and stage lengths served by the commercial passenger and air cargo carriers from the airport. The type of aircraft used is also included. Currently, the longest passenger aircraft flight from the airport is to Las Vegas (983 miles) and the longest all-cargo flight is to Wilmington, Ohio (750 miles).

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EXISTING	SHORT TERM NEED	LONG TERM NEED
RUNWAYS		
RUNWAY 1L-19R	**RUNWAY 1L-19R**	**RUNWAY 1L-19R**
ARC D-IV 10,301' x 150' 100,000 SWL 210,000 DWL 300,000 DTWL	Same Same Same Same Same	Same Same Same Same ***400,000 DTWL***
Runway Safety Area 250' each side of runway centerline 1,000' beyond each runway end	 Same Same	 Same Same
Object Free Area 400' each side of centerline 1,000' beyond each runway end	 Same Same	 Same Same
Precision Object Free Area 400' each side of runway centerline 200' beyond each runway end	 Same Same	 Same Same
Obstacle Free Zone 200' each side of runway centerline 200' beyond each runway end	 Same Same	 Same Same
Runway Protection Zone Each End Inner Width - 1,000' Outer Width - 1,750' Length - 2,500'	 Same Same Same	 Same Same Same
Approach Slope Each End 50:1	 Same	 Same
RUNWAY 1R-19L	**RUNWAY 1R-19L**	**RUNWAY 1R-19L**
ARC D-IV 7,301' x 150' 125,000 SWL 240,000 DWL 400,000 DTWL	Same Same Same Same Same	Same 8,700' x 150' Same Same Same
Runway Safety Area 250' each side of runway centerline 1,000' beyond each runway end	 Same Same	 Same Same
Object Free Area 400' each side of runway centerline 1,000' beyond each runway end	 Same Same	 Same Same
Precision Object Free Area (Rwy 1R only) 400' each side of runway centerline 200' beyond each runway end	 ***Add POFA to Runway 19L***	 Same Same
Obstacle Free Zone 200' each side of runway centerline 200' beyond each runway end	 Same Same	 Same Same
Runway Protection Zone 1R Only Inner Width - 1,000' Outer Width - 1,750' Length - 2,500'	 Same Same Same	 Same Same Same
Runway Protection Zone 19L Only Inner Width - 500' Outer Width - 1,010' Length - 1,700'	 ***Inner Width - 1,000'*** ***Outer Width - 1,750'*** ***Length - 2,500'***	 Same Same Same
Approach Slope Each End 50:1	 Same	 Same

EXISTING	SHORT TERM NEED	LONG TERM NEED
RUNWAYS (CONTINUED)		
RUNWAY 14-32	**RUNWAY 14-32**	**RUNWAY 14-32**
ARC D-IV 6,301' x 150' 100,000 SWL 190,000 DWL 280,000 DTWL	Same Same Same Same Same	Same Same Same Same Same
Runway Safety Area 250' each side of runway centerline 1,000' beyond each runway end	 Same Same	 Same Same
Object Free Area 400' each side of runway centerline 1,000' beyond each runway end	 Same Same	 Same Same
Obstacle Free Zone 200' each side of runway centerline 200' beyond each runway end	 Same Same	 Same Same
Runway Protection Zone Each End Inner Width - 500' Outer Width - 1,010' Length - 1,700'	 Same Same Same	 Same Same Same
Approach Slope Each End 34:1	 Same	 Same
TAXIWAYS		
RUNWAY 1L-19R	**RUNWAY 1L-19R**	**RUNWAY 1L-19R**
Full-length Parallel Taxiway D - 75' wide 400' from runway centerline Connecting Taxiways B, C, D1, D2, D3, D4 - 75' wide	Same Same Same Holding Apron / De-Ice area 1L Access to 19R / Reduce Crossover from Northwest Facilities	Same Same Same Same Same West side parallel, 400' from runway centerline, 75' wide
RUNWAY 1R-19L	**RUNWAY 1R-19L**	**RUNWAY 1R-19L**
Full-length Parallel Taxiway M - 75' wide 400' from runway centerline Connecting Taxiway M1 - 35' wide Connecting Taxiways A, A2, A5, A7, B, B1, E2, E3, M2, M3, M4, M5, M6 - 75' wide Partial Parallel Taxiway N - 75' wide 450' from runway centerline	Same Same Same Same Extend to Taxiway A Same Eliminate Taxiway B1, Reconfigure Taxiway B Intersection, Add Holding Apron De-Ice Area 19L	Same Same Same Same Same Same Same Same
RUNWAY 14-32	**RUNWAY 14-32**	**RUNWAY 14-32**
Partial Parallel Taxiway K - 75' wide 400' from runway centerline Connecting Taxiway K1 - 75' wide Partial Parallel Taxiway C - 75' wide 750' from runway centerline Connecting Taxiway C2 - 75' wide Connecting Taxiway B, B1, E, E1 - 75' wide	Same Same Same Same Same Same Same	Same Same Same Same Same Same Same South side parallel, 400' from runway centerline, 75' wide
HELIPAD		
None	Helipad 2 parking positions lighted	Helipad 2 parking positions lighted

KEY:

ARC - Airport Reference Code
SWL - Single Wheel Loading
DWL - Dual Wheel Loading
DTWL - Dual Tandem Wheel Loading

CITY OF WICHITA
Wichita Airport Authority

TABLE 3F
Critical Commercial Airline and Air Freight Aircraft Stage Lengths

Passenger Airlines			Air Freight Airlines		
Destination	**Distance**	**Aircraft**	**Destination**	**Distance**	**Aircraft**
Atlanta (ATL)	780 nm	Boeing 717-200	Louisville (SDF)	638 nm	Boeing 757
Denver (DEN)	427 nm	Boeing 737-500	Memphis (MEM)	452 nm	Boeing 727-200
Las Vegas (LAS)	983 nm	Boeing MD-83	Wilmington (ILN)	750 nm	Boeing DC-9
			Dayton (DAY)	728 nm	Boeing 727-200

Source: Airplane Characteristics for Airport Design (Boeing, Airbus)
nm – nautical miles

Due to the central location of Wichita in the continental United States, the airport is in close proximity to all major commercial airline hubs and air cargo hubs. Therefore, it is not expected that the stage lengths and destinations would change significantly through the planning period even if the airport initiates new feeder service to hubs in Chicago for example or new point-to-point service. Longer flights to metropolitan cities on the west coast or east coast are unlikely as this would require airline operators to bypass existing hub locations. Passenger airline traffic is not expected to be sufficient at Wichita Mid-Continent Airport to warrant direct non-stop flights to final destinations without first stopping at an enroute hub airport. These stage lengths reduce runway length requirements for aircraft operating at Wichita Mid-Continent Airport.

To determine runway length requirements for the airport, take-off runway lengths of the current mix of commercial airline and air cargo aircraft were calculated to existing hub destinations. Take-off runway length requirements for various aircraft from the airport are listed in **Table 3G**.

TABLE 3G
Runway Length Requirements

Aircraft Currently In Service	Longest Non-Stop Stage Length	Runway Required (Takeoff)
Boeing 727-200	728 nm	8,500 feet
Boeing 757	638 nm	6,100 feet
Boeing DC9-30	750 nm	6,500 feet
Boeing MD-83	983 nm	8,200 feet
Boeing 717-200	780 nm	7,400 feet
Potential Future Aircraft	**Runway Required (Takeoff)** [1]	
Boeing 767-200	8,000 feet	
Boeing DC8-73F	7,100 feet	
Airbus A300-600	7,400 feet	

[1] Maximum Takeoff Weight
Source: Airplane Characteristics for Airport Design (Boeing, Airbus)

The primary runway at a commercial service airport must be designed to accommodate the runway length needs of the most demanding (critical) aircraft. For the airport, the critical passenger aircraft for takeoff runway length requirements is the Boeing MD-83 which requires up to 8,200 feet for a 983 mile flight. For all-cargo aircraft, the critical aircraft is the Boeing 727-200 which requires up to 8,500 feet for a 728 mile flight. For commercial passenger airline and air cargo aircraft operations, the critical aircraft for runway length requirements is the Boeing 727-200 with flights to primary cargo hub locations in Ohio. This 8,500-foot requirement is less than the present 10,301-foot length of Runway 1L-19R. Therefore, the existing length of Runway 1L-19R should be sufficient to accommodate the current and expected mix of passenger and all-cargo aircraft serving the airport through the planning period.

As the secondary air carrier runway, Runway 1R-19L must be capable of accommodating air carrier operations if the primary runway (Runway 1L-19R) is not operational (e.g. closed for maintenance or repairs). Runway 1R-19L is designed to the same ARC D-IV requirements as Runway 1L-19R and has similar approach capability. At its present length of 7,301 feet, aircraft operations are limited in the warmest summer months when payload may have to be reduced to reach intended destinations. To fully meet the operating requirements of all commercial aircraft on the airfield, the runway should be a minimum of 8,500 feet (refer to previous paragraph). However, in addition to serving the commercial carriers, Runway 1R-19L also serves Cessna, RAC, and Bombardier for first flights and various types of testing (recent testing by Cessna included the 680, XL BPC, and CJ3). These companies will benefit from a longer runway which meets their testing needs. The preferred length for flight testing is 8,700 feet; therefore, the master plan should consider an extension to this runway to provide improved capability to all users.

Takeoff runway length requirements for the general aviation aircraft fleet was also considered in the runway length analysis for Runway 14-32. Recommended runway lengths for these aircraft are prepared by the FAA and presented in **Table 3H**. At 6,301 feet, Runway 14-32 is adequate to serve 100 percent of large airplanes (business turboprops and jets) at 60 percent of useful load (fuel and passengers). Therefore, the present length of Runways 14-32 is sufficient to meet the demands of general aviation aircraft that use this runway during crosswind conditions.

TABLE 3H FAA Recommended Runway Length Requirements	
AIRPORT AND RUNWAY DATA	
Airport elevation	1,333 feet
Mean daily maximum temperature of the hottest month (Fahrenheit)	93 degrees
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	3,000 feet
95 percent of these small airplanes	3,600 feet
100 percent of these small airplanes	4,200 feet
Small airplanes with 10 or more passenger seats	4,500 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5,500 feet
100 percent of these large airplanes at 60 percent useful load	6,200 feet
Source: FAA Airport Design Computer Program, Version 4.2D. Small airplanes – aircraft weighing less than 12,500 pounds.	

RUNWAY WIDTH

Runway width is primarily determined by the planning ARC for the particular runway. The ultimate planning ARC for the airport is ADG IV. ADG IV design standards specify a runway width of 150 feet. All runways at the airport are currently 150 feet wide meeting this design requirement.

RUNWAY PAVEMENT STRENGTH

Existing pavement strength ratings for each runway at the airport are shown on **Exhibit 3E**. The weights of existing and future critical aircraft are shown in **Table 3J**. Since Runway 1L-19R serves as the primary runway for air cargo activities, pavement strength should continue to be monitored for its ability to handle maximum loading conditions. The other runways appear to have adequate strength for critical aircraft operations on an annual basis.

TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between the aprons and runways, whereas other taxiways become necessary as activity increases at an airport to provide safe and efficient use of the airfield.

Taxiway width is determined by the ADG of the most demanding aircraft to use the taxiway on a regular basis. As mentioned previously, the most demanding aircraft to use the airport fall within ADG IV. According to FAA design standards, the minimum taxiway width for ADG IV is 75 feet. Taxiways serving commercial air cargo aircraft are 75 feet wide, meeting this design requirement.

TABLE 3J
Aircraft Weights and Pavement Loading

Aircraft	Weight (lbs.)/Pavement Loading
Boeing 727-200	209,500 (DWL)
Boeing 757	255,000 (DTWL)
Boeing DC9-30	110,000 (DWL)
Boeing MD-83	160,000 (DWL)
Boeing 717-200	121,000 (DWL)
Boeing 767-200	315,000 (DTWL)
Boeing DC8-73F	355,000 (DTWL)
Airbus A300-600	363,763 (DTWL)

Source: FAA AC 150/5300-13, Airport Design, Airplane Characteristics for Airport Design (Boeing)
DWL – Dual Wheel Loading
DTWL – Dual Tandem Wheel Loading

Privately-maintained taxiways and taxiways primarily serving general aviation areas can be designed to ADG II design requirements, which meet the requirements of most of the business jets in the national fleet. ADG II design requirements specify a taxiway width of 35 feet.

Design standards for the separation distances between runways and parallel taxiways are based primarily on the ARC for that particular runway and the type of instrument approach capability. ARC D-IV design standards specify a runway/taxiway separation distance of 400 feet for runways served by an instrument approach procedure with visibility minimums of less than one-half mile. Presently, all full-length or partial parallel taxiways associated with each runway at the airport meet or exceed this design requirement.

Additional exit taxiways should be considered for each runway; especially acute-angled (high speed) exists. Additional exit taxiways would reduce the amount of time that aircraft occupy the runway, thereby maximizing airfield capacity and reducing delay. The alternatives analysis will examine the optimum number of exit taxiways and locations, for the mix of aircraft expected to use the airport.

Facility planning should include improvements for access from the northwest portion of the airport to the Runway 19R end. Presently, aircraft accessing Runway 19R from this portion o the airport must cross Runway 1L-19R at Taxiway C. This increases the potential for airfield incursions. Direct access to the Runway 19R end should be planned for this area of the airport.

While not required for airfield capacity, facility planning should include the development of a full length parallel taxiway west of Runway 1L-19R and a full length parallel taxiway south of Runway 14-32. This will facilitate airfield development along these runways in the future by providing access to the runway system.

Holding aprons and by-pass taxiways provide an area at the runway end for aircraft to prepare for departure and/or bypass other aircraft which are ready for departure. A holding apron is planned once Taxiway B is reconfigured. Taxiway A2 serves as a by-pass taxiway for Taxiway A at the Runway 19 end. Taxiway E3 serves a by-pass taxiway for Taxiway E2 at the Runway 1R end. Holding aprons or by-pass taxiway should be planned for the remaining runway ends.

Primary aircraft de-icing activities are currently conducted on the air carrier apron. However, the distance to the Runway 1R and 1L ends, coupled with any slight departure delays, sometimes requires that aircraft incur a second series of de-icing activities. This increases costs to airlines for de-icing activities, increasing the use and collection of de-ice fluids, and delays flights. Consideration should be given to developing secondary de-icing areas near the Runway 1R and 1L ends.

HELIPADS

The airport does not have a designated helipad. Helicopters utilize the same areas as fixed-wing aircraft. Helicopter and fixed-wing aircraft should be segregated to the extent possible. Facility planning should include establishing a designated helipad at the airport. This should be supplemented with two parking positions and be lighted to allow for operations at night and during low visibility conditions.

NAVIGATIONAL AIDS AND INSTRUMENT APPROACH PROCEDURES

Navigational Aids

Navigational aids are electronic devices that transmit radio frequencies which properly equipped aircraft and pilots translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from Wichita Mid-Continent Airport include the very high frequency omni-directional range (VOR) facility, global positioning system (GPS), and Loran-C. These systems are sufficient for navigation to and from the airport; therefore, no other navigational aids are needed at the airport.

GPS was developed and deployed by the United States Department of Defense as a dual-use (civil and military) radio navigation system. GPS initially provided two levels of service: the GPS standard positioning system (SPS), which supported civil GPS uses; and the GPS precise positioning system (PPS), which was restricted to U.S. Armed Forces, U.S. federal agencies and selected allied armed forces, and government use.

The differences in GPS signals have been eliminated and civil users now access the same signal integrity as federal agencies. A GPS modernization effort is underway by the FAA and focuses on augmenting the GPS signal to satisfy requirements for ac-

curacy, coverage, availability, and integrity. For civil aviation use, this includes the development the Wide Area Augmentation System (WAAS). The WAAS uses a system of reference stations to correct signals from the GPS satellites for improved navigation and approach capabilities. Where the present GPS provides for enroute navigation and limited instrument approach (nonprecision) capabilities, WAAS will provide for approaches with both course and vertical navigation. This capability is currently only provided by an instrument landing system (ILS), which requires extensive on-airport facilities. The WAAS upgrades are expected to allow for the development of approaches to most airports with cloud ceilings as low as 250 feet above the ground and visibilities restricted to three-quarters of a mile. The FAA is developing the local area augmentation system (LAAS) to provide the same capabilities as the ILS system. In contrast with WAAS, the LAAS system will require on-site airport equipment. The LAAS is expected to provide for Category I standards (200-foot cloud ceilings and one-half mile visibility). LAAS capability should be planned for Wichita Mid-Continent Airport.

Instrument Approach Procedures

Instrument approach procedures have been established for the airport using the VOR and GPS navigational aid, as well as the instrument landing system (ILS). The capabilities of each of these approaches were summarized in Chapter One. Each of these approaches should be maintained in the future. The ability to access the airport using different navigational aids allows the most flexibility for aircraft operators by not requiring that they have a specific navigational aid on board to access the airport. This also provides significant levels of redundancy should a primary navigational aid fail.

An ILS approach to Runway 19L was completed in 2004. This approach provides for approach minimums of 200-foot cloud ceilings and three-quarters-mile visibility. No other instrument approaches are required for Wichita Mid-Continent Airport.

LIGHTING AND MARKING

Currently, there are a number of lighting and pavement marking aids serving pilots using Wichita Mid-Continent Airport. These lighting systems and marking aids assist pilots in locating the airport at night or in poor weather conditions and assist in the ground movement of aircraft. Existing and future lighting and marking aids are summarized on **Exhibit 3F**.

Identification Lighting

Wichita Mid-Continent Airport is equipped with a rotating beacon to assist pilots in locating the airport at night. The existing rotating beacon, located on the north side of the airfield near Harry Street may need to be relocated since it has created some conflicts with adjacent residential devel-

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EXISTING	SHORT TERM NEED	LONG TERM NEED
INSTRUMENT APPROACH PROCEDURES		
ILS Runway 1L-CAT II	Same	Same
ILS Runway 1R-CAT I	Same	Same
ILS Runway 19R-CAT I	Same	Same
ILS or LOC Runway 19L	Same	Same
GPS Runways 1R, 14, 19R, 32, 1L, 19L	Same	Same
VOR/DME RNAV Runway 1L	Same	Same
VOR/DME RNAV Runway 19R	Same	Same
VOR Runway 14	Same	Same
NDB Runway 1R	Same	Same
		Add LAAS Capability

AIRFIELD LIGHTING		
Rotating Beacon	Same	Same
Lighted Airfield Directional Signs	Same	Same
Medium Intensity Taxiway Edge Lighting (MITL)	Same	Same
Pilot Controlled Lighting	Same	Same
RUNWAY 1L-19R		
High Intensity Runway Edge Lighting (HIRL)	Same	Same
Centerline Lighting	Same	Same
Touchdown Zone Lighting (TDZL)-Runway 1L	Same	**Add TDZL-Runway 19R**
ALSF2-Runway 1L	Same	Same
MALSR-Runway 19R, 19L	Same	Same
Distance Remaining Signs	Same	Same
RUNWAY 1R-19L		
High Intensity Runway Edge Lighting (HIRL)	Same	Same
MALSR-Runway 1R, 19L	Same	Same
Precision Approach Path Indicator (PAPI)-Runway 1R	Same	Same
Distance Remaining Signs	Same	Same
		Add Centerline Lighting
		Add Touchdown Zone Lighting (TDZL)-Runway 1R & 19L
RUNWAY 14-32		
High Intensity Runway Edge Lighting (HIRL)	Same	Same
Runway End Identifier Lights (REIL)-Runways 14 & 32	Same	Same
Precision Approach Path Indicator (PAPI)-Runways 14 & 32	Same	Same
Distance Remaining Signs	Same	Same

EXISTING	SHORT TERM NEED	LONG TERM NEED

AIRFIELD MARKINGS		
Taxiway Centerline, Hold Positions	Same	Same
Land and Hold Short Positions	Same	Same
RUNWAY 1L-19R		
Precision	Same	Same
RUNWAY 1R-19L		
Precision	Same	Same
RUNWAY 14-32		
Nonprecision Markings	Same	Same
WEATHER FACILITIES		
Automated Surface Observation System (ASOS)	Same	Same
Runway Visual Range-Runway 1L & 19R	**Add Runway Visual Range-Runway 1R-19L**	Same
Lighted Wind Socks	Same	Same

AIR TRAFFIC CONTROL		
Airport Traffic Control Tower (ATCT)	Same	Same
Radar Approach Control	Same	Same
Radar Departure Control	Same	Same
Airport Surveillance Radar (ASR-9)	Same	**Relocate**
		Add Airport Surface Detection Equipment (ASDE) Ground Radar

KEY

ILS - Instrument Landing System
LOC - Localizer
BC - Back Course
GPS - Global Positioning System
VOR - Very High Frequency Omnidirectional Range Facility
DME - Distance Measuring Equipment
NDB - Nondirectional Beacon
RNAV - Area Navigational
LAAS - Local Area Augmentation
CAT I - Category I Standards
CAT II - Category II Standards
ALSF2 - Approach Lighting System with Sequenced Flashing Lights
MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights

opment and is frequently lost in light pollution.

Runway and Taxiway Lighting

Each runway is equipped with high intensity runway lights (HIRL). The runways are also equipped with threshold lights, which indicate the location of the runway threshold at night.

Additional lighting aids are available for aircraft landing Runways 1L and 19R, particularly during inclement weather conditions when visibility might be reduced. For Runway 1L, the designed touchdown zone and runway centerline is lighted. The runway centerline is lighted along Runway 19R.

Facility planning may consider runway centerline lighting for Runway 1R-19L and touchdown zone lighting for Runways 1R, 19L, and 19R. These lighting aids will enhance ILS operations by providing pilots with more visual clues as to their proximity to the runway surfaces and for safe landing and ground movements.

Effective ground movement of aircraft at night can be enhanced by taxiway lighting. Currently, all airport-maintained taxiways are equipped with medium intensity taxiway lights (MITL). Airports are currently pursuing upgrades to LED systems to reduce maintenance and operating costs.

Airfield Signs

Lighted directional and hold signs are installed at the airport. This signage identifies runways, taxiways, and apron areas. These aid pilots in determining their position on the airport and provide directions to their desired location on the airport. These lighting aids are sufficient and should be maintained through the planning period.

Pilot-Controlled Lighting

Wichita Mid-Continent Airport is equipped with pilot-controlled lighting (PCL). PCL allows pilots to control the intensity of runway and taxiway lighting using the radio transmitter in the aircraft. This system should be maintained through the planning period.

Distance Remaining Signs

Each runway is equipped with distance remaining signs. These lighted signs are placed in 1,000-foot increments along the runway to notify pilots of the length of runway remaining and should be maintained in the future.

Visual Approach Lighting

The landing phase of most flights to the airport must be conducted visually. To provide pilots with visual de-

scent information during landings to the runway, visual glideslope indicators have been provided at the Runway 19L, 14, and 32 ends. A visual approach slope indicator (VASI) 4L has been installed at each of these runway ends. Current facility planning includes replacing each VASI-4L with precision approach path indicators (PAPI-4L). The PAPI-4L is more appropriate for business jet operations and more cost effective to operate. Besides this improvement, no additional visual approach lighting is required.

Approach Lighting

Approach lighting systems consist of a configuration of signal lights extending into the approach area from the runway threshold to aid pilots transitioning from instrument flight to visual flight and landing. A medium intensity approach lighting system with runway alignment indicator lights (MALSR) is installed at Runways 1R and 19R ends to assist pilots in landing to these runway ends during inclement weather conditions. An Approach Lighting System with Sequenced Flashing Lights (ALSF-2) is installed at Runway 1L. The ALSF-2 allows for lower visibility and cloud ceiling minimums for instrument landings to this runway end. These lighting aids are sufficient and should be maintained in the future. A MALSR is planned for the Runway 19L Category I ILS approach.

Runway End Identification Lighting

Runway end identification lighting provides the pilot with rapid and positive identification of the runway end. The most basic system involves runway end identifier lights (REILs). As REILs provide pilots with the ability to identify the runway ends and distinguish the runway end lighting from other lighting on the airport and in the approach areas, REILs are installed at the Runway 19R, Runway14 and Runway 32 ends. The Runway 14 and Runway 32 REILs should be maintained through the planning period. The Runway 19R REIL could be removed as the Runway 19R end will be equipped with a more extensive approach lighting system when the ILS is installed to the Runway 19R end.

Pavement Markings

Pavement markings are designed according to the type of instrument approach available on the runway. FAA AC 150/5340-1H, *Markings of Paved Areas on Airports*, provides the guidance necessary to design an airport's markings. The Runway 1L, 1R, 19L, and 19R ends are equipped with precision runway markings. Runway 14-32 is equipped with nonprecision runway markings. These makings will be sufficient through the panning period.

Taxiway and apron areas also require marking to assure that aircraft remain on the pavement. Yellow centerline stripes are currently painted on all taxiway and apron surfaces at the airport to provide this guidance to pilots. Besides routine maintenance, these markings will be sufficient through the planning period.

WEATHER REPORTING

Wichita Mid-Continent Airport is equipped with an automated surface observation system (ASOS). The ASOS provides automated aviation weather observations 24 hours a day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The ASOS system reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting (barometric pressure), and density altitude (airfield elevation corrected for temperature). The ASOS is located approximately midway between the parallel runways, north of Runway 14-32. This system is essential for aircraft operations and should be maintained through the planning period. The parallel runways are also equipped with in-pavement temperature indicators.

Runway 1L-19R is equipped with runway visual range (RVR) equipment. The RVR consists of a transmissometer located along the runway edge to determine, in feet, the horizontal distance a pilot can see down the runway from the approach threshold. Facility planning may include installing similar RVR equipment to Runway 1R-19L.

Wichita Mid-Continent Airport is equipped with seven lighted wind cones. The wind cones, located in various locations throughout the airfield, provide wind direction and speed information to pilots.

AIRPORT TRAFFIC CONTROL RADAR

Wichita Mid-Continent Airport is equipped with an Airport Surveillance Radar (ASR)- 9. The ASR-9 is located in an undeveloped area south of Runway 14-32, east of Runway 1L-19R. While the FAA has indicated that there are no plans to relocate the radar in the near or intermediate future, consideration should be given to relocating the ASR-9 off airport property. To ensure there is no inference with the radar system, development is prohibited for a large area around the ASR-9. This currently encompasses a large portion of developable property at Wichita Mid-Continent Airport. Relocating the ASR-9 would allow future landside development south of Runway 14-32 and west of Runway 1L-19R. The alternatives analysis will examine development opportunities assuming the relocation of the ASR-9 off Wichita Mid-Continent Airport property.

The FAA has developed the Automated Surface Detection Equipment (ASDE) Program to monitor ground operations at an airport. The ASDE system uses a combination of surface

movement radar and transponder sensors to display aircraft position labeled with flight call-signs on a ATCT display. The integration of these sensors provides data with an accuracy, update rate and reliability suitable for improving airport safety in all weather conditions. The primary application is to provide controllers with positive identification of aircraft on the surface in all weather conditions. The ASDE system provides:

- Positive correlation of flight plan information with aircraft position on controller displays,
- Seamless surveillance coverage of the airport from arrival through departure,
- Elimination of blind spots and coverage gaps, and
- Conflict detection and resolution, and taxi route conformance monitoring.

Utilization and installation of an ASDE system at Wichita Mid-Continent Airport will the responsibility of the FAA air traffic division. However, the Wichita Mid-Continent Airport staff should follow the progress of ADSE installations and technological improvements for their applicability to ground control at Wichita Mid-Continent Airport. As mentioned previously, the installation of ASDE can improve airfield capacity.

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for handling aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacities of the various components of each area were examined in relation to projected demand to identify future landside facility needs. This includes components for commercial service and general aviation needs such as:

- Passenger Airline Terminal Area
- Air Cargo Facilities
- General Aviation Facilities
- Airport Support Facilities

AIRLINE TERMINAL AREA

Components of the terminal area complex include the terminal apron, aircraft gate positions, the functional elements within the terminal building, and the public and rental car parking areas. This section identifies the terminal area facilities required to meet the airport's needs through the planning period. These requirements are based upon specific passenger enplanement thresholds, rather than a given year. In this manner, the airport's management can reference the guidelines, even if growth varies from the forecast presented in Chapter Two.

The existing airline terminal area facilities were evaluated based on planning guidelines relating to the major functional elements of the terminal area as presented in AC 150/5360-13, *Planning and Design Guidelines For Airport Terminal Facilities*, the consultant's data base of terminal planning criterion, and information collected during the inventory element to

prepare estimates of various terminal building requirements.

Passenger Terminal Building

Terminal area requirements have been developed for the following functional areas:

- Aircraft Gate Positions
- Ticketing
- Airline Operational Areas
- Secure Departure Area
- Baggage Claim
- Rental Car Counters and Offices
- Concessions and Terminal Services
- Public Lobby; and
- Administrative Offices

The methodology utilized in the analysis of the passenger terminal building involved the design hour passenger demands and a comparison of these requirements with existing terminal facilities. The evaluation process includes the major terminal building areas that are normally affected by peaking characteristics.

Exhibit 3G summarizes the space available functional area space within the existing terminal building and compares it to the anticipated needs for each of the enplanement levels described above. (It should be noted that the totals listed on **Exhibit 3G** are less than the total terminal building area as the areas on the exhibit only include the primary functional areas to be analyzed.) As indicated on the exhibit, while the total functional terminal building space is expected to only increase from approximately 134,600 square feet to 136,000 square feet to serve long term projected demand, increases within several functional areas is anticipated through the planning period. This includes a nearly 8,000 square-foot increase in baggage claim area and an additional 210 feet of baggage claim display. Concession area is expected to increase by nearly 5,000 square feet, while rental car counters are expected to increase by nearly 1,400 square feet. Additional public lobby space and administrative space is also anticipated to be needed to meet long term planning horizon activity levels.

Terminal Curb Frontage

The curb element is the interface between the terminal building and the ground transportation system. The length of curb required for the loading and unloading of passengers and baggage is determined by the type and volume of ground vehicles anticipated in the peak period on the design day. The existing curb frontage totals approximately 600 feet in length, of which approximately 350 feet is used for enplaning activities. The remaining 250 feet is used for deplaning activities. As shown on **Exhibit 3G**, based upon the planning assumptions, an additional 258 feet of terminal curb length is needed through the planning period. This is primarily comprised of additional deplaning curb space.

The airport is also equipped with a commercial vehicle curb and lane that is approximately 500 feet in length. This segregates hotel courtesy vehi-

cles, taxis, and other commercial vehicles from the passenger curb to reduce congestion and increase capacity. This curb should be maintained through the planning period.

Automobile Parking Areas

Vehicle parking for the terminal complex area includes public, employee, and rental car spaces. The primary public parking area is located directly north of the terminal building and is at-grade. Public parking totals 1,729 spaces. Short term parking encompasses approximately 372 spaces in the parking area closest to the terminal curb. Long term parking encompasses approximately 1,357 spaces in a separate lot north of the short term parking area. Rental car parking encompasses approximately 89 spaces in the easterly portion of the short term parking area, with 124 spaces located behind the ATCT. Terminal employee parking is available in two separate lots located west of the terminal access roadway, northwest of the terminal building. Terminal employee parking totals approximately 380 spaces, with 72 additional spaces available for ATCT staff. (The remote parking lot has added 446 public parking spaces.)

The airport has been experiencing a shortage of public parking spaces during peak travel periods. This required the temporary use of the employee parking lot west of the terminal and the island between the north and southbound lanes of Airport Road.

As shown on **Exhibit 3G**, a requirement for as many as 2,203 public parking spaces and 231 rental car spaces is needed to meet current demand. Additional public parking areas and rental car parking areas in excess of this demand may be required should annual enplanement levels reach the long term planning horizon levels.

The alternatives analysis will examine options for additional public parking at the terminal building, including additional surface parking, remote lots, and parking structures.

AIR CARGO

The two primary cargo-related facilities requiring analysis include the cargo apron and building space. Air cargo facilities are separated in two areas on the airport. The north air cargo apron area, located near the Runway 19L end provides segregated apron and cargo buildings for dedicated all-cargo carriers. The air freight building and south air cargo apron area are used by dedicated all cargo carriers as well as the passenger airlines.

The space requirements of aircraft commonly used for air cargo operations at the airport were reviewed to examine future ramp requirements. Currently, FedEx operates Boeing 727-200 aircraft with a possible upgrade to the Airbus A300-600 should growth in air freight at the airport justify the need for this larger aircraft. UPS currently operates Boeing 757 aircraft (with occasional use of DC-8 aircraft), Emery operates the Boeing 727-200, and Airborne Express operates DC-9-30/40 aircraft. Commuter

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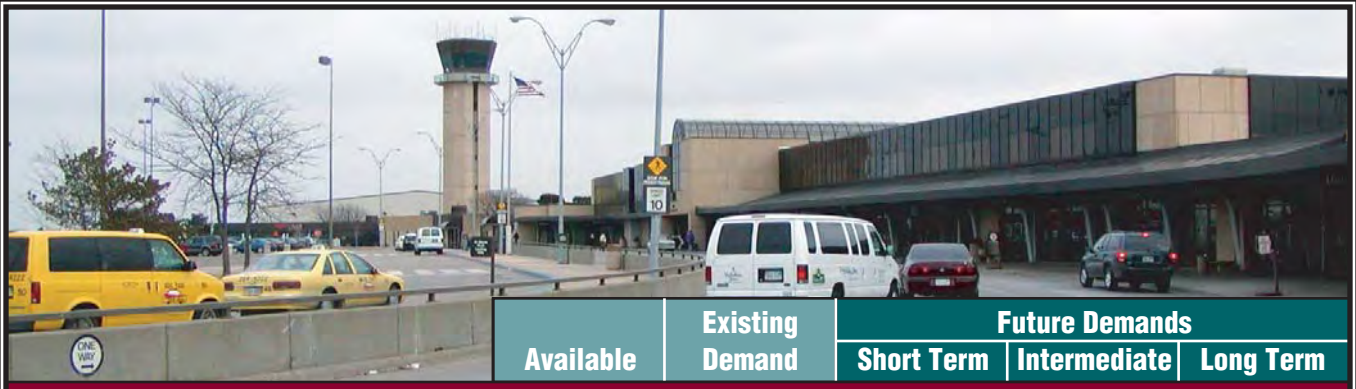

	Available	Existing Demand	Future Demands		
			Short Term	Intermediate	Long Term
AIRCRAFT GATE POSITIONS					
Loading Bridges	7	5	5	5	6
Commuter Gates	5	5	5	5	6
Total	*12*	*10*	*10*	*10*	*12*
TERMINAL BUILDING SPACES					
Ticketing/Check-in					
Number of Airlines	16	15	15	15	15
Number of Pax/Half Hour Peak		235	255	268	295
Number of Agent Positions	51	20	21	22	25
Counter Frontage (l.f.)	290	156	170	179	197
Ticket Lobby Queue (s.f.)	4,000	3,908	4,243	4,467	4,913
Airline Operations					
Counter Area (s.f.)	2,660	1,563	1,697	1,787	1,965
Airline Operations (s.f.)	24,692	18,500	18,800	19,000	19,400
Subtotal Airline Operations (s.f.)	*27,352*	*20,063*	*20,497*	*20,787*	*21,365*
Departure Area					
Peak Occupants		350	380	400	440
Holdroom Area	19,932	7,700	8,360	8,800	9,680
Baggage Claim					
Pax Claiming Bags	N/A	210	228	240	264
Claim Display (ft.)	230	350	380	400	440
Claim Display Floor Area (s.f.)	1,380	2,100	2,280	2,400	2,640
Claim Lobby Area (s.f.)	5,176	9,450	10,260	10,800	11,880
Total Bag Claim Area (s.f.)	*6,556*	*11,550*	*12,540*	*13,200*	*14,520*
Rental Car Counters					
Counter Frontage (l.f.)	130	118	125	130	140
Counter Office Area (s.f.)	1,335	2,354	2,504	2,604	2,804
Counter Queue Area (s.f.)	780	706	751	781	841
Total Rental Car Area (s.f.)	*2,115*	*3,060*	*3,255*	*3,385*	*3,646*
Concessions					
Food and Beverage	12,342	12,845	13,946	14,680	16,148
Gift Shops	1,468	1,606	1,743	1,835	2,019
Total Concessions	*13,810*	*14,451*	*15,689*	*16,515*	*18,167*
Public Waiting Lobby					
Public Lobby/Seating (s.f.)	2,309	7,014	7,615	8,016	8,818
Greeting Lobby (s.f.)	N/A	1,754	1,904	2,004	2,204
Security Queuing Area (s.f.)	N/A	3,150	3,420	3,600	3,960
Total Public Waiting Lobby (s.f.)	*12,840*	*11,918*	*12,939*	*13,620*	*14,982*
Restrooms					
Men's/Women's (s.f.)	4,868	2,367	2,570	2,705	2,976
Administration Offices/Conference (s.f.)	1,630	8,500	9,250	9,750	10,500
Total Functional Building Space (s.f.)	134,600*	112,747	120,614	125,859	136,011
TERMINAL CURB					
Enplane Curb (ft.)	350	315	342	360	396
Deplane Curb (ft.)	250	368	399	420	462
Total Curb (ft.)	600	683	741	780	858
AUTO PARKING					
Public Parking					
Short Term Parking	372	298	323	340	374
Long Term Parking	1,357	1,906	2,087	2,211	2,401
*Total Public Parking***	*1,729*	*2,203*	*2,410*	*2,551*	*2,775*
Employee	380	225	247	263	285
Rental Car	213	231	253	268	291
Total All Parking	*2,322*	*2,659*	*2,911*	*3,082*	*3,351*

* Functional building space less than gross building space. ** 446 spaces added in remote lot - 2004.

Exhibit 3G
TERMINAL BUILDING REQUIREMENTS

aircraft include the Cessna 208 Caravan and Rockwell International Aero Commander.

The space requirements of aircraft commonly used for the transport of air cargo were used to develop air cargo ramp requirements. The DC-9 requires approximately 3,600 square yards of apron. The Boeing 727-200 requires approximately 5,900 square yards of apron and Group IV aircraft such as the Boeing 757, Boeing 767, and Airbus A300-600 require approximately 7,700 square yards of apron. Feeder aircraft require approximately 1,300 square yards of apron area.

Current all-cargo airline schedules indicate that peak arrivals occur between 5:18 a.m. and 6:30 a.m. During this period, there are three 727-200 aircraft, one DC-9, one 757, and three Cessna 208 Caravans and one Rockwell International Aero Commander on the airport. Assuming that cargo flights will continue to operate under the current schedule involving peak periods of five or more jet aircraft, future apron requirements were determined using the air cargo forecasts developed in Chapter Two. In addition, future apron requirements also include parking requirements for dedicated jet aircraft which remain at the airport through the day. An additional 20,000 square yards of apron area is expected to be needed through the planning period (exclusive of apron taxilanes).

To accommodate cargo sorting activities, the amount of required building space will also grow. For planning purposes, the typical planning standard of 800 pounds of cargo processed per square foot was used to determine building space. If cargo growth occurs as forecast, up to 94,000 square feet of building space will be required by the end of the planning period. **Table 3K** summarizes air cargo apron, building and area requirements through the planning period.

The air freight building handles cargo transported on the scheduled passenger airlines and dedicated all-cargo carries. Facility planning should include replacing the air freight building along the north air cargo apron. The area currently occupied by the air freight building may be needed to meet long term terminal building needs.

GENERAL AVIATION FACILITIES

Wichita Mid-Continent Airport is a full service general aviation airport providing facilities and services for the general aviation community. General aviation facilities at the airport are primarily located west of Runway 1R-19L, along Airport Road. This area provides an aircraft parking apron, storage hangars, and office and terminal space. The general aviation apron encompasses approximately 38,000 square yards, including space for aircraft tiedown and taxilane access. General aviation hangar area exceeds 450,000 square feet. A portion of Cessna Aircraft, Raytheon, and Bombardier Aircraft manufacturing hangars are located on airport property. In addition, Cessna has recently (2004) added 244,000 square feet of hangar area with construction of the Cessna Citation Service Center.

TABLE 3K
Air Cargo Requirements

	Currently Available	Current Need	Short Term	Intermediate Term	Long Term
Cargo Buildings (s.f.)	67,520[1]	42,100	53,000	64,300	94,000
Cargo Apron (s.y.)	65,000	34,200	50,200	57,400	80,800
Use Area (in acres)					
Cargo Building Area	1.9	1.2	1.5	1.8	2.6
Cargo Apron Area	13.4	7.1	10.4	11.9	16.7
Undeveloped Areas	3.1	1.6	2.4	2.7	3.9
Total Area	18.3	9.9	14.2	16.4	23.1

Source: Coffman Associates Analysis
[1] Includes air freight building

While the aviation demand forecasts did anticipate the continued use of Wichita Mid-Continent Airport by general aviation aircraft, the forecasts did not anticipate growth in based aircraft at the airport. It was assumed in the forecasts that Colonel James Jabara Airport, as the reliever airport would serve general aviation growth for Wichita Mid-Continent Airport. The forecasts noted that general aviation use of Wichita Mid-Continent Airport would continue to transition to more business and corporate aircraft use.

Colonel James Jabara Airport was specifically constructed to serve as a general aviation reliever airport for Wichita Mid-Continent Airport. As a reliever airport, Colonel James Jabara Airport is expected to relieve traffic at Wichita Mid-Continent Airport by providing an alternate landing area for general aviation aircraft. By contrast, the role of Wichita Mid-Continent Airport in the regional and national aviation system is to primarily accommodate commercial air service which includes both scheduled passenger airlines and air cargo.

Transferring general aviation activity to Colonel James Jabara Airport does not diminish the role of general aviation at Wichita Mid-Continent Airport. General aviation services will be needed for the foreseeable future at Wichita Mid-Continent Airport. There is a segment of general aviation, particularly business-class aircraft, that use Wichita Mid-Continent Airport because of the capabilities of the airfield system at Wichita Mid-Continent Airport and the general aviation services provided at the airport.

The master plan should reflect the role that Wichita Mid-Continent Airport plays in serving business-class aircraft. The master plan should recognize that any significant growth in general aviation beyond the capabilities of the existing general aviation area will be accommodated at Colonel James Jabara Airport or other general aviation airports. Future improvements to the existing general aviation

area at Wichita Mid-Continent Airport should primarily focus on the support of the increasing numbers of business-class aircraft utilizing the airport.

Specific facility requirements for general aviation apron, terminal, office, and hangar facilities have not been determined. Instead, during the alternatives analysis, specific attention will be given to maximizing development in the existing general aviation area by defining available parcels for development. Additionally, new general aviation development areas will be designated on the airport.

AIRCRAFT RESCUE AND FIREFIGHTING

Requirements for aircraft rescue and firefighting (ARFF) services at an airport are established under Federal Aviation Regulations (FAR) Part 139. FAR Part 139 applies to the certification and operation of land airports served by any scheduled or unscheduled passenger operation of an air carrier using aircraft with more than 30 seats. Paragraph 139.315 establishes ARFF index ratings based on the length of the largest aircraft with an average of five or more daily departures. The airport operates as an Index "C" facility. ARFF Index C includes scheduled air carrier aircraft up to 159 feet long. This index rating is sufficient for the mix of air carrier aircraft expected to operate at the airport through the planning and should be maintained for certification.

AIRPORT MAINTENANCE FACILITIES

The airport maintenance facilities are located at the southern end of the airport along Southwest Boulevard (K-42). Airport maintenance equipment storage and operations are conducted from three separate buildings. Future expansion of these facilities will be a function of airport management needs. However, any further equipment purchases will require outside storage of older equipment. Therefore, consideration should be given to construction of a new multi-purpose equipment storage facility. The alternatives analysis will focus on retaining the airport maintenance facilities in this area to the extent possible as it is segregated from other airfield uses, is in a remote area of the airport that cannot be used for aviation-related activities, and provides an area to accommodate growth.

SUMMARY

The facility needs evaluation has identified several requirements on the airfield, in the terminal building, public parking, and air cargo segments. Each of these functional areas will be given consideration in the following evaluation of airport development alternatives. The next chapter will provide analysis and recommend the best alternative for the future development of the airport.

Chapter Four
AIRPORT DEVELOPMENT ALTERNATIVES

Chapter Four

Airport Development Alternatives

CITY OF WICHITA
Wichita Airport Authority

In the previous chapter, the airside and landside facility requirements were evaluated for the planning period. In this chapter, the facility needs will be applied to a series of airport development alternatives, exclusive of terminal area planning which is being handled under a separate planning effort. Since the possible combination of alternatives can be nearly endless, the alternatives which have been examined have been limited to only the ones which were considered to be the more feasible. The alternatives evaluation provides the underlying rationale for the ultimate master planning recommendations.

The alternatives presented in this chapter provide a series of options for meeting short- and long-term facility needs. Since the levels of commercial, air cargo, and general aviation activity can vary from forecast levels, flexibility must be considered in the plan. If activity levels vary by significant levels within a five-year period, the Wichita Airport Authority should consider updates to the plan to reflect the changing conditions.

While an evaluation of alternatives can also include a "no action" alternative, this would effectively reduce the quality of services being provided to the general public, and potentially affect the Wichita area's ability to accrue additional economic growth. However,

the final decision with regard to pursuing a development plan which meets the needs of commercial airline, air cargo, and general aviation needs rests with the Wichita Airport Authority. Economic and/or environ-mental costs may not always be offset by the potential benefit of each and every project in the plan. However, a thorough evaluation of the available options will assist the Airport Authority with making a decision which is consistent with its goals and objectives for the airport.

A number of airfield and landside considerations were identified upon completing the evaluation of facility requirements in Chapter Three. These considerations have been summarized in **Exhibit 4A**. The following series of alternatives will attempt to address each of these considerations.

AIRFIELD ALTERNATIVES

Because of its primary role and the fact that it physically dominates airport land use, the airfield is generally the focal point of the airport complex. In particular, the airfield system requires the greatest commitment of land area and has a great effect on the identification and development of alternatives and development of alternatives for other facilities.

The previous chapter identified present and future needs for the components of the airfield. To accommodate projected needs, planning efforts must first consider means to improve the airfield's operational capacity. As indicated earlier, the airport can expect to exceed 60 percent of its annual service volume (ASV) during the short term planning period. When activity exceeds the 60 percent threshold, the FAA recommends that consideration be given to capacity enhancement projects. Potential capacity enhancements were outlined in the preceding chapter, and summarized in **Table 3E**. These tables identified that a third parallel runway may be a consideration, after all other improvements are completed. Generally, the other capacity enhancements considered are expected to increase capacity sufficiently to not justify a third parallel during the 20-year planning period; therefore, no alternatives for a third parallel were considered in this chapter. While a number of the capacity enhancements identified in **Table 3E** involve air traffic or equipment upgrades, which will require evaluation by the FAA, a number of enhancements involve runway and/or taxiway improvements, and are appropriate to this master planning evaluation. These improve-ments include the following:

- Upgrade the instrument approach capability on Runway 19L (pending).
- Add run-up pads/ bypass taxiways at runway ends, with two secondary de-icing aprons.
- Add angled/high-speed exits along runways to reduce runway occupancy times.
- Focus more general aviation activity at Colonel James Jabara Airport.

Following the Planning Advisory Committee (PAC) meeting, which was held

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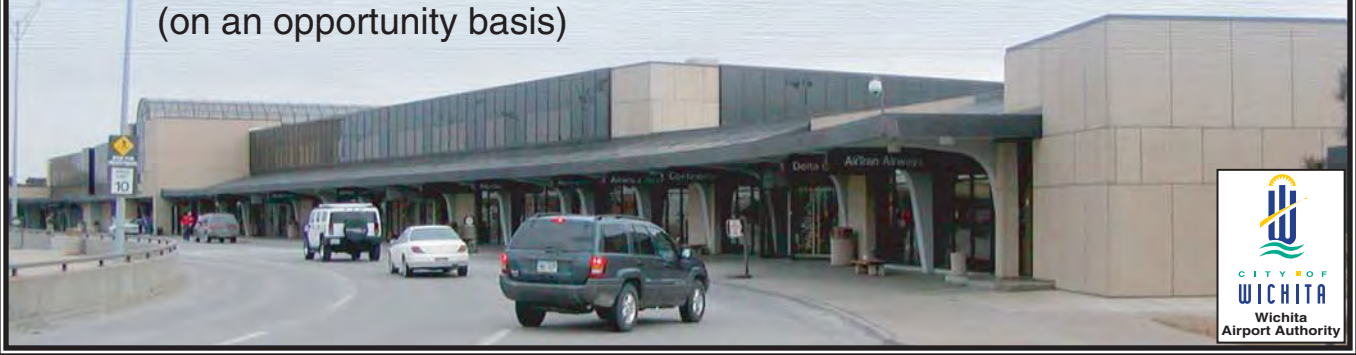
AIRFIELD CONSIDERATIONS

- Extend Runway 1R-19L from 7,300' to 8,700'
- Instrument approach to Runway 19L - Complete 2004
- Upgrade approach on Runway 19R to Category II Standards
- Analyze taxiway improvements to enhance capacity:
  - Additional parallel taxiways
  - Holding aprons or bypass taxiways
  - Secondary de-icing aprons
  - Acute-angled exits
- Acquire property for approach protection

LANDSIDE CONSIDERATIONS

- Reserve area for terminal development options
- Reserve area for air cargo facility expansion
- Provide parcels for corporate hangar development
- Reserve areas for aviation-related development requiring taxiway access
- Reserve areas for aviation-related development which do not require taxiway access
- Acquire contiguous properties for aviation-related development (on an opportunity basis)



CITY OF WICHITA
Wichita Airport Authority

Exhibit 4A
ALTERNATIVE DEVELOPMENT CONSIDERATIONS

to review these preliminary recommendations, a potential extension to Runway 1R-19L was added to the facility needs based upon the desire to provide a fully capable runway on the east side of the airfield for all airfield users. (It is noted that an extension was also included in the last master plan.) The existing length of 7,300 feet is not considered by local tenants to adequately serve as a secondary runway to Runway 1L-19R, should the longer runway be placed out of service. It also does not meet the needs of Cessna, Raytheon, and Bombardier for aircraft testing.

The following sections will discuss rational airfield alternatives from the standpoint of their ability to meet the planning horizon activity milestones in a functional, efficient, economic, and environmentally acceptable manner. The alternatives are not limited to those that would only involve development of the existing airfield. Consideration is given to "no action", new airport, and transfer of demand. Through this process, a basic airfield concept can be transformed into a realistic development plan.

NO ACTION ALTERNATIVE

In analyzing and comparing costs and benefits of various development alternatives, it is important to consider the consequences of no further development. The "no action" alternative essentially considers keeping the airfield in its present condition, and not providing for any improvements to existing facilities. The primary result of this alternative, as in any growing air transportation market, would be the eventual inability of the airport to satisfy the increasing demands of the airport service area. In the case of Wichita Mid-Continent Airport, this service area includes an area well outside the local metropolitan area (refer to Chapter Two for geographic areas served).

As discussed previously, Wichita Mid-Continent Airport is expected to exceed 60 percent of its theoretical capacity in the short term planning period. As operations increase and the airport approaches 100 percent of its capacity, the efficiency of the airfield system will deteriorate and delays for all airport users will increase. However, based upon the aviation demand forecasts, the airport is only expected to reach 86 percent of its capacity during the 20-year planning period. Nevertheless, the efficiency of the airfield will diminish over time without enhancements.

The ramifications of the "no action" alternative extend into impacts on the economic well being of the region. If facilities are not maintained and improved so that the airport maintains a pleasant experience to the visitor or business traveler, of if delays become unacceptable, then these individuals may consider doing their business elsewhere.

Thus, the "no action" alternative is inconsistent with the long term transportation system goals of the Wichita Airport Authority, which are to enhance local and interstate commerce. A policy of "no action" would be considered an irresponsible approach, affecting not

only the long term viability of the airport and the investment that has been made in it, but also the economic growth and development of the airport's service area. Therefore, the "no action" alternative was not considered as prudent or feasible.

DEVELOP A NEW AIRPORT

The relocation of aviation services to a new facility is another option which can be considered. However, the development of a new commercial service airport is a very complex and expensive development option, which can have far-reaching impacts of its own. That is why there has been only a few new commercial service airports constructed in the United States in the last twenty years.

The development of a new commercial airport takes a commitment of extensive land area. The existing airport comprises a land area of approximately 3,274 acres. A new airport would likely require an even greater acreage. Typically, the location of a new site is relatively undeveloped. As a result, the potential for impacts to natural, biological, and cultural resources are generally greater than at any existing site which still has development capacity.

A new airport site also requires the duplication of investment in airport facilities and supporting access and infrastructure that are already available at the existing site. A new airport site would require the construction of an entirely new airfield, air passenger terminal, air cargo areas, general aviation facilities, support and access facilities. The level of facility required to serve the Wichita area would require multilane roadway access. In addition, utilities such as water, sewer, electricity, and gas would have to be either extended to the site or developed on the site. Major access and utility development further compounds the potential costs and impacts associated with a new site.

Finally, the political and economic realities of relocating to a new airport must also be considered. The recent construction of the new Denver airport required the financial commitment of several billion dollars. Virtually the entire cost of this development is being financed by taxes, rates and charges being paid by air travelers, and the aviation industry as a whole.

While it is appropriate that the airport user pay for aviation facilities and their operation, the airport proprietor (Wichita Airport Authority) has a duty to be fiscally responsible. The construction of a major new airport that would duplicate the facilities at Wichita Mid-Continent Airport would require a financial commitment of $750 million-$1 billion dollars. The high costs associated with new airport development will continue to limit the number of new facilities that the aviation industry can absorb. In a case where public funds are limited, facility replacement would be an unjustifiable loss of taxpayer's dollars.

Attempts to create new general aviation reliever airports are also met with sig-

nificant opposition. In fact, the list of new reliever airports constructed in the United States over the past twenty years is nearly as short as the list of air carrier facilities. Many airport proprietors have attempted to pursue development of new reliever facilities, only to be shut down by public opposition. Therefore, it is prudent to attempt to maximize the utility of the existing public investment which has been made in Wichita Mid-Continent Airport, and examine its ability to handle future needs.

TRANSFER DEMAND TO ANOTHER AIRPORT

Another alternative to consider is the transfer of demand to another airport. While Wichita Mid-Continent Airport is the only public airport in the area with adequate airfield facilities to support commercial passenger and air cargo carriers, certain general aviation activities can be supported at nearby airports. The most logical choice is Colonel James Jabara Airport, also operated by the Wichita Airport Authority, and being considered concurrently with Wichita Mid-Continent Airport in long-range master planning studies. This facility (and other general aviation facilities in the immediate area) has the potential of relieving a segment of additional general aviation demands on Wichita Mid-Continent Airport.

Colonel James Jabara Airport has a single runway, 6,100 feet by 100 feet, a dual-wheel pavement strength of 62,000 pounds, and non-precision instrument approaches. There are an estimated 153 based aircraft and 38,700 annual operations. The runway length and strength can support a high percentage of the general aviation propeller fleet, and a significant portion of the business jet fleet. However, the lack of a precision approach has limited its capabilities. This will change shortly, with the addition of an instrument landing system on Runway 18 in 2004. Current master planning for the airport is considering additional areas for hangar storage, service facilities, and airfield development to support additional based aircraft and itinerant activity.

Therefore, while a segment of future general aviation demand may be attracted to Colonel James Jabara Airport or other nearby general aviation airports, the commercial passenger, air cargo, and many of the general aviation demands must continue to be met at Wichita Mid-Continent Airport.

AIRFIELD CAPACITY ALTERNATIVES

The analysis of airfield capacity alternatives has considered both runway and taxiway improvements. Preliminary cost estimates were prepared for each of these improvement items and have been summarized in an appendix to this working paper.

Runway Improvements

When possible, the best means for improving runway capacity is the development of a parallel runway. However, as explained earlier in this chapter,

other capacity enhancements available for the airfield will adequately increase hourly and annual capacity.

For optimum capacity, the ideal separation between parallel runway centerlines is 4,300 feet, which is exceeded at Wichita with a separation of 4,400 feet. This separation permits simultaneous approaches in instrument weather, which occurs at least seven percent of the time at Wichita. With the addition of an instrument approach on Runway 19L, the airport will be able to handle dual instrument approaches in north or south flow, increasing the airfield's hourly capacity when instrument conditions favor operations on Runways 19L/19R.

If the Airport Authority extended the length of Runway 1R-19L, this runway would be able to serve all users on the airfield when Runway 1L-19R is unavailable. Based upon the runway length evaluations conducted in the prior chapter, and input from the Planning Advisory Committee, an ultimate length of 8,700 feet would be desirable. Therefore, several alternatives were considered to extend the length from 7,300 to 8,700 feet:

- Place all 1,400 feet on the south end (Alternative A).
- Place all 1,400 feet on the north end (Alternative B).
- Place 700 feet on each end of the runway (Alternative C).

Each of these alternatives has been depicted on **Exhibit 4B**. The Wichita Airport Authority already own adequate property at either end of the runway to allow extension of pavement, taxiways, and extended safety areas. However, runway protection zones (RPZ) will be pushed farther out as depicted on the exhibit, and in some situations place the RPZ over property not currently owned. The new Cessna Service Center (under construction) is graphically depicted on each of the alternatives.

Alternative A places all pavement at the south end of the runway. Taxiway M is shown extended to the 1R threshold end and a new taxiway parallel to Runway 14-32 is shown extended to the new runway end. However, aircraft originating from the terminal area are not afforded a clear taxi to the 1R threshold, having to use a connecting taxiway across the threshold of Runway 32. The RPZ extends across K-42, with only a small portion of property not already owned by the sponsor. The alternative will require the relocation of ILS equipment and approach lights.

Alternative B places all pavement at the north end of the runway. Taxiway M and Taxiway N (AA) may be extended to the 19L threshold. Taxiway A cannot be extended to the north (due to the location of storage hangars), and Taxiway H does not have adequate separation from Taxiway N to be upgraded. The runway safety area (RSA) will extend into a 100-year floodplain area (noted on exhibit) and the RPZ will be pushed over property not owned by the Airport Authority. Since Runway 19L does not presently have an ILS or approach lights, relocation will not be required unless the ILS is installed prior to pavement extensions (the ILS installation is currently pending). The

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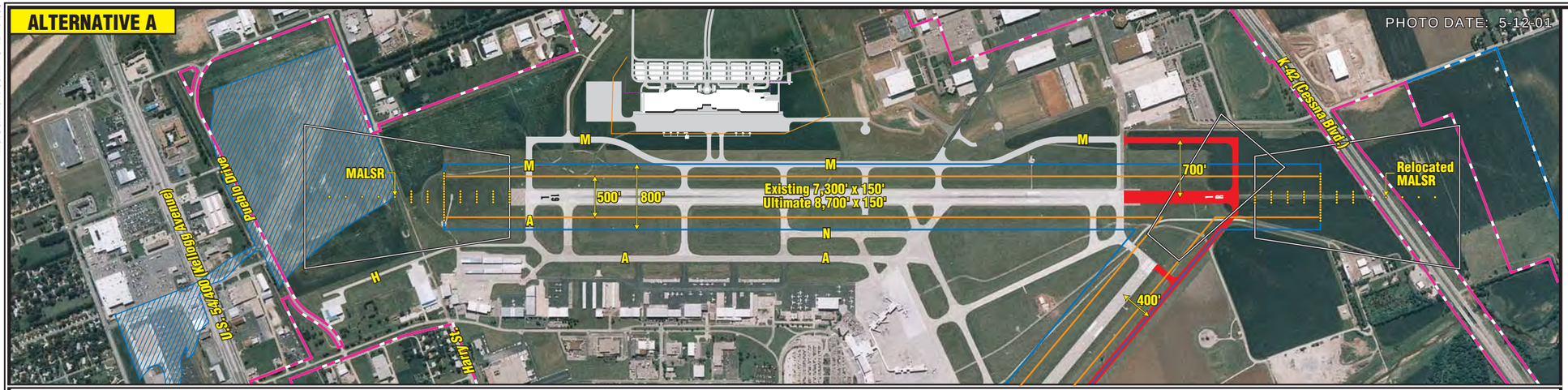
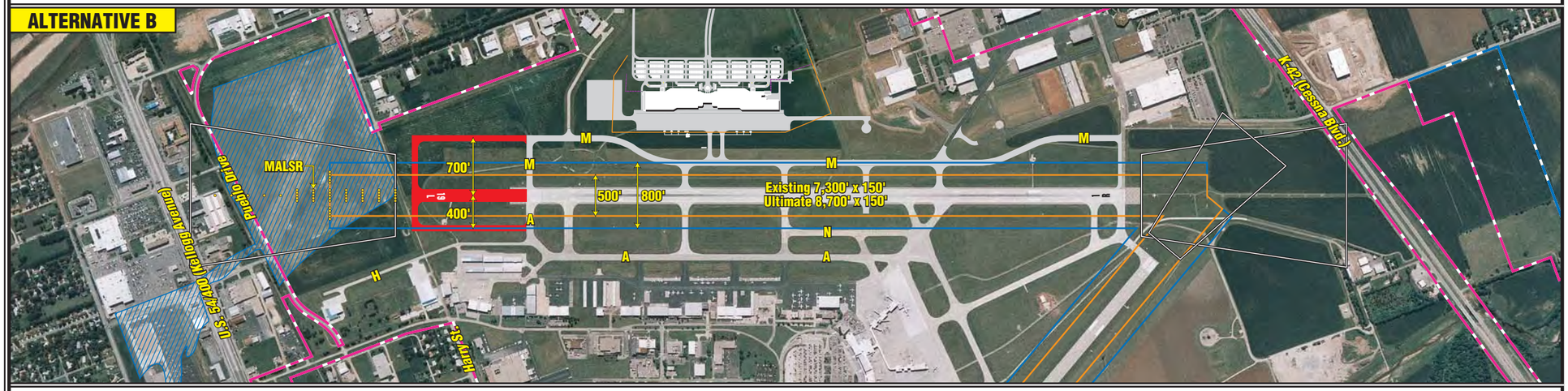
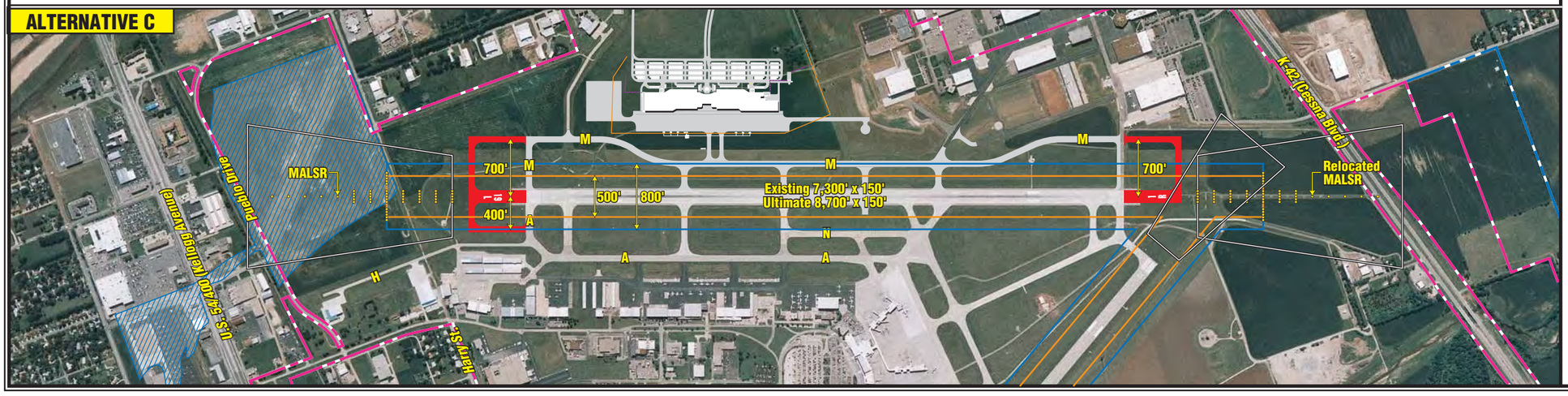
ALTERNATIVE A



ALTERNATIVE B



ALTERNATIVE C



LEGEND

- Airport Property Line
- Potential Acquisition
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Ultimate Pavement
- Limits of 100 Year Floodplain
- Runway Protection Zone (RPZ) and Ultimate RPZ

0 1,500 3,000

SCALE IN FEET

NORTH

CITY OF WICHITA
Wichita Airport Authority

Exhibit 4B
RUNWAY1R-19L
EXTENSION ALTERNATIVES

spacing between the runway and Taxiway M will allow placement of glideslope equipment without infringing on the critical areas.

Alternative C places 700 feet of pavement at each end of the runway. As shown on the exhibit, aircraft originating from the midfield and wishing to use the full runway length for departure on 1R must cross the runway to reach Taxiway M, which is extended to the runway end. The extension of pavement on the north end limits the amount of RSA falling within the floodplain and the amount of RPZ falling outside of airport property. A small amount of RPZ on the south end will fall outside of current property.

The three alternatives have not been evaluated with regard to noise compatibility or potential obstructions in runway approaches. An extension in either direction is considered to present some difficulty for taxiing aircraft originating from the midfield. Alternative A also places aircraft preparing to depart on Runway 1R within the RPZ of Runway 14-32. Further evaluation of these three alternatives during the committee and public review process will provide further insight into their respective feasibility.

Taxiway Considerations

Taxiway improvements are one means of improving the operational capacity and efficiency of the airfield as the airport continues to develop and operations grow. Adequate runway exits and circulation are essential to achieving the optimum capacity potential of any runway system. Since taxiway improvements are generally far less expensive than runway improvements, it is important to ensure maximum capabilities are being derived from the taxiway system before making runway changes to improve capacity.

The ideal taxiway system includes full length parallel taxiways for each runway with adequate exits spaced along the runway to reduce runway occupancy times. In some cases, high speed exits can further minimize occupancy time. Connecting taxiways should be available, as necessary, to provide convenient access between the airfield and the various terminal, air cargo, and general aviation facilities on the airport.

Each of the existing runways at Wichita Mid-Continent Airport are equipped with at least partial parallel taxiways, as noted on **Exhibit 4C**. Taxiway M, the full-length parallel taxiway on the east side of Runway 1R-19L was completed in 2003. Taxiway N (formerly AA) was extended to the north end of the runway in 2004. In conjunction with this project, a holding/ engine run-up apron was placed at the south end of the taxiway, and a new compass rose was constructed adjacent to Taxiway B (as noted on the exhibit).

The Sponsor has noted a need for secondary de-icing pads on the airport. With the airport in a north flow during most of these periods, de-icing pads were positioned towards the south end of each parallel runway. However, unless the taxiway bridge at Cowskin Creek is widened to allow vehicles to

avoid the taxiway safety area, the pad in this location will need to be constructed north of the creek.

Along Runway 1L-19R, a full-length parallel taxiway is depicted along the west side of the runway. This taxiway should be considered to reduce potential runway incursions if significant facilities are constructed on the west side. A stub taxiway at the north end is being designed at this time to allow access from the Bombardier facilities on the northwest side (and to reduce the number of runway crossings). As part of this project, Taxiway J will be widened, and a compass rose constructed on the west side of the taxiway. A stub taxiway can also be considered for the area south of Runway 14-32 if hangar facilities are developed in this area.

An extension of Taxiway R should be considered to allow two-way taxiing from the terminal area when Runway 1L is the preferred arrival/departure runway. However, terminal planning may affect the need and/or alignment of this taxiway.

Runway 14-32 has a partial parallel taxiway along the north side of the runway, and a dual taxiway system through the midfield area. A full-length parallel taxiway has been depicted along the south side of Runway 14-32, to serve potential development in the midfield area south of the runway. Holding aprons are shown at each runway end.

While development of full-length parallel taxiways improves circulation along the runways, real gains in airfield capacity are achieved with the addition of taxiway exits at well-spaced intervals. With the volume of traffic on Runway 1R-19L, the right-angled exits along the runway may need to be supplemented with acute-angled taxiways as depicted on the exhibit. The same holds true for Runway 1L-19R, although this runway has much lower peak hour operations than Runway 1R-19L.

Category II Runway Approach Considerations

The airport has centerline and touchdown zone lighting on Runway 1L and centerline lighting on Runway 19R. This allows the airport to remain open during lower visibility and cloud ceiling conditions. While future GPS approaches are expected to provide for Category II approach capability, a firm implementation schedule has not been established. Consequently, the following equipment (based upon current standards) will need to be added to Runway 19R (or other approaches) to facilitate a Category II approach if the capability is pursued over the next few years.

An ALSF-2 light system (as in place on Runway 1L) will replace the current MALSR system. The ALSF-2 consists of a light bar at 100-foot intervals, starting 100 feet from the runway threshold and continuing out to a distance of 2,400 feet from the threshold.

The localizer antenna array shall be symmetrically positioned about the extended runway centerline at a minimum distance of 600 feet, but preferably at the end of the safety area (1,000

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PHOTO DATE: 5-12-01

Hoover Road
Pueblo Drive
Harry Street
Mid-Continent Drive
Learjet Way
U.S. 54/400 (Kellogg Avenue)
K-42 (Cessna Blvd.)
Ridge Road
Tyler Road
Cowskin Creek
Compass Rose
Secondary De-Ice Pad
700'
400'

LEGEND

- Airport Property Line
- Potential Acquisition
- Ultimate Pavement
- Pavement To Be Removed
- 1 West Parallel Tawiway
- 2 South Parallel Taxiway
- 3 Taxiway Extension
- 4 Holding Apron/De-Ice
- 5 Acute-Angled Taxiway
- 6 Bypass Taxiway

0 1,500 3,000
SCALE IN FEET

NORTH

CITY OF WICHITA
Wichita Airport Authority

Exhibit 4C
TAXIWAY CONSIDERATIONS

feet from the runway end). It may be located as far as 2,000 feet beyond the end of the runway.

The glide slope antenna needs to be located in a line parallel to the runway centerline at a distance of 400 feet offset from centerline and at a distance not to exceed 1,250 feet and not less than 700 feet from the threshold. It is also necessary to maintain clearance in a 35-degree Cat II glide slope signal limit area.

Runway visual range (RVR) systems provide a measurement of horizontal visibility (i.e., how far ahead the pilot of an aircraft should be able to see high intensity runway edge lights or contrasting objects). Current RVR field sensors consist of one equipment rack and a visibility sensor atop a fold-over mast.

The FAA is currently developing and testing a local area augmentation system (LAAS) in the United States to be used in conjunction with the wide area augmentation systems (WAAS) which was commissioned in July 2003. The LAAS is a ground-based system used to further refine and correct GPS signals for Cat II and III approach minimums. The LAAS would need to be installed near (but not necessarily on) the airport, but would eliminate the need for some of the ground-based equipment previously discussed. At this time, it is not known when this capability will be available to the airport as an alternative to achieving a Cat II approach with traditional equipment.

Airport Traffic Control Tower Considerations

The airport traffic control tower is the focal point for controlling flight operations within the airport's designated airspace and all aircraft and vehicle movements on the airport's runways and taxiways. The present airport traffic control tower is located adjacent to the passenger terminal building, and it is not expected to require relocation. However, should redevelopment of the terminal area identify the tower for potential relocation, several considerations should be kept in mind.

When siting a new tower, several land and clearance requirements are identified by the FAA: 1) A site of one to four acres in size, 2) Maximum visibility of the airport's traffic patterns, and clear, unobstructed, and direct line-of-sight to the approaches, runways and taxiways, 3) The tower must not derogate the signal generated by any existing or planned electronic NAVAID or ATC facility.

The optimum location for the tower will remain between the wide-spaced runways. While it is generally preferable to locate control towers and airport surveillance radars (ASR) as close as practical to each other, ASR antennas have a clear area with a 1,500-foot radius to avoid signal reflections. Therefore, the control tower will need to be located a minimum of 1,500 feet from the ASR.

While no known plans exist for relocation and/or upgrade to the current ASR,

the FAA normally conducts an evaluation of alternative sites when considering an ASR upgrade. Relocation may also be triggered by the need to relocate aviation facilities into the area currently used for the ASR. ASRs may be elevated (to 85 feet) to obtain line-of-sight clearance and located several miles from the airport. The ASR should be relocated when the FAA considers an upgrade to the facility.

AIR CARGO FACILTIES

Conventional air cargo layouts for ramp, sortation buildings, and truck courts use power-in/push-back or power-in/push-back parking arrangements for aircraft on the apron and a truck court on the landside which provides adequate room for the parking and maneuvering of 18-wheel tractor-trailers. An area for common road and ground service equipment is generally provided between the ramp and the building. New facilities located on the west side generally follow this configuration.

Generally, when dealing with 757 and A-300 type aircraft, a minimum depth of 325-350 feet should be provided on the ramp. This allows for a taxilane to be placed behind the parked aircraft. In addition, sortation buildings should be designed at a depth of 100 feet and the truck court should be constructed at a minimum of 150 (preferably 200) feet in depth. This type of configuration allows for easy expansion of the building, ramp, and truck court at either end of the building. When sizing an area to handle a 100,000 square foot sortation building, space should be reserved for nine acres of ramp and four to five acres of truck court and public parking.

Current ramp along Taxiway D has been extended to a point even with the threshold of Runway 19R. Further expansion to the north may be limited by design standards which limit parked aircraft or facilities in the areas near approaches to instrument runways. In this case, Runway 19R is being considered for a Category II upgrade, which places greater restrictions on development beyond the runway end.

GENERAL AVIATION FACILITIES

While vast land parcels have been developed on Mid-Continent Airport for manufacturing and testing facilities, the opportunities for large hangar development and/or corporate hangar development for general aviation storage and servicing are somewhat limited on the airfield at this time. General aviation services (excluding manufacturing and testing facilities) are concentrated along the west side of Runway 1R-19L. The alternatives analysis has concentrated on maximizing existing or new areas on the airport which are available for corporate aviation development. Several alternatives have been examined for the area along Taxiway H, and a layout has also been depicted for land adjacent to Eisenhower Road on the east side of Runway 1R-19L. These layouts have been depicted on **Exhibits 4D and 4E**. Only a small portion of the area north of Harry Street is available

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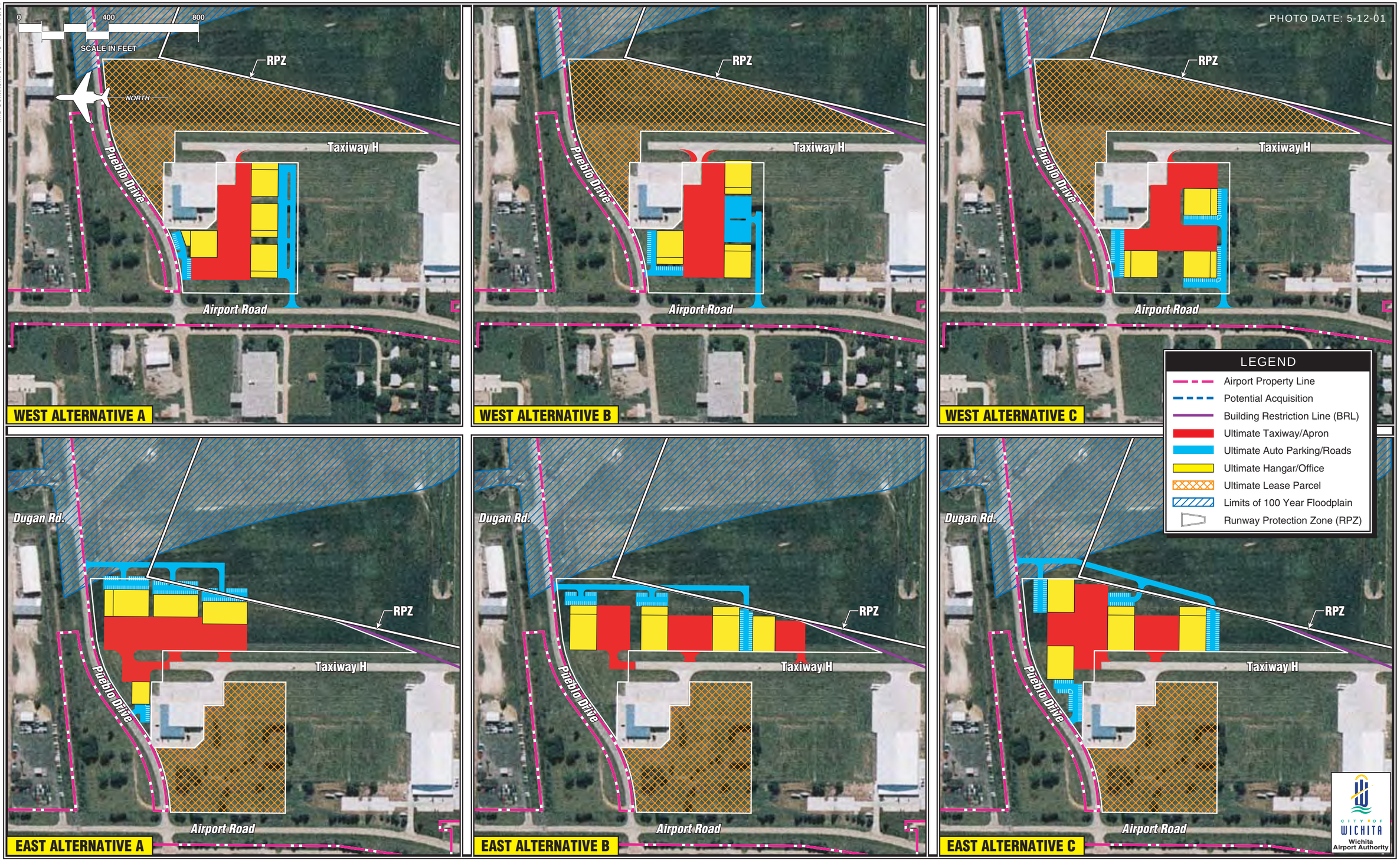
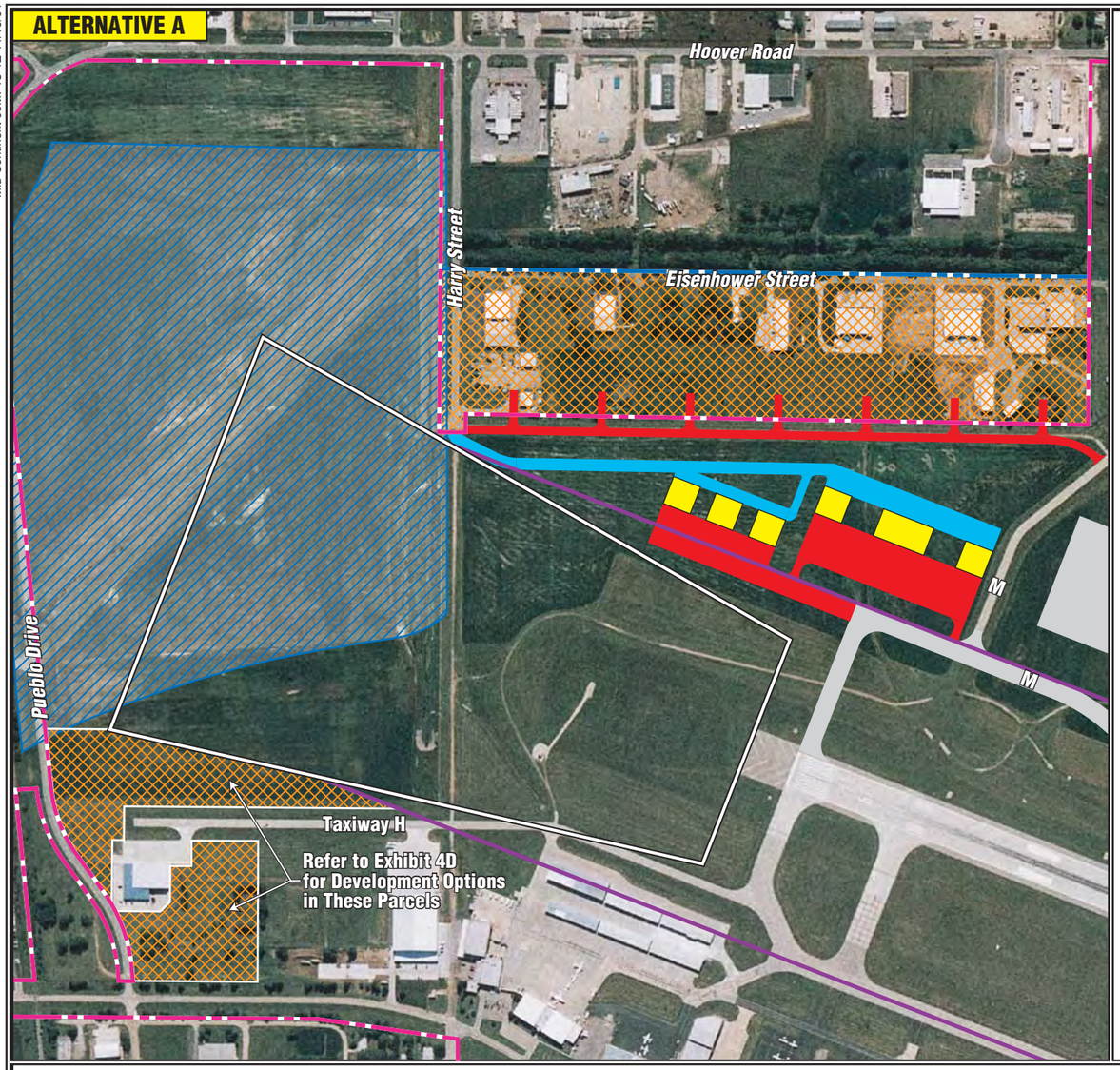


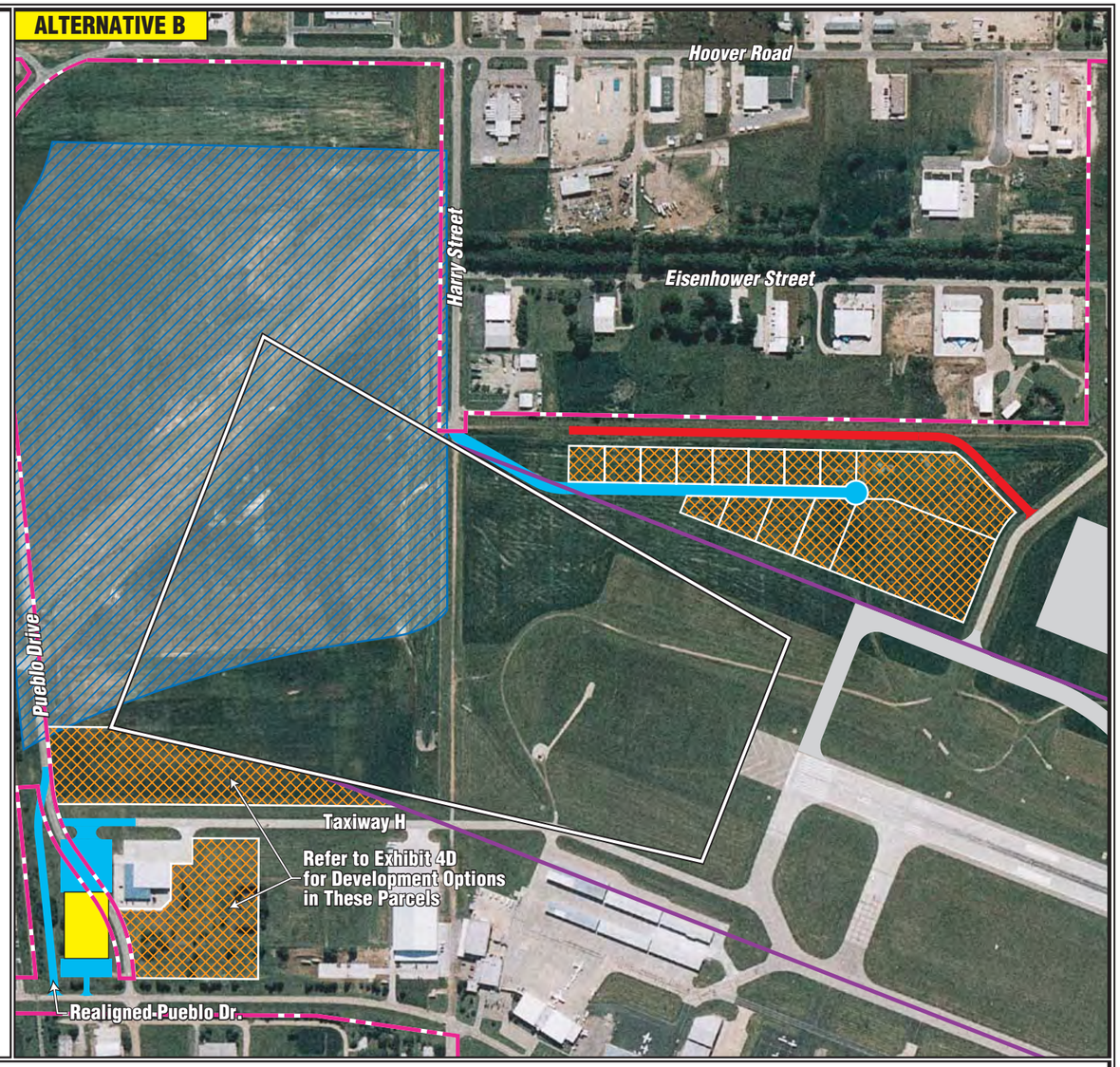
Exhibit 4D
TAXIWAY H HANGAR ALTERNATIVES

Mid-Continent-00MP13-4E-11/16/04

ALTERNATIVE A



ALTERNATIVE B



LEGEND

- Airport Property Line
- Potential Acquisition
- Building Restriction Line (BRL)
- Ultimate Taxiway/Apron
- Ultimate Auto Parking/Roads
- Ultimate Hangar
- Ultimate Lease Parcel
- Limits of 100 Year Floodplain
- Runway Protection Zone (RPZ)

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Exhibit 4E
NORTHEAST HANGAR ALTERNATIVES

for hangar development since most of the area falls within the 100-year floodplain.

Another area on the airfield which is available for large hangar development is along the west side of Runway 1L-19R. This area has been examined in the past for aircraft service-related activities. One of the limitations of this area is the lack of a taxiway network to serve the area. However, the taxiway development alternatives presented earlier in this chapter would serve this area very well. In the near term, even a stub taxiway could serve this area (in much the same way as the stub taxiway into the Bombardier facilities).

Demand for small executive-style corporate facilities on the airfield may be limited, based upon a decline in the total number of aircraft based on the airfield over the past decade. Much of the general aviation activity on the airfield is concentrated in flight testing and general aviation services rather than in basing of aircraft. While this creates tremendous demands on airfield and service related facilities, the demand for small, individual parcels to lease for hangar development may be limited on Mid-Continent. Never-theless, adequate area should be held in reserve to support executive hangar development on the airfield, and the areas reflected in **Exhibits 4D** and **4E** appear to be best suited for this type of development.

LAND ACQUISITION CONSIDERATIONS

As part of the alternatives analysis, consideration was given to ultimate property needs for the airport while considering natural boundaries. Many of the parcels are not required for immediate use, but should be considered for acquisition on an opportunity basis. The specific parcels which were considered for potential acquisition include:

- Land parcel in approach to Runway 1R, south of K-42. This parcel lies directly in the approach to the runway, abuts land already owned by the Airport Authority, and would be partially under the RPZ if the runway is extended to the south.

- Land parcel adjacent to K-42 (southwest corner of airport property) for airport property access - acquired 2004.

- Residential and commercial properties north of Post Office (opportunity basis). This pocket of residential properties has become surrounded by commercial or industrial uses. Re-use of property is anticipated for aviation-related development not requiring airfield access.

- Land parcel along Eisenhower Street, south of Harry Street (opportunity basis). Acquisition of this parcel would allow for subdivision of parcels for executive hangar development. Airfield access would be provided by a stub taxiway connecting to Taxiway M or M-1.

In formulating future airport land use development alternatives, it will be necessary to consider the impact of FAA regulations on land acquired with FAA grants, the conditions under which the Airport Authority accepts federal

grants, and the highest and best use of available property in terms of location, facilities available, functional capabilities, and revenue potential.

Unlike development grants, assurances remain in effect permanently for land acquired with FAAP, ADAP, or AIP (federal airport aid programs). Such land can be used only for aeronautical purposes unless released by the FAA. Changes made to non-aeronautical uses may be approved by the FAA if, in its judgment, aeronautical functioning of the airport is not impaired. The FAA will not approve a change to an airport layout plan (ALP) where a non-aeronautical property usage option would result in the reduction of an airport's ability to meet aeronautical need. Kansas statutes (K.S.A. 3-162) and City of Wichita Ordinance 2.12.1040 also place limitations on the use of land on airport property.

FUTURE LAND USE CONCEPTS

Future land use concepts have been depicted on **Exhibits 4F** and **4G**. These exhibits summarize the potential future use of property under two basic assumptions:

- The passenger terminal remains in the current midfield area, and additional land area (currently used for air cargo) is dedicated to terminal and parking redevelopment needs.
- The passenger terminal is relocated into the area currently used for the ASR antenna (south of Runway 14-32), allowing the existing terminal area to be redeveloped for general aviation and air cargo needs.

Terminal master planning is being handled under a separate planning effort. Therefore, this study will merely depict future passenger terminal reserve areas in the two locations as noted. Specific layouts for these areas will be undertaken under the terminal master planning effort.

Several basic land use categories have been designated on the exhibits, which are defined as follows:

- *Airfield, Approach Protection, and Open Space* - This broad category encompasses the runways, taxiways, safety and object free areas, runway visibility zones, and runway protection zones. The approach protection areas may be extended beyond the runway protection zones to further protect the runway approach. For the following land use concepts, this category has also been used for open space designations, which include 100-year floodplain areas and major roadway right-of-ways.

- *Passenger Terminal* - The passenger terminal category includes the terminal building, concourses, apron and aircraft circulation areas, automobile parking lots, rental car ready/return lots, and vehicular circulation. Remote parking lots may be reflected under a separate designation.
- *General Aviation* - The general aviation category includes storage and ramp for general aviation aircraft,

Mid-Continent-00MP13-4F-8/13/03

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Hoover Road
Hoover Relocated
Pueblo Drive
Harry Street
Mid-Continent Drive
U.S. 54/400 (Kellogg Avenue)
K-42 (Cessna Blvd.)
Ridge Road
Mac Arthur Road
Learjet Way
Cowskin Creek
Tyler Road
Tyler Road
Yosemite St.
31st St. South
Maize Road

LEGEND

- Airport Property Line
- Potential Acquisition
- Building Restriction Line (BRL)
- Runway Visibility Zone (RVZ)
- Passenger Terminal
- General Aviation
- Aviation-Related-Airfield Access
- Aviation-Related-No Airfield Access
- Air Cargo
- Airfield, Approach Protection, Storm Water Detention, Open Space
- Limits of 100 Year Floodplain
- Airport Management, Maintenance
- Building To Be Removed
- Runway Protection Zone (RPZ) and Ultimate RPZ

0 1,800 3,600

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Exhibit 4F
LAND USE ALTERNATIVE A

Mid-Continent-00MP13-4G-8/13/03

PHOTO DATE: 5-12-01

Hoover Road
Pueblo Drive
Relocated Pueblo Dr.
Harry Street
U.S. 54/400 (Kellogg Avenue)
Mid-Continent Drive
K-42 (Cessna Blvd.)
Ridge Road
Mac Arthur Road
Cowskin Creek
Tyler Road
Yosemite St.
31st St. South
Maize Road

LEGEND

- Airport Property Line
- Potential Acquisition
- Building Restriction Line (BRL)
- Runway Visibility Zone (RVZ)
- Passenger Terminal
- General Aviation
- Aviation-Related-Airfield Access
- Aviation-Related-No Airfield Access
- Air Cargo
- Airfield, Approach Protection, Storm Water Detention, Open Space
- Limits of 100 Year Floodplain
- Airport Management, Maintenance
- Building To Be Removed
- Runway Protection Zone (RPZ)

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Wichita Airport Authority

Exhibit 4G
LAND USE ALTERNATIVE B

automobile parking, and local roadway access.

- *Aviation Related-Airfield Access* - This category has been used for lands available for aviation-related activities and having direct taxiway access (current or future). The major aircraft manufacturing/ services areas are included within this category.

- *Aviation Related-No Airfield Access* - This category defines the remaining areas on the airfield which are available for aviation related activities, but lacking direct airfield access. All of the facilities north of the existing terminal midfield area (and within the roadway loop) are included in this category. Areas outside of major roadway boundaries, and not designated for approach protection, may also be included within this category.

- *Air Cargo* - The air cargo category includes cargo buildings, aircraft apron and circulation areas, auto parking and truck courts, and shipping or freight forwarding offices.

- *Airport Management* - Airport management offices and maintenance facilities.

Exhibit 4F depicts relocation of passenger terminal facilities to a new area (south of Runway 14-32), allowing reuse of the existing terminal area for general aviation uses. Air cargo uses remain in current areas, although it is anticipated that the air freight building will eventually be replaced with an updated facility. A parcel of land along Eisenhower Street is noted for potential acquisition to allow taxiway access into potential corporate hangar sites.

Exhibit 4G depicts the preservation of passenger terminal facilities in the existing midfield area, allowing expansion or redevelopment of facilities into the area currently occupied by the air freight building. To provide for expansion and/or relocation of air cargo facilities, additional area north of the Runway 19R threshold has been reserved for air cargo. A partial realignment of Pueblo Street is shown to allow for additional corporate hangar development. The area south of Runway 14-32 has been designated as aviation related (with airfield access), exclusive of areas within the 100-year floodplain.

THROUGH-THE-FENCE AIRPORT ACCESS

There are instances when the owner of a public airport proposed to enter into an agreement which permits access to the public landing area by aircraft based on land adjacent to, but not part of, the airport property. This type of an arrangement is commonly called a through-the-fence operation, whether the perimeter fence is imaginary or real. It is Federal Aviation Administration (FAA) policy to strongly discourage through-the-fence agreements.

The obligation to make an airport available for the use and benefit of the public does <u>not</u> impose any requirement to permit access by aircraft from adjacent property. On the contrary, the ex-

istence of such an arrangement has been recognized as an encumbrance upon the airport property itself. Airport obligations arising from federal grant agreements and conveyance instruments apply to dedicated airport land and facilities and not to private property adjacent to the airport, even when the property owner is granted a through-the-fence privilege.

The owner of a public airport is entitled to seek recovery of the initial and continuing costs of providing a public use landing area. The owners of airports receiving federal funds have been required to establish a fee and rental structure designed to make the airports as self-sustaining as possible. Most public airports seek to recover a substantial part of airfield operating costs indirectly through various arrangements affecting commercial activities on the airport. The development of aeronautical businesses on land uncontrolled by the airport owner may give the through-the-fence operation a competitive advantage that will be detrimental to the on-airport operators on whom the airport owner relies for revenue and service to the public. To avoid a potential imbalance, the airport owner may refuse to authorize a through-the-fence operation. In an effort to equalize an imbalance of existing through-the-fence operations, the airport owner should obtain a fair return from off-airport operators in exchange for continuing access to the airport and use of the landing area.

Although airports do not need and should avoid through-the-fence arrangements, circumstances may arise which compel an airport owner to contemplate a through-the-fence operation. In this situation, the airport owner must plan ahead to formulate a prudent through-the-fence agreement and obtain just compensation for granting access to the airport because the airport is enfranchising a special class of airport users who will be permitted to exercise an exclusive through-the-fence privilege.

In making airport facilities available for public use, the airport owner must make the airport as self-sustaining as possible under the particular circumstances at the airport. The FAA has interpreted the self-sustaining assurance to require airport owners to charge fair market value (FMV) commercial rates for nonaeronautical uses of the airport. In conformity with the self-sustaining principle, it would be appropriate to charge FMV rates to off-airport users for the exclusive privilege of accessing the airport through-the-fence. In formulating a through-the-fence agreement, the airport owner should endeavor to establish terms that are beneficial to the airport. For example, the adjacent developer or landowner should be made to finance the necessary improvements and maintenance of the facilities and infrastructure connecting the adjacent land to the airport's landing area. Recurring payments should be based on use rather than on flat rates. Agreements should contain provisions allowing the airport to terminate through-the-fence access permits for cause.

In addition, the airport owner must restrict the uses that may be made of the adjacent land as a condition for granting a through-the-fence privilege. Private property owners must be asked to

enter into agreements that prohibit public aeronautical commercial operations. Simply stated, they should not be allowed to operate as fixed base operators (FBO) offering aeronautical services to the public. Such FBO operations, if allowed, would give private property operators an advantage over on-airport operators. Allowing private property owners to gain a competitive advantage will jeopardize the economic vitality of the airport and impede its ability to remain self-sustaining. Additionally, any economic advantage gained by adjacent property owners will diminish the economic viability of the airport's own aeronautical commercial operators.

Arrangements that permit aircraft to gain access to a public landing area from off-site property introduce safety considerations along with additional hazards that complicate the control of vehicular and aircraft traffic. Airport improvements designed to accommodate access to the airport and landing areas from an off-site location for the sole benefit and convenience of an off-airport neighbor present a substantial and continuing burden to the airport owner. In addition, the airport must contend with legal, insurance, and management implications represented by increased costs, liability, and administrative and operational controls. For the airport owner, it may become an unexpected challenge to balance airport needs with the increasing demands on the airport by off-airport users.

It is FAA policy to strongly discourage any agreement that grants access to public landing areas by aircraft normally stored on adjacent property. Airport owners must guard against any through-the-fence operation that can become detrimental to the airport and threaten its economic viability. Any agreement for a through-the-fence operation must include provisions making such operations subject to the same federal obligations as tenants on airport property. Furthermore, the airport owner must ensure that the through-the-fence operators contribute a fair share toward the cost of the operation, maintenance, and improvement of the airport and that they do not gain an unfair economic advantage over on-airport operators.

SUMMARY

The process utilized in assessing airside and landside development alternatives involved an analysis of long-term requirements and growth potential.

Current airport design standards were reflected in the analysis of runway and taxiway considerations, runway protection zones, and approach areas. As design standards may be modified from time to time, revisions will be necessary to certain components of the plan.

Upon review of this working paper by the Wichita Airport Authority and the Planning Advisory Committee for the master planning process, a final master planning concept will be developed which fulfills the 20-year demands of the planning period. As any good long-range planning tool, it should remain flexible to unique opportunities which may be presented to the airport. The remaining portions of the master plan

will be directed towards the refinement of the final concept, the preparation and phasing of a detailed capital improvement program, and an evaluation of funding options currently available to the Wichita Airport Authority.

Chapter Five
AIRPORT PLANS

Airport Plans

CITY OF WICHITA
Wichita Airport Authority

The airport master planning process for Wichita Mid-Continent Airport has evolved through the development of forecasts of future demand, facility needs assessments, and the evaluation of airport development alternatives. The planning process has included the development of four working papers, distributed to a Planning Advisory Committee (PAC), and discussed at coordination meetings held throughout the study process. The coordination of the planning effort has allowed the direct input of each of these representatives into the ongoing planning effort, which has resulted in the development of a master plan concept. The purpose of this chapter is to present the master planning concept in narrative and graphic form. The planning process will include one additional coordination meeting with the PAC. At that time, a draft final master plan report will be prepared, followed by final documents and executive summaries of the study.

RECOMMENDED MASTER PLAN CONCEPT

The recommended master plan concept, depicted on **Exhibit 5A**, provides for anticipated facility and land acquisition needs over the twenty-year planning period. This will allow the facility to meet the growing demands of commercial, air cargo, and general aviation users. While a mid-field area has been reserved for commercial terminal building areas, it should be recognized that additional planning studies are underway in late 2003 and early 2004, to present multiple options

for future terminal building and parking development. The results of the terminal planning are not scheduled for conclusion prior to finalization of the master plan.

AIRFIELD DESIGN STANDARDS

The Federal Aviation Administration (FAA) has established design criteria to define the physical dimensions of runways and taxiways, and the imaginary clearance surfaces surrounding the runway system. The design standards also define the separation criteria for the placement of landside facilities. As discussed earlier in Chapter Three, FAA design criterion is a function of the critical design aircraft or "family" of aircraft which conduct a minimum of 500 or more itinerant operations (landings and takeoffs) each year. The design category is measured by the wingspan of the aircraft and their approach speed.

As a commercial service airport, Wichita Mid-Continent Airport must also comply with the requirements of Federal Aviation Regulation (F.A.R.) Part 139, *Certification and Operations: Land Airports Serving Certain Air Carriers*. This regulation prescribes the rules governing the certification and operation of land airports which serve scheduled or unscheduled passenger operations of an air carrier, which are conducted with an aircraft having a seating capacity of more than 30 passengers. Under F.A.R. Part 139, the airport must complete (and maintain) a certification manual which outlines their compliance under each provision of the regulation. The compliance level required is dependent on the airport's design standards and the size and frequency of the aircraft in scheduled service. The master plan and airport layout drawings provide a means to present this information.

The certification manual contains the following information on the following topics:

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

The airport will need to continually monitor their compliance with Part 139 in each of the aforementioned areas. The capital program (to be presented in the following chapter) will include items which are necessary to maintain compliance with Part 139 and are reimbursable under the Airport Improvement Program (AIP).

As with many airports, runways, taxiways, and landside development areas are designed to differing design standards. Each of the runways on the airport, and their associated parallel and connecting taxiways are currently designed to airport reference code (ARC) D-IV standards. While aircraft in higher ARCs may occasion-

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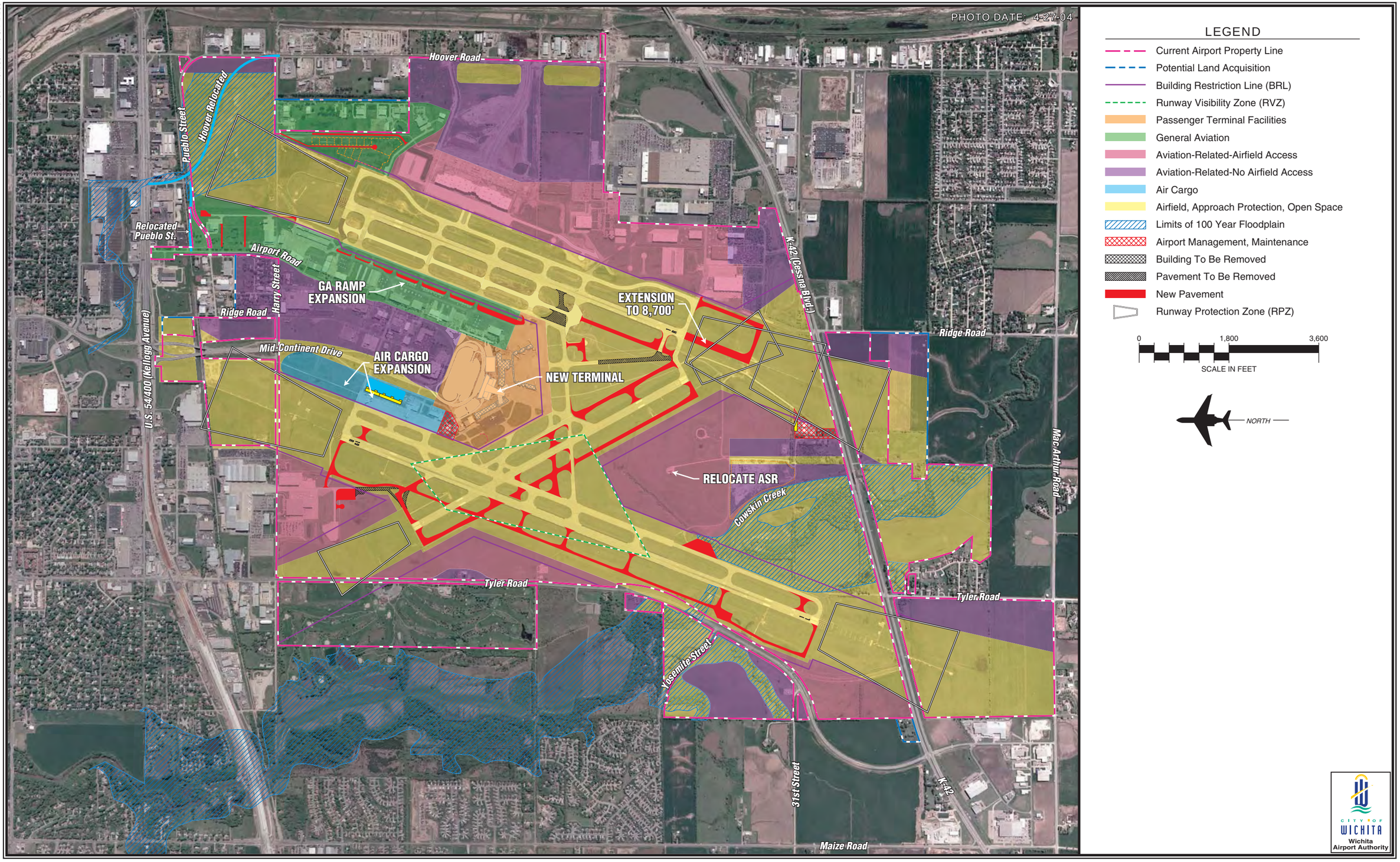

LEGEND

- Current Airport Property Line
- Potential Land Acquisition
- Building Restriction Line (BRL)
- Runway Visibility Zone (RVZ)
- Passenger Terminal Facilities
- General Aviation
- Aviation-Related-Airfield Access
- Aviation-Related-No Airfield Access
- Air Cargo
- Airfield, Approach Protection, Open Space
- Limits of 100 Year Floodplain
- Airport Management, Maintenance
- Building To Be Removed
- Pavement To Be Removed
- New Pavement
- Runway Protection Zone (RPZ)

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Wichita Airport Authority

Exhibit 5A
MASTER PLAN CONCEPT

ally use the airport, their use is not expected to result in an upgrade to the airport/runway ARC. Air carrier and air cargo areas are designed to airplane design group (ADG) IV standards, while general aviation areas are designed to lesser ADG III standards (or ADG II around nested T-hangars). **Table 5A** summarizes the design standards used for the runway/taxiway system.

TABLE 5A
Planning Design Standards

Runway Design Standards	Runways 1L-19R/1R-19L	Runway 14-32
Airport Reference Code	D-IV	D-IV
Approach Visibility Minimums	≤ One-Half Mile	One Mile
Runway		
Width	150	150
Runway Safety Area (RSA)		
Width (centered on runway centerline)	500	500
Length Beyond Runway End	1,000	1,000
Object Free Area (OFA)		
Width	800	800
Length Beyond Runway End	1,000	1,000
Obstacle Free Zone (OFZ)		
Width	400	400
Length Beyond Runway Lights	200	200
Runway Centerline to:		
Parallel Taxiway Centerline	400	400
Edge of Aircraft Parking Apron	500	500
Runway Protection Zones (RPZ)		
Inner Width	1,000	500
Outer Width	1,750	1,010
Length	2,500	1,700
Threshold Surface Slope Ratio	34:1	20:1

Taxiway and Taxilane Design Standards	ADG IV	ADG III	ADG II
Taxiways			
Width	75	50	35
Shoulder Width	25	20	10
Safety Area Width	171	118	79
Object Free Area Width	259	186	131
Taxiway Centerline to:			
Parallel Taxiway/Taxilane	215	152	105
Fixed or Moveable Object	129.5	93	65.5
Taxilanes			
Taxilane Centerline to:			
Parallel Taxilane Centerline	198	140	97
Fixed or Moveable Object	112.5	81	57.5
Taxilane Object Free Area	225	162	115

Source: FAA Airport Design Software Version 4.2D

AIRFIELD RECOMMENDATIONS

The recommended master plan concept includes a series of improvements on the airfield to provide additional operational capability and taxiway access to areas which may be developed during the planning period.

Only one runway extension project is proposed: a 1,400-foot extension on 7,300-foot Runway 1R-19L, to provide an ultimate length of 8,700 feet. An extension on this runway will provide greater flexibility in the use of the parallel runway system, and provide a more reliable back-up to Runway 1L-19R during periods when the longer runway is closed. This is important to the aircraft manufacturers and air cargo companies located on the airfield. The longer runway (1L-19R) is used exclusively by the manufacturers for all field performance and heavy weight testing. When Runway 1L-19R is not available, this testing is forced to off-site locations. The extension has been recommended on the south end of the runway to avoid encroachment on floodplain areas south of Pueblo Street, to avoid a lowering of the overflight approach on residential areas located less than one mile north of the runway, and too avoid potential conflict with a proposed realignment of Hoover Road (depicted on **Exhibit 5A**).

While the extension of the runway safety areas and object free areas will remain north of K-42, the runway protection zone will extend over the road. It is recommended that an "L" shaped land parcel on the south side of K-42 be acquired for approach protection. The extension of parallel taxiway "M" has been depicted on the master plan concept; however, Taxiway N has not been extended to the new runway end, since the taxiway would need to pass through the safety area of Runway 14-32. The extension of Runway 1R-19L will require the relocation of ILS equipment and the approach lighting system.

An extension of Taxiway N was finished in 2004, originating at Taxiway B and extending to the north end of the runway. The intersection at Taxiway B was realigned to eliminate converging exit taxiways from the runway. A hold area was developed at the Taxiway B intersection for use by aircraft preparing to make intersection departures on Runway 1R. The master plan concept calls for the eventual extension of Taxiway N to the existing south end of Runway 1R-19L, with provision for a secondary de-icing pad at the bypass taxiway (E3). In conjunction with the extension of Taxiway N to Taxiway E2 and the extension of Taxiway C to E2, Taxiway E (from Taxiway B to E2) will ultimately be closed.

The extension of Taxiway C will provide improved access to Runways 1R and 32 from the mid-field area. It will also improve circulation for aircraft landing on Runway 14 to the mid-field or air cargo areas. Because of the distance of the extension, an exit taxiway is shown midway between Taxiway B and E2.

A future parallel taxiway has been shown on the south side of Runway 14-32, to support aviation-related development south of the runway and on the west side (west of Runway 1L-19R). An extension of Taxiway R is depicted from Taxiway K to Taxiway D. This will improve circulation for aircraft between the mid-field location and Runway 1R-19L, particularly when Runway 1L is the active runway.

A secondary de-icing pad has been shown along Taxiway D, between exits D3 and D4. The secondary de-icing pads (on each of the parallel runways) are deemed necessary because of the distance/taxiing time involved from the terminal when Runways 1R and 1L are the departure runways. Placement of the de-icing pad south of D4 was not deemed feasible because of the limited access provided for de-icing vehicles. By-pass taxiways have been depicted at each end of Taxiway D, to facilitate aircraft movements onto the runway.

The initial taxiway improvement on the west side involves the extension of Taxiway L from the threshold of Runway 19R to Taxiway J. This project has been recommended by the Runway Safety Action Team (RSAT), to reduce runway incursions. The RSAT also recommended the eventual extension of the west-side parallel taxiway for Runway 1L-19R, which is reflected in the master plan. This parallel taxiway will need to be flared at each end to stay outside of glideslope critical areas in much the same way that Taxiway M on the east side of the airfield was constructed. Several exit taxiways have been depicted along the runway and a secondary de-icing pad has been depicted south of Taxiway D4.

AIR CARGO RECOMMENDATIONS

Future demand for air cargo ramp, sortation buildings, truck transfer, and automobile parking will need to be met in the existing air cargo area along Mid-Continent Drive, and accessed from Crossfield Road. The need to abandon existing air freight activities in the area immediately west of the terminal will provide a larger footprint in the mid-field area for the terminal building and future parking areas. In the short term period, the Airport intends to construct a shuttle lot in the future air cargo development area, to meet growing parking demands during peak periods. Upon redevelopment of the terminal area, and the construction of new parking lots, the shuttle lot will revert to use by the air cargo companies.

GENERAL AVIATION RECOMMENDATIONS

Two areas were evaluated in the previous chapter for potential general aviation facility expansion. The first area is located along Taxiway H, where some development has already been undertaken. The second area is located north of the new Cessna Service Center, and is accessed via Taxiway M or M-1. Greater development potential in the second area can be

achieved with the purchase of additional property along Eisenhower Street.

The only consideration within this plan for the existing general aviation facilities along Airport Road is the full-length expansion of the ramp to Taxiway A, effectively transitioning the taxiway into a ramp edge taxilane. This project will follow the extension of Taxiway N to the north end of Runway 19L. (Completed 2004.)

LAND USE RECOMMENDATIONS

As an airport facility, a large land area needs to be reserved for airfield operations, approach protection, and open space (including floodplain-designated property). This area must include the runway-taxiway system, critical areas for navaids, runway visibility zones, runway protection zones, and building setbacks. The remaining property may then be designated for specific development categories.

Terminal, air cargo, and general aviation areas have been depicted on the plan for each of these specific uses. The aviation-related areas with airfield access are noted on the east and west sides, with the area south of Runway 14-32 also reserved for this use should the radar be relocated during the planning period. Much of the property used by aircraft manufacturing companies falls within this category, as does the area on the west side of Runway 1L-19R.

Aviation-related areas with no airfield access have been designated in each quadrant of the airport, including the mid-field area north of the terminal area. A small residential/commercial area north of Harry Street has been recommended for purchase for potential aviation-related development. Portions of property abutting runway approaches south of K-42 also fall within this category, although a portion of the land in the approach to Runway 1R is not presently owned by the Wichita Airport Authority.

The golf course (a recreational use) should remain in the plan as a reserve area for potential aviation-related development, should a future need materialize. It should be noted that a portion of this property in the approach to Runway 14 should be reserved for approach protection.

ENVIRONMENTAL EVALUATION

The protection and preservation of the local environment are essential concerns in the master planning process. Now that a program for the use and development of Wichita Mid-Continent Airport has been finalized, it is necessary to review environmental issues to ensure that the program can be implemented in compliance with applicable environmental regulations, standards, and guidelines.

Once the airport begins receiving federal funding, improvements planned for Wichita Mid-Continent Airport, as

depicted on the Airport Layout Plan (ALP), will require compliance with the National Environmental Policy ACT (NEPA) of 1969, as amended. Many of the improvements will be categorically excluded and will not require further NEPA documentation; however, some improvements may require further NEPA analysis and documentation. As detailed in FAA Order 5050.4A, *Airport Environmental Handbook*, compliance with NEPA is generally satisfied with the preparation of an Environmental Assessment (EA). In cases where a categorical exclusion is issued, environmental issues such as wetlands, threatened or endangered species, and cultural resources are further evaluated during the federal, state, and/or local permitting processes.

This section is intended to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA or the permitting process. Consequently, this analysis does not address mitigation or the resolution of environmental issues. The following pages consider the environmental resources as outlined in FAA Order 5050.4A.

ENVIRONMENTAL CONSEQUENCES – SPECIFIC IMPACTS

This environmental evaluation has been prepared using FAA Order 1050.1D, *Policies and Procedures for Considering Environmental Impacts*, and FAA Order 5050.4A, *Airport Environmental Handbook,* as guidelines. Several factors are considered in a formal environmental document, such as an Environmental Assessment (EA) or an Environmental Impact Statement (EIS), which are not included in an environmental evaluation. These factors include details regarding the project location, historical perspective, existing conditions at the airport, and the purpose and need for the project. This information is available within the Master Plan document. A formal environmental document also includes the resolution of issues/impacts identified as significant during the environmental process.

Consequently, this environmental evaluation only identifies potential environmental issues and does not address mitigation or the resolution of environmental impacts. Each of the specific impact categories outlined in FAA Order 5050.4A are addressed. The following table includes a discussion of each environmental category.

NOISE

The Yearly Day-Night Average Sound Level (DNL) is used to assess aircraft noise. DNL is the metric currently accepted by the Federal Aviation Administration (FAA), Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility.

Noise contours have been prepared for the Master Plan, and are reflected on the land use drawing. The 65 DNL does not extend over residential or any other type of incompatible development. Upon completion, noise impacts or noise- sensitive development can be determined.

COMPATIBLE LAND USE

F.A.R. Part 150 recommends guidelines for planning land use compatibility within various levels of aircraft noise exposure. As the name indicates, these are guidelines only. F.A.R. Part 150 explicitly states that determination of noise compatibility and the regulation of land use are purely local responsibilities. In addition, Advisory Circular 150/5200-33 identifies land uses that are incompatible with safe airport operations because of their propensity for attracting birds or other wildlife, which in turn results in an increased risk of aircraft strikes and damage. Finally, F.A.R. Part 77 regulates the height of structures within the vicinity of the airport.

In regard to noise impacts, a land use compatibility evaluation could not be undertaken at this time as noise contours had not yet been completed for the Master Plan update.

Currently the airport does not have a significant problem with wildlife strikes and the proposed improvements will not provide any new wildlife attractants; therefore, an increased risk of aircraft strikes is not anticipated. Development of the proposed airport improvements will not result in the introduction of any new obstructions to the F.A.R. Part 77 surfaces.

SOCIAL IMPACTS

These impacts are often associated with the relocation of residents or businesses or other community disruptions. Implementation of the proposed projects will require acquisition of approximately 130 acres of property. Residential property to be acquired to the north of current airport property is planned to be utilized for aviation-related purposes, such as businesses which do not need airfield access. To the east, property will be acquired for general aviation uses such as future FBOs or hangar development. Property to the south will be acquired for multiple uses, including aviation-related development, approach protection, and open space preservation. A small tract of land to the southwest will be acquired for aviation-related development, such as aircraft manufacturing or repair. Compliance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (URAUPAPA) will be required. FAA Order 5050.4A provides that where the relocation or purchase of a residence, business, or farmland is involved, the provisions of the URARPAPA must be met. The Act requires that landowners, whose property is to be purchased, be compensated fair market value for their property.

The proposed development and associated land acquisition are not anticipated to divide or disrupt an estab-

lished community, interfere with orderly, planned development, or create a short-term, appreciable change in employment.

INDUCED SOCIOECONOMIC IMPACTS

These impacts address those secondary impacts to surrounding communities, resulting from the proposed development, including shifts in patterns of population growth, public service demands, and changes in business and economic activity to the extent influenced by the airport development.

Significant shifts in patterns of population movement or growth, or public service demands, are not anticipated as a result of the proposed development. It could be expected, however, that the proposed development would potentially induce positive socioeconomic impacts for the community over a period of years. The airport, with expanded facilities and services, would be expected to attract additional users. It is also expected to encourage tourism, industry and trade, and to enhance the future growth and expansion of the community's economic base. Future socioeconomic impacts resulting from the proposed development would be primarily positive in nature.

AIR QUALITY

The US Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O3), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrogen Oxide (NO), Particulate matter (PM10), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements. For example, an air quality analysis is typically required during the preparation of a NEPA document if enplanement levels exceed 1.3 million enplanements or general aviation operations exceed 180,000.

Wichita Mid-Continent Airport is located in Sedgwick County which is designated as being in attainment for all criteria pollutants. An air quality assessment will be required as part of a NEPA analysis as forecasted general aviation operations exceed 180,000 operations. It has been forecasted within the Master Plan that general aviation operations will reach 232,700 in the short-term and 304,100 in the long-term.

WATER QUALITY

Water quality concerns associated with airport expansion most often relate to domestic sewage disposal, increased surface runoff and soil erosion, and the storage and handling of fuel, petroleum, solvents, etc.

Construction of the proposed improvements will result in an increase

in impermeable surfaces and a resulting increase in surface runoff. During the construction phase, the proposed development may result in short-term impacts on water quality. Temporary measures to control water pollution, soil erosion, and siltation through the use of best management practices (BMPs) should be used.

The airport will need to comply with current NPDES operations permit requirements. With regard to construction activities, the airport and all applicable contractors will need to obtain and comply with the requirements and procedures of the construction-related NPDES General Permit, including the preparation of a Notice of Intent and a Stormwater Pollution Prevention Plan, prior to the initiation of product construction activities.

SECTION 4(f) LANDS

These include publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or any land from a historic site of national, state, or local significance. The proposed development will not require the use of Section 4(f) lands.

HISTORICAL AND CULTURAL RESOURCES

An online search of the National Register of Historic Places did not identify any historic resources that would be affected by the proposed airport improvements. The relocation of existing roads to the northeast and the construction of parallel taxiways will disturb previously undisturbed land; therefore, coordination with the State Historic Preservation Officer is required to determine potential impacts to cultural resources.

THREATENED OR ENDANGERED SPECIES AND BIOLOGICAL RESOURCES

An online search of the U.S. Fish and Wildlife Service database indicated four threatened and endangered species listed for Sedgwick County. All of these species' critical habitat are found in riparian habitats.

Cowskin Creek is partially located on airport property. In order to determine if any endangered or threatened species exist within the creek or its riparian boundaries, further coordination with the U.S. Fish and Wildlife Service will be required and a biological survey may need to be conducted.

WATERS OF THE U.S. INCLUDING WETLANDS

Cowskin Creek is located on southwest portion of airport property. This creek will be directly affected by the proposed airport development as a bridge will need to be built to allow construction of the parallel taxiway to Runway 1L-19R. A Section 404 permit, issued by the Army Corps of Engineers, will be required prior to any construction. Wetlands may border Cowskin Creek in the southwest sec-

tion of airport property. The U.S. Fish and Wildlife Service or the local or state natural resource agency should be contacted to survey the area for any potential wetlands.

FLOODPLAINS

A 100-year floodplain is located west and northeast of airport property and on southwest portions of airport property. The proposed plan does not include the construction of any buildings in the floodplain.

The proposed plan does include the construction of a parallel taxiway to Runway 1L-19R, which will result in the encroachment of a floodplain. A drainage study may be required prior to construction to ensure floodplain capacity isn't diminished.

WILD AND SCENIC RIVERS

According to the National Park Service's list of Wild and Scenic Rivers, there are no wild or scenic rivers located within the vicinity of the proposed development.

FARMLAND

The *Farmland Protection Policy Act* (FPPA) authorizes the Department of Agriculture to develop criteria for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses. Farmland protected by the FPPA is classified as either unique farmland, prime farmland (which is not already committed to urban development or water storage), or farmland which is of state or local importance (as determined by the appropriate government agency and the Secretary of Agriculture).

Direct impacts to farmland are those which permanently remove the property from even the potential for agriculture production. Direct impacts are primarily considered to occur in those areas not being directly converted, but which would no longer be capable of being farmed because access would be restricted.

According to the Natural Resource Conservation Service (NRCS) the majority of the soil surrounding the airport qualifies as prime or unique farmland under the *Farmland Protection Policy Act* (FPPA); however, this land is already committed to urban development. Therefore, compliance with the FPPA may not be required.

ENERGY SUPPLY AND NATURAL RESOURCES

An increase in energy demand is anticipated as a result of the proposed development; however, this increase is not expected to be large enough to have a dramatic effect on existing energy production facilities or energy resource supplies.

LIGHT EMISSIONS

A variety of lighting aids are available at Wichita Mid-Continent Airport to

facilitate airport identification, approaches, and landings, both at night and during adverse weather conditions. A rotating beacon with a flashing green and white light identifies the location of the airport at night. The airport is also equipped with approach lights and strobe on extended centerline. Implementation of the proposed project would require the installation of additional lighting for the new approach on Runway 19L, the new taxiways, and additional/extended lighting (and relocation of approach lights) for the runway extension project. The impact of the additional lighting is not anticipated to be significant.

SOLID WASTE

Increases in the amount of solid waste generated by the airport are expected as a result of the proposed development and overall growth in the aviation industry. These increases are not expected to place an undue burden on the existing landfill that accepts airport waste.

AIRPORT LAYOUT PLAN DRAWINGS

The remainder of this chapter provides a brief description of the airport layout drawings that will be submitted to the FAA for review and approval. These drawings have been prepared to graphically depict the ultimate airport layout, facility development, safety areas, and imaginary surfaces that extend beyond each runway end. The set includes:

- Cover Sheet
- Airport Layout Drawing
- Airport Layout Drawing Data Tables
- Airspace Drawing (multiple sheets)
- Inner Approach Surface and Runway Profile Drawings (multiple sheets)
- Terminal Area Drawing
- On-Airport Land Use Drawing
- Property Map Drawing

The layout drawings are prepared on a computer-aided drafting system (AutoCAD) to allow easier updating and revisions. The set provides detailed information on existing and future facilities. The drawings will be submitted to the FAA for approval and must reflect any future development under consideration, for potential funding with the Airport Improvement Program (AIP).

AIRPORT LAYOUT DRAWING

The Airport Layout Drawing (ALD) graphically presents the existing and ultimate airport layout. Data tables for runway and building information have been included on a separate drawing sheet. The ALD also depicts runway protection zones, property boundaries, building restriction lines, elevation information, wind information, runway and taxiway details, location of navaid equipment, and several tables to identify object penetra-

tions or modifications to FAA standards. This drawing must be approved by the FAA before individual projects shown on the drawing are approved for construction.

AIRPORT AIRSPACE DRAWINGS

To protect the airspace around the airport and approaches to each runway end from hazards that could affect the safe and efficient operation of aircraft arriving and departing the airport, standards contained in F.A.R. Part 77, *Objects Affecting Navigable Airspace*, have been established for use by local jurisdictions to control the height of objects near the airport. The Airport Airspace Drawings included in the drawing set are a graphical depiction of these regulatory criterions. These drawings will provide the basis for updates to the Wichita-Sedgwick County Airport Hazard Zoning Map, as ordained by the Board of County Commissioners of Sedgwick County on December 13, 1995 (and updated in 1998). The new drawings will be developed in AutoCAD. Drawings contained in the current ordinance were not developed in a digital format.

The Airspace Drawings assign three-dimensional imaginary surfaces to each runway, each approach, and the area immediately around and above the airport. These imaginary surfaces emanate from the runway centerline and are dimensioned according to visibility minimums associated with each runway approach. These surfaces include the primary surfaces, approach surfaces, transitional surfaces, horizontal surface, and conical surface.

The **primary surface** is an imaginary surface centered on the runway and extending 200 feet beyond the end of each runway. It has the same elevation as the runway at any point along the runway. Each of the parallel runways have primary surfaces 1,000 feet wide, while the crosswind runway has a primary surface that is only 500 feet wide.

An **approach surface** is established for each runway. The approach surface begins at the same width as the primary surface, and extends upward and outward for a distance which is based upon the category of the runway approach. For Runways 1L, 19R, 1R, and 19L (each with ILS approaches), the approach surfaces extend 50,000 feet from the edge of the primary surfaces. The approach slope is 50:1 for the first 10,000 feet and 40:1 for the remaining 40,000 feet. Runways 14 and 32 have approach surfaces which extend 10,000 feet from the primary surface at an upward slope of 34:1.

Each runway has a **transitional surface** that begins at the outside edge of the primary surface and approach surfaces. This surface rises at a slope of 7:1 until it intersects with the **horizontal surface** which is established at an elevation 150 feet above the highest runway surface elevation. The outer edges of the horizontal surface connect with the transitional and **conical surfaces** at a distance of 10,000 from the primary surfaces at each runway end. The conical surface begins at the outer edge of the horizontal surface, continuing outward

and upward for 4,000 feet at a slope of 20:1.

INNER APPROACH SURFACE AND RUNWAY PROFILE DRAWINGS

The Inner Approach Surface and Runway Profile Drawings are prepared for each runway approach surface and runway end, with details provided on runway protection zones, runway safety areas, object free areas, and obstacle free zones. It is intended to provide enlarged views and detail of the approaches for evaluation of obstructions or potential obstructions.

TERMINAL AREA DRAWING

The Terminal Area Drawing provides greater detail of the facilities located between the parallel runways; therefore, it functions more accurately as a mid-field facilities drawing. Details on future terminal facilities have not been included, pending conclusion of the terminal planning effort underway by the Airport. However, it has been assumed that additional terminal area will need to be reserved west of the existing terminal building, requiring the removal of the air freight building and hangar (as noted on the drawing).

ON-AIRPORT LAND USE DRAWING

The On-Airport Land Use Drawing is provided in the drawings set to depict future uses of airport property. Much of this information was included on **Exhibit 5A**, which depicts the master plan concept. The land use categories include: passenger terminal facilities, general aviation facilities, air cargo facilities, aviation-related development with airfield access, aviation-related development without airfield access, airfield operations-approach protection-open space, and airport management-airport maintenance. The plan depicts the ultimate use of the airport property, taking into consideration potential runway-taxiway development, building restriction lines, and potential re-development areas (e.g., the radar site south of Runway 14-32). As facilities are proposed on airport property, they will need to be coordinated with the local FAA office.

PROPERTY MAP DRAWING

The Property Map Drawing provides information on the acquisition and identification of all land tracts owned by the Wichita Airport Authority. Tract numbers, property interest, acreage, and project number (if acquired with FAAP, ADAP, AIP, PFC, or Airport Revenues).

SUMMARY

The airport layout drawings are designed to assist the Airport and the FAA in decision-making relative to future development. The plan considers anticipated development needs based upon forecasts developed for a 20-year

planning period, yet provides flexibility should activity not occur exactly as forecast. Areas have been reserved for terminal, general aviation, and air cargo facilities which exceed the expectations of this 20-year plan.

In the following chapter, airport development schedules will be established based upon the operational requirements of the recommended airport concept. Potential funding sources will be identified to provide for an analysis of airport funding requirements.

AIRPORT LAYOUT PLANS
FOR
WICHITA MID-CONTINENT AIRPORT
Wichita, Kansas
Prepared for the

THE CITY OF WICHITA
WICHITA AIRPORT AUTHORITY
THOMAS P. NOLAN, INTERIM DIRECTOR OF AIRPORTS
JOHN M. OSWALD, P.E., DIRECTOR OF AIRPORT ENGINEERING AND PLANNING

CITY OF WICHITA
Wichita Airport Authority

VICINITY MAP

INDEX OF DRAWINGS

LOCATION MAP

April 2005

Coffman Associates
Airport Consultants
www.coffmanassociates.com

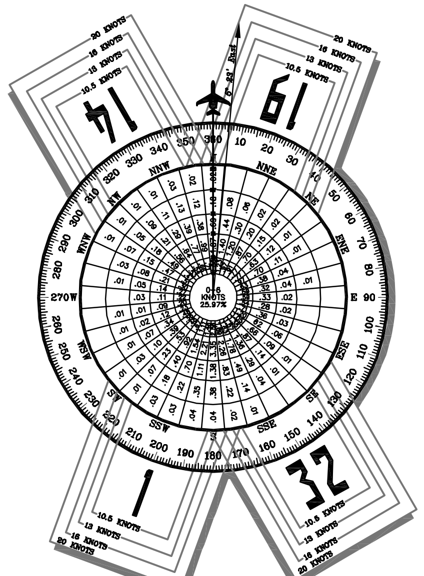
AIP No. 3-20-0088-36P

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 01-19	*89.07%*	*94.33%*	*98.10%*	*99.45%*
Runway 14-32	*85.63%*	*92.39%*	*97.33%*	*99.30%*
Combined	*97.74%*	*99.24%*	*99.81%*	*99.96%*

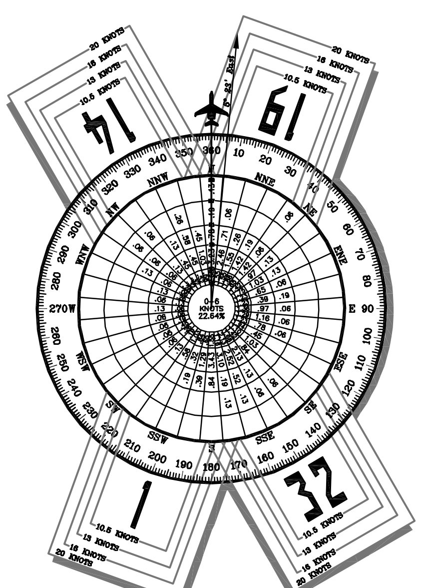
SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Wichita Mid Continent Airport
Wichita, Kansas

OBSERVATIONS:
84,241 All Weather
1990-1999



IFR WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 01-19	*89.09%*	*94.85%*	*98.79%*	*99.68%*
Runway 14-32	*87.65%*	*94.32%*	*98.81%*	*99.77%*
Combined	*96.82%*	*99.02%*	*99.75%*	*99.94%*



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Wichita Mid Continent Airport
Wichita, Kansas

OBSERVATIONS:
1,546 IFR Observations
1990-1999

Magnetic Declination
5° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

NORTH

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surface, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES DRAWING, sheets 6, 7 and 8 of these plans.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWING, sheets 9, 10, 11, 12, 13 and 14 of these plans.
5. The base map used on this drawing is a composite of USGS Mapping developed in 1959 and photorevised 1970-1982. Overlay mapping developed in 2004 by the City of Wichita, Ks and Sedgwick County, Ks for Geographic Information Systems (GIS).
6. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART.
http://www.ngs.noaa.gov/AERO/ads/0987_03.pdf
ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT__99B.F77

EXISTING BUILDINGS/FACILITIES

	DESCRIPTION	Elev.
1	ADMINISTRATION BUILDING (WICHITA AIRPORT AUTHORITY)	1352 MSL
2	SAFETY BUILDING (ARFF)	1372 MSL
3	CONVENTIONAL HANGAR (HANGAR 20)	1379 MSL
4	AIR FREIGHT BUILDING	1386 MSL
5	AIRLINE MAINTENANCE BUILDING	1386 MSL
6	AIR CARRIER PASSENGER TERMINAL	1371 MSL
7	AIR TRAFFIC CONTROL TOWER (FAA)	1448 MSL
8	OFFICE BUILDING (RAYTHEON AIRCRAFT)	1333 MSL
9	CONVENTIONAL HANGAR	1333 MSL
10	OFFICE BUILDING	1340 MSL
11	OFFICE BLDG. (INTERNATIONAL FLYING FARMERS)	1340 MSL
12	UTILITY BUILDING (WATER SUPPLY)	1333 MSL
13	FUEL STATION/UNDERGROUND BULK FUEL STORAGE	1354 MSL
14	T-HANGAR NO. 4	1354 MSL
15	CONVENTIONAL HANGAR (HANGAR 1/YINGLING AVIATION)	1354 MSL
16	OFFICE BLDG. (YINGLING AIRCRAFT)	1354 MSL
17	CONVENTIONAL HANGAR (HANGAR 2/RAYTHEON NORTH)	1354 MSL
18	CONVENTIONAL HANGAR (HANGAR 3/RAYTHEON NORTH)	1354 MSL
19	T-HANGAR NO. 11 (TO BE REMOVED)	1335 MSL
20	T-HANGAR NO. 12 (TO BE REMOVED)	1335 MSL
21	T-HANGAR NO. 14 (TO BE REMOVED)	1335 MSL
22	T-HANGAR NO. 15 (TO BE REMOVED)	1335 MSL
23	CONVENTIONAL HANGAR (YINGLING AVIATION)	1354 MSL
24	CONVENTIONAL HANGAR (HANGAR 10)	1354 MSL
25	CONVENTIONAL HANGAR (HANGAR 27/KOCH INDUSTRIES)	1354 MSL
26	CONVENTIONAL HANGAR	1354 MSL
27	CONVENTIONAL HANGAR (HANGAR 16/YINGLING AVIATION)	1354 MSL
28	CONVENTIONAL HANGAR (HANGAR 17/EXECUTIVE AIRCRAFT)	1354 MSL
29	CONVENTIONAL HANGAR (HANGAR 19/EXECUTIVE AIRCRAFT)	1354 MSL
30	CONVENTIONAL HANGAR	1354 MSL
31	CONVENTIONAL HANGAR	1354 MSL
32	T-HANGAR 25	1335 MSL
33	T-HANGAR 23	1335 MSL
34	T-HANGAR 21	1335 MSL
35	T-HANGAR 26	1335 MSL
36	T-HANGAR 24	1335 MSL
37	T-HANGAR 22	1335 MSL
38	OFFICE WAREHOUSE (U.S. POST OFFICE, NO. 41)	1353 MSL
39	OFFICE BLDG. (AUTOMATED FLIGHT SERVICE STATION)	1330 MSL
40	OFFICE BLDG. (FAA-FLIGHT STANDARDS DISTRICT OFFICE)	1330 MSL
41	OFFICE BLDG. (CESSNA FLIGHT SAFETY)	1352 MSL
42	OFFICE BLDG. (FLIGHT SAFETY INTERNATIONAL)	1330 MSL
43	OFFICE BLDG. (THE GUERNSEY CO. FAA)	1330 MSL
44	OFFICE BLDG. (COLLINS AVIONICS)	1330 MSL
45	OFFICE BLDG. (FLIGHT SAFETY)	1330 MSL
46	OFFICE BLDG. (AMERICAN BONANZA SOCIETY)	1330 MSL
47	OFFICE BLDG. (AVIS)	1343 MSL
48	OFFICE BLDG. (HERTZ)	1347 MSL
49	OFFICE BLDG. (BUDGET)	1347 MSL
50	OFFICE BLDG. (BENDIX)	1330 MSL
51	OFFICE BLDG. (PRATT & WHITNEY AIRCRAFT)	1330 MSL
52	OFFICE BLDG. (ROLLINS HUDIG HALL)	1330 MSL
53	HOTEL (HILTON)	1396 MSL
54	CARGO BUILDING	1386 MSL
55	OFFICE BUILDING (LEARJET/FLIGHT SAFETY INTERNATIONAL)	1353 MSL
56	AVIATION EDUCATION CENTER	1330 MSL
57	AVIATION EDUCATION CENTER	1330 MSL
58	U.S. WEATHER BUREAU	1346 MSL
59	VACANT OFFICE	1346 MSL
60	MAINTENANCE BLDG. 2	1328 MSL
61	MAINTENANCE BLDG. 3	1328 MSL
62	MAINTENANCE BLDG. 1	1328 MSL
63	EXISTING AIRPORT BEACON	1386 MSL
64	OFFICE BUILDING	–
65	CESSNA CITATION SERVICE STATION	–
66	ENGINE RUN UP APRON	–
67	ENGINE RUN UP PAD	–

GENERAL NOTES:

7. Wichita Mid-Continent Airport Layout Drawings reflect Horizontal Datum (NAD-83), USGS Maps Vertical Datum (NGVD-29), and Runway Elevations (NAVD-88).
8. Survey Monument locations per National Geodetic Survey Data Sheet, http:www.ngs.noaa.gov/cgi-bin/ds_radius.prl.
9. Building elevations information was provided by the Wichita Airport Authority in March 2005.

BUILDINGS/FACILITIES

	DESCRIPTION (Bombardier/Learjet)	Elevation
68	CUSTOMER SERVICE (7)	1363 MSL
69	PRODUCTION FLIGHT (7A)	1363 MSL
70	FUEL FARM	–
71	PAINT FACILITY (14)	1377 MSL
72	FLIGHT SAFETY INTERNATIONAL LEARJET	1363 MSL
73	CORPORATE BUSINESS SERVICE (8)	–
74	FLIGHT TEST (6G)	–
75	FLIGHT TEST (6F)	–
76	RESEARCH & DEVELOPMENT (6)	–
77	MAINTENANCE BUILDINGS (A4, A5, A6, A7)	–
78	MANUFACTURING BLDG. (1, 2, 3, 4, 4a, 5, 5a, 5b, 5c, 5d, 5e.)	–
79	FACILITY (A10)	–
80	FACILITY (A8, A8a)	–
81	FACILITY (15)	–
82	MIDLAND SUBASSEMBLY (9)	–
83	VEHICLE MAINTENANCE (10)	–
84	AG-BUILDING WAREHOUSE/TOOLING (11)	–
85	CHEMICAL STORAGE (12)	–

	DESCRIPTION (Cessna)	
W1	ENGINEERING	–
W2	EXPERIMENTAL	–
W3	FLIGHT HANGAR	–
W4	POWER PLANT	–
W5	PRODUCTION FLIGHT TEST	–
W6	PUMP HOUSE	–
W7	MFG FACTORY	–
W8	PAINT BUILDING	–
W9	HUMAN RESOURCES	–
W13	HANGAR	–
W15	HANGAR SAND & FILL	–
W17	STORAGE	–
W18	FUEL PIT BUILDING	–
W19	PAINT PREP FACILITY	–
W20	HAZ. WASTE BUILDING	–
W21	MAINTENANCE BUILDING	–
C1	DIVISION HEADQUARTERS	1342 MSL
C2	MARKETING & DELIVERY	1341 MSL
C3	AIRCRAFT COMPLETION	1343 MSL
C4	BOILER HOUSE	1328 MSL
C5	CITATION SERVICE CENTER	1347 MSL
C6	ACC INT. BUILDING	1357 MSL
C7	ACC DEPAINTING BUILDING	1344 MSL
C12	ACC FLIGHT BUILDING	1348 MSL
C13	ATD HANGAR	1344 MSL
C14	TRAINING & PROPJET MARKETING	1340 MSL
C16	ACC FLIGHT BUILDING	1341 MSL

ULTIMATE BUILDINGS/FACILITIES

	DESCRIPTION
93	FUTURE MAINTENANCE BUILDING
94	FUTURE ENGINE RUN-UP PAD
95	FUTURE PARKING GARAGE
96	FUTURE AIR CARRIER PASSENGER TERMINAL
97	AIR CARGO BUILDING LOT (TEMP. SHUTTLE PARKING)
98	FUTURE AIR CARGO BUILDING
99	FUTURE VIEWING AREA

RUNWAY END COORDINATES (NAD 83)

Datum Horz. NAD-83/ Vert. NAVD-88		EXISTING	ULTIMATE
Runway 1L – EL. 1312.6	Latitude	37° 38' 06.0674" N	*SAME*
	Longitude	97° 26' 45.5905" W	*SAME*
Runway 19R – EL. 1329.7	Latitude	37° 39' 41.7630" N	*SAME*
	Longitude	97° 26' 01.7928" W	*SAME*
Runway 1R – EL. 1320.9 Ult. Runway 1R – EL. 1321.0	Latitude	37° 38' 33.9452" N	*37° 38' 20.939" N*
	Longitude	97° 25' 34.6273" W	*97° 25' 40.582" W*
Runway 19L – EL. 1319.8	Latitude	37° 39' 41.7681" N	*SAME*
	Longitude	97° 25' 03.5639" W	*SAME*
Runway 14 – EL. 1332.1	Latitude	37° 39' 27.1616" N	*SAME*
	Longitude	97° 26' 24.2724" W	*SAME*
Runway 32 – EL. 1321.6	Latitude	37° 38' 33.2158" N	*SAME*
	Longitude	97° 25' 45.1013" W	*SAME*

AIRPORT DATA

OWNER: THE CITY OF WICHITA		AIRPORT NPIAS CODE: Reliever	
CITY: Wichita, Kansas		COUNTY: Sedgwick County	
RANGE: 1 West TOWNSHIP: 27 S/28 S			
WICHITA MID-CONTINENT (ICT)		EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL		Commercial Service	Commercial Service
AIRPORT REFERENCE CODE		D-IV	D-IV
DESIGN AIRCRAFT		B757-200/Business Jets	A-310/Business Jets
AIRPORT ELEVATION		1332.5 MSL	1332.5 MSL
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		93° F	93° F
AIRPORT REFERENCE POINT (NAD 83)	Latitude	37° 38' 59.8" N	37° 38' 58.037" N
	Longitude	97° 25' 59.0" W	97° 25' 57.772" W
AIRPORT INSTRUMENT APPROACH GPS APPROACH		ILS Cat-I (1L, 19R) ILS Cat-I (1R, 19L) ILS Cat-II (1L) RNAV GPS (1R, 19R) RNAV GPS (14, 32) RNAV GPS Z (1L, 19L) RNAV GPS Y (1L, 19L) LOC-BC (19L) VOR/DME RNAV (1L, 19R) VOR (14) NDB (1R)	ILS CAT-I (1L-19R) ILS CAT-I (1R-19L) ILS CAT-II (1L) RNAV GPS (1R, 19R) RNAV GPS (14, 32) RNAV GPS Z (1L, 19L) RNAV GPS Y (1L, 19L) LOC-BC (19L) VOR/DME RNAV (1L, 19R) VOR (14) NDB (1R)
AIRPORT and TERMINAL NAVIGATIONAL AIDS		ROTATING BEACON ATCT	ROTATING BEACON ATCT
GPS AT AIRPORT		YES	YES

RUNWAY DATA

RUNWAY DATA	RUNWAY 1L-19R EXISTING	RUNWAY 1L-19R ULTIMATE	RUNWAY 1R-19L EXISTING	RUNWAY 1R-19L ULTIMATE	RUNWAY 14-32 EXISTING	RUNWAY 14-32 ULTIMATE
RUNWAY CATEGORY	Transport	Transport	Transport	Transport	Transport	Transport
AIRCRAFT APPROACH CATEGORY-DESIGN GROUP	D-IV	D-IV	D-IV	D-IV	D-IV	D-IV
FAR PART-77 APPROACH SURFACES	1000' x 50,000' x 16,000' 1000' x 50,000' x 16,000'	1000' x 50,000' x 16,000' 1000' x 50,000' x 16,000'	1000' x 50,000' x 16,000' 1000' x 50,000' x 16,000'	1000' x 50,000' x 16,000' 1000' x 50,000' x 16,000'	1000' x 10,000' x 3,500' 1000' x 10,000' x 3,500'	1000' x 10,000' x 3,500' 1000' x 10,000' x 3,500'
RUNWAY WIND COVERAGE	99.45% (20 KNOTS)	99.45% (20 KNOTS)	99.45% (20 KNOTS)	99.45% (20 KNOTS)	99.30% (20 KNOTS)	99.30% (20 KNOTS)
RUNWAY INSTRUMENTATION	Precision/Precision	Precision/Precision	Precision/Precision	Precision/Precision	Nonprecision/Nonprecision	Nonprecision/Nonprecision
RUNWAY DIMENSIONS	10,301' x 150'	10,301' x 150'	7,301' x 150'	8,701' x 150'	6,301' x 150'	6,301' x 150'
RUNWAY GEODETIC AZIMUTH (Clockwise from North)	20.00°/200.0°	20.00°/200.0°	20.01°/200.02°	20.01°/200.02°	150.00°/330.00°	150.00°/330.00°
RUNWAY BEARING (True Bearing)	N 20° 0' 0.0" E	N 20° 0' 0.0" E	N 20° 0' 21.6" E	N 20° 0' 21.6" E	N 30° 0' 0.0" W	N 30° 0' 0.0" W
RUNWAY LIGHTING	HIRL, CL	HIRL, CL	HIRL	HIRL	HIRL	HIRL
RUNWAY SAFETY AREA (RSA)	12,301' x 500'	12,301' x 500'	9,301' x 500'	10,601' x 500'	8,301' x 500'	8,301' x 500'
RUNWAY OBSTACLE FREE ZONE (OFZ)	10,701' x 400'	10,701' x 400'	7,701' x 400'	9,101' x 400'	6,701' x 400'	6,701' x 400'
RUNWAY OBJECT FREE AREA (OFA)	12,301' x 800'	12,301' x 800'	9,301' x 800'	10,701' x 800'	8,301' x 800'	8,301' x 800'
RUNWAY EFFECTIVE GRADIENT	0.2%	0.2%	0.0%	0.0%	0.2%	0.2%
RUNWAY MAXIMUM ELEVATION Above MSL	1329.7 MSL	1329.7 MSL	1320.9 MSL	1321.0 MSL	1332.5 MSL	1332.5 MSL
RUNWAY PAVEMENT MATERIAL	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete
RUNWAY PAVEMENT SURFACE TREATMENT	Grooved	Grooved	Grooved	Grooved	Grooved	Grooved
RUNWAY PAVEMENT STRENGTH (in thousand lbs.)[1]	100(S), 210(D), 300(DT)	100(S), 210(D), 300(DT)	125(S), 240(D), 400(DT)	125(S), 240(D), 400(DT)	100(S), 190(D), 280(DT)	100(S), 190(D), 280(DT)
RUNWAY PROTECTION ZONE	1000' x 2500' x 1750' (1) 1000' x 2500' x 1750' (19)	1000' x 2500' x 1750' (1) 1000' x 2500' x 1750' (19)	1000' x 2500' x 1750' (1) 1000' x 2500' x 1750' (19)	1000' x 2500' x 1750' (1) 1000' x 2500' x 1750' (19)	500' x 1700' x 1010' (14) 500' x 1700' x 1010' (32)	500' x 1700' x 1010' (14) 500' x 1700' x 1010' (32)
PRECISION OBSTACLE FREE ZONE (800' x 200')	POFZ (1L-19R)	POFZ (1L-19R)	POFZ (1L-19R)	POFZ (1L-19R)	N/A	N/A
TAXIWAY WIDTH	75'	75'	75'	75'	75'	75'
TAXIWAY LIGHTING	MITL, Reflectors	MITL, Reflectors	MITL, Reflectors	MITL, Reflectors	MITL, Reflectors	MITL, Reflectors
TAXIWAY MARKING	Centerline, Signage	Centerline, Signage	Centerline, Signage	Centerline, Signage	Centerline, Signage	Centerline, Signage
TAXIWAY SURFACE MATERIAL	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
TAXIWAY SAFETY AREA WIDTH	171'	171'	171'	171'	171'	171'
TAXIWAY OBJECT FREE AREA WIDTH	259'	259'	259'	259'	259'	259'
TAXIWAY HOLDING POSITION MARKING/HOLDSIGN	263'	263'	263'	263'	263'	263'

RUNWAY END DATA	Existing 1L	Existing 19R	Ultimate 1L	Ultimate 19R	Existing 1R	Existing 19L	Ultimate 1R	Ultimate 19L	Existing 14	Existing 32	Ultimate 14	Ultimate 32
RUNWAY THRESHOLD DISPLACEMENT	None	None	None	None	None	None	None	None	None	None	None	None
RUNWAY DISPLACED THRESHOLD ELEVATION	None	None	None	None	None	None	None	None	None	None	None	None
RUNWAY END ELEVATION	1312.6 MSL	1329.7 MSL	1312.6 MSL	1329.7 MSL	1320.9 MSL	1319.8 MSL	1321.0 MSL	1319.8 MSL	1332.1 MSL	1321.6 MSL	1332.1 MSL	1321.6 MSL
RUNWAY TOUCHDOWN ZONE ELEVATION	1314.2 MSL	1329.7 MSL	1314.2 MSL	1329.7 MSL	1320.9 MSL	1319.9 MSL	1321.0 MSL	1319.9 MSL	1332.5 MSL	1321.7 MSL	1332.5 MSL	1321.7 MSL
RUNWAY APPROACH VISIBILITY MINIMUMS	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile	1 Mile	1 Mile	1 Mile	1 Mile
F.A.R. PART-77 CATEGORY	Precision	Precision	Precision	Precision	Precision	Precision	Precision	Precision	Nonprecision	Nonprecision	Nonprecision	Nonprecision
F.A.R. PART-77 APPROACH SLOPE	50:1/40:1	50:1/40:1	50:1/40:1	50:1/40:1	50:1/40:1	50:1/40:1	50:1/40:1	50:1/40:1	34:1	34:1	34:1	34:1
THRESHOLD SITING REQUIREMENTS (Appendix 2)	Par 5h	Par 5h	Par 5i	Par 5h	Par 5h	Par 5h	Par 5h	Par 5h	Par 5f	Par 5f	Par 5f	Par 5f
RUNWAY SAFETY AREA (Beyond Runway End)	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'
OBJECT FREE AREA (Beyond Runway End)	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'
OBSTACLE FREE ZONE (Beyond Runway End)	200'	200'	200'	200'	200'	200'	200'	200'	200'	200'	200'	200'
RUNWAY MARKING	Precision	Precision	Precision	Precision	Precision	Precision	Precision	Precision	Nonprecision	Nonprecision	Nonprecision	Nonprecision
RUNWAY APPROACH LIGHTING	ALSF-2	MALSR	ALSF-2	MALSR	MALSR	MALSR	MALSR	MALSR	None	None	None	None
TAKEOFF RUN AVAILABLE (TORA)	10,301'	10,301'	10,301'	10,301'	7301'	7301'	8701'	8701'	6301'	6301'	6301'	6301'
TAKEOFF DISTANCE AVAILABLE (TODA)	10,301'	10,301'	10,301'	10,301'	7301'	7301'	8701'	8701'	6301'	6301'	6301'	6301'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	10,301'	10,301'	10,301'	10,301'	7301'	7301'	8701'	8701'	6301'	6301'	6301'	6301'
LANDING DISTANCE AVAILABLE (LDA)	10,301'	10,301'	10,301'	10,301'	7301'	7301'	8701'	8701'	6301'	6301'	6301'	6301'
ELECTRONIC NAVIGATIONAL AIDS	CAT-I CAT-II RNAV (GPS) VOR/DME	CAT-I RNAV (GPS) VOR/DME	CAT-I CAT-II RNAV (GPS) VOR/DME	CAT-I RNAV (GPS) VOR/DME	CAT-I RNAV (GPS) NDB	CAT-I RNAV (GPS) LOC BC	CAT-I RNAV (GPS) NDB	CAT-I RNAV (GPS) NDB LOC BC	RNAV (GPS) VOR	RNAV (GPS)	RNAV (GPS) VOR	RNAV (GPS)
RUNWAY VISUAL NAVIGATIONAL AIDS	ALSF-2 C/L TDZL	MALSR C/L	ALSF-2 C/L TDZL	MALSR C/L	MALSR	MALSR PAPI-4 REIL	PAPI-4	MALSR PAPI-4 REIL	PAPI-4 REIL	PAPI-4 REIL	PAPI-4 REIL	PAPI-4 REIL

[1] Pavement strengths are expressed in Single (S), Dual (D), Dual Tandem (DT), and/or Double Dual Tandem (DDT) wheel loading capacities.
[2] C/L Mean Centerline Lights and TDZL Mean Touch Down Zone Lights..

MODIFICATION TO AIRPORT DESIGN STANDARDS TABLE

DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	AIRSPACE CASE NUMBER	APPROVAL DATE	PROPOSED DISPOSITION
TAXILANE OFA	*LEARJET COMPASS ROSE*	*2004-ACE-540-NRA*	*2004*	*No Action*
–	–	–	–	–
–	–	–	–	–
–	–	–	–	–

APPROVED BY: ______ DATE ______
THOMAS P. NOLAN, INTERIM DIRECTOR OF AIRPORTS

APPROVED BY: ______ DATE ______
JOHN M. OSWALD, P.E., DIRECTOR OF AIRPORT ENGINEERING AND PLANNING

No.	REVISIONS	DATE	BY	APP'D.

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

CITY OF WICHITA
Wichita Airport Authority

WICHITA MID-CONTINENT AIRPORT
AIRPORT DATA
Wichita, Kansas

PLANNED BY: Stephen C. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

Coffman Associates
Airport Consultants
www.coffmanassociates.com

April 12, 2005 SHEET 1 OF 17

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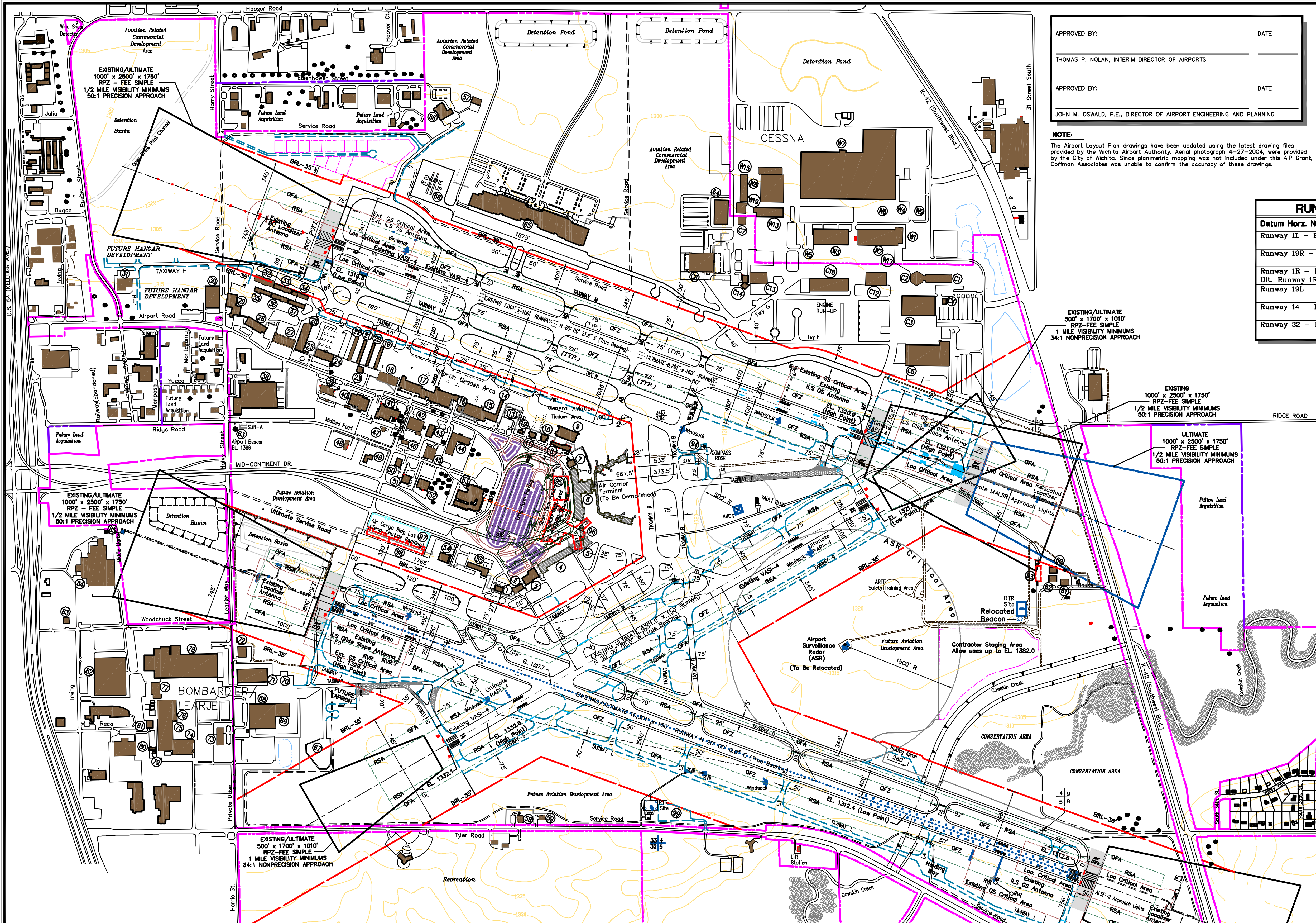

APPROVED BY:	DATE
THOMAS P. NOLAN, INTERIM DIRECTOR OF AIRPORTS	
APPROVED BY:	DATE
JOHN M. OSWALD, P.E., DIRECTOR OF AIRPORT ENGINEERING AND PLANNING	

NOTE:

The Airport Layout Plan drawings have been updated using the latest drawing files provided by the Wichita Airport Authority. Aerial photograph 4-27-2004, were provided by the City of Wichita. Since planimetric mapping was not included under this AIP Grant, Coffman Associates was unable to confirm the accuracy of these drawings.

LEGEND

EXISTING	ULTIMATE	
N/A		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
N/A		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
N/A		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
BRL		BUILDING RESTRICTION LINE (BRL)
	N/A	DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
1080	N/A	TOPOGRAPHY (source)
		WIND INDICATOR (Lighted)
		HOLDING POSITION MARKING
		SURVEY MONUMENT

RUNWAY END COORDINATES (NAD 83)

Datum Horz. NAD-83/ Vert. NAVD-88		EXISTING	ULTIMATE
Runway 1L – EL. 1312.6	Latitude	37° 38' 06.0674" N	SAME
	Longitude	97° 26' 45.5905" W	SAME
Runway 19R – EL. 1329.7	Latitude	37° 39' 41.7630" N	SAME
	Longitude	97° 26' 01.7928" W	SAME
Runway 1R – EL. 1320.9	Latitude	37° 38' 33.9452" N	37° 38' 20.939" N
Ult. Runway 1R – EL. 1321.0	Longitude	97° 25' 34.6273" W	97° 25' 40.582" W
Runway 19L – EL. 1319.8	Latitude	37° 39' 41.7681" N	SAME
	Longitude	97° 25' 03.5639" W	SAME
Runway 14 – EL. 1332.1	Latitude	37° 39' 27.1616" N	SAME
	Longitude	97° 26' 24.2724" W	SAME
Runway 32 – EL. 1321.6	Latitude	37° 38' 33.2158" N	SAME
	Longitude	97° 25' 45.1013" W	SAME

GENERAL NOTES:

1. Depiction of features and objects, including related elevations and clearances, within the runway protection zones are depicted on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWINGS.
2. Details concerning terminal improvements are depicted on the TERMINAL AREA DRAWING.
3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE DRAWING.
4. Wichita Mid-Continent Airport Layout Drawings reflect Horizontal Datum (NAD-83), USGS Maps Vertical Datum (NGVD-29), and Runway Elevations (NAVD-88). http://avnwww.jccbi.gov/datasheet/.
5. Survey Monument locations per National Geodetic Survey Data Sheet, http:www.ngs.noaa.gov/cgi-bin/ds_radius.prl.
6. No THRESHOLD SITING SURFACE (TSS) Object Penetrations.
7. No OBSTACLE FREE ZONE (OFZ) Object Penetrations.

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

AIRPORT LAYOUT DRAWING

Wichita, Kansas

PLANNED BY: Stephen C. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005

Coffman Associates Airport Consultants www.coffmanassociates.com

Coffman Associates-LDJ lot_sh10-1-2-cw-data-alp.dwg Tuesday April 12 2005

OBSTRUCTION TABLE

	Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1	ANT ON RTR TWR	1397 MSL	TRANSITIONAL SURFACE	1391 MSL	6'	NO ACTION
2	TREE	1324 MSL	TRANSITIONAL SURFACE	1322 MSL	2'	REMOVE
3	TREE	1366 MSL	TRANSITIONAL SURFACE	1354 MSL	12'	REMOVE
4	TREE	1348 MSL	TRANSITIONAL SURFACE	1337 MSL	11'	REMOVE
5	TREE	1347 MSL	TRANSITIONAL SURFACE	1344 MSL	3'	REMOVE
6	TREE	1365 MSL	TRANSITIONAL SURFACE	1361 MSL	4'	REMOVE
7	ROD ON OL TOWER	1490 MSL	HORIZONTAL SURFACE	1482 MSL	8'	NO ACTION
8	AMOM ON EQUIPMENT	1329 MSL	TRANSITIONAL SURFACE	1319 MSL	10'	NO ACTION
9	ROD ON OL GLIDESLOPE	1360 MSL	TRANSITIONAL SURFACE	1312 MSL	48'	NO ACTION
10	ROD ON OL GLIDESLOPE	1374 MSL	TRANSITIONAL SURFACE	1329 MSL	45'	NO ACTION
11	AMOM ON EQUIPMENT	1338 MSL	TRANSITIONAL SURFACE	1322 MSL	16'	NO ACTION
12	ROD ON OL GLIDESLOPE	1354 MSL	TRANSITIONAL SURFACE	1320 MSL	34'	NO ACTION

Magnetic Declination
5° 25' East (May 2003)
Annual Rate of Change
6.53' West (May 2003)

0 2000 4000 6000
SCALE IN FEET

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surface, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES DRAWING, sheets 6, 7 and 8 of these plans.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWING, sheets 9, 10, 11, 12, 13 and 14 of these plans.
5. Airport Datum is NAD–83 AND NAVD–88, USGS MAPS NAD–27.
6. The base map used on this drawing is a composite of USGS Mapping developed in 1959 and photorevised 1970–1982. Overlay mapping developed in 2004 by the City of Wichita, Ks and Sedgwick County, Ks for Geographic Information Systems (GIS).
7. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ods/0987_03.pdf ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT___99B.F77

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WICHITA MID-CONTINENT AIRPORT

AIRPORT AIRSPACE DRAWING
CONICAL SURFACE

Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005 | SHEET 3 OF 17

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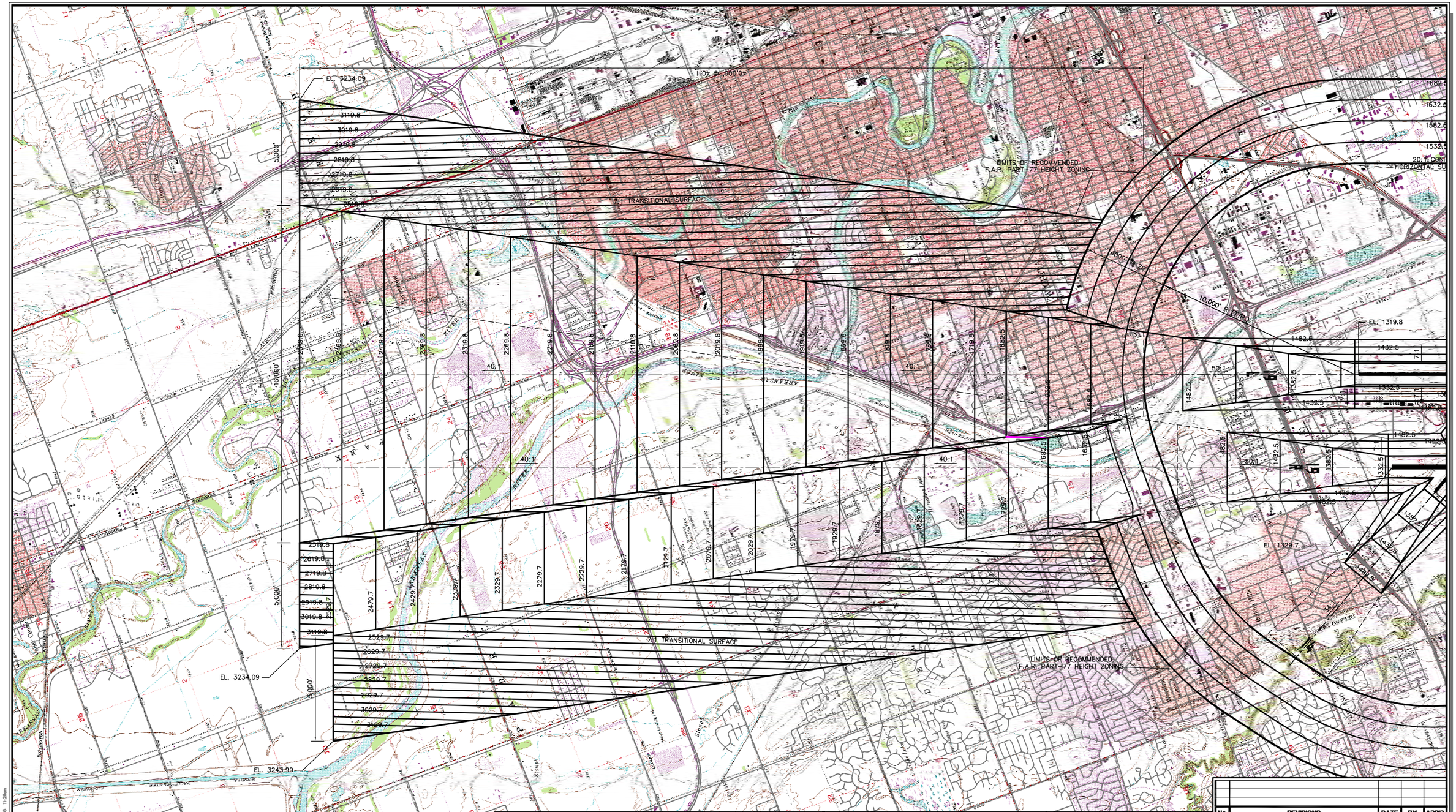

RUNWAY 19L OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	RUNWAY 19L OUTER APPROACH FAN	–	–	–

RUNWAY 19R OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	RUNWAY 19R OUTER APPROACH FAN	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from an ultimate runway end elevations and ultimate approach surface, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES DRAWING, sheets 6, 7 and 8 of these plans.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWING, sheets 9, 10, 11, 12, 13 and 14 of these plans.
5. Airport Datum in NAD-83 AND NAVD-88, USGS MAPS NAD-27.
6. The base map used on this drawing is a composite of USGS Mapping developed in 1959 and photorevised 1970-1982. Overlay mapping developed in 2004 by the City of Wichita, Ks and Sedgwick County, Ks for Geographic Information Systems (GIS).
7. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ads/0987_03.pdf ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT__99B.F77

Magnetic Declination 6° 23' East (May 2003) Annual Rate of Change 6.99' West (May 2003)

0 2000 4000 6000

SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

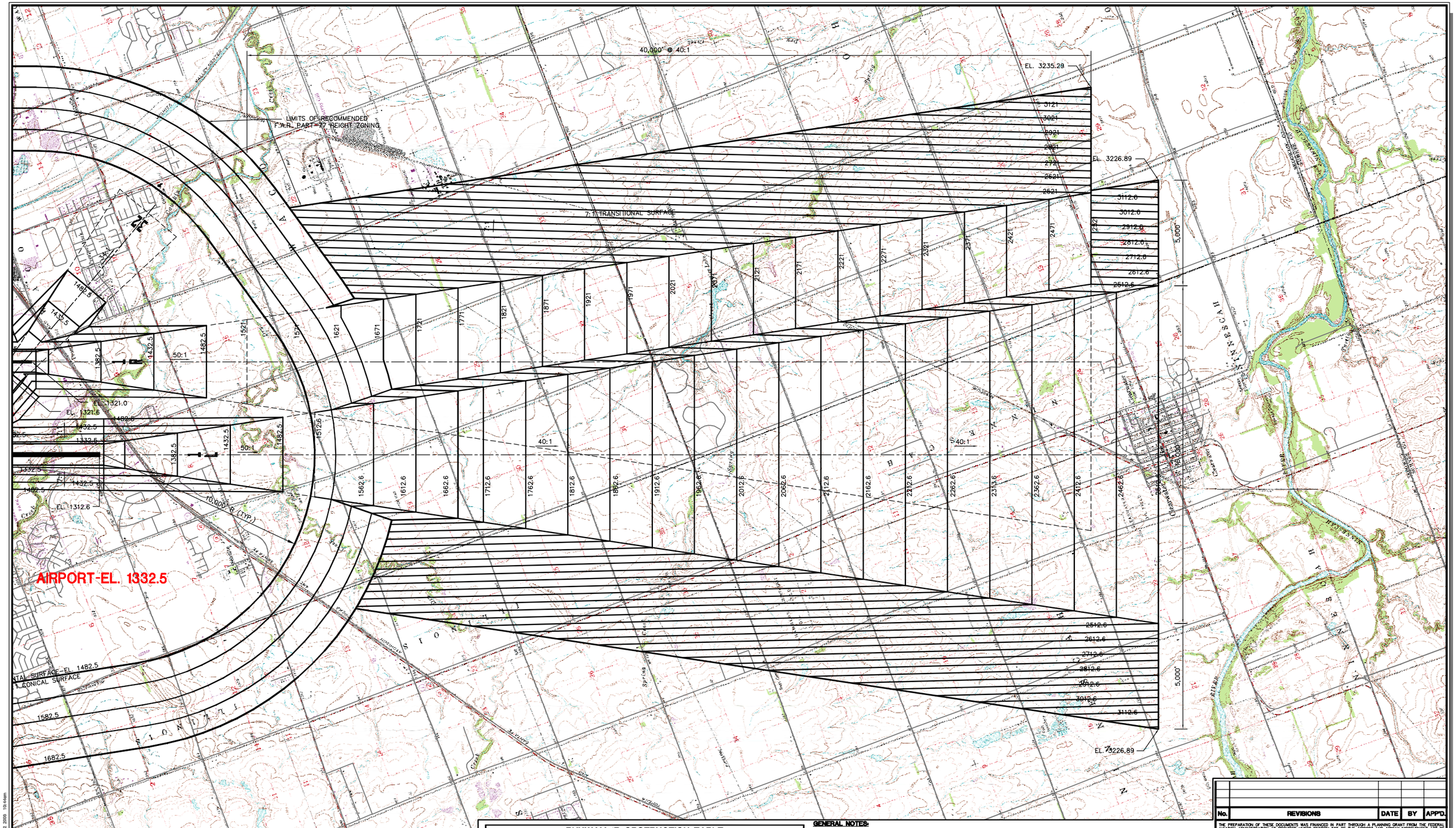
AIRPORT AIRSPACE DRAWING 19L-19R APPROACH FANS

Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanelle V. Coffman
April 12, 2005

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Coffman Associates - LDJ ICT_AirVol-Part77.dwg Thursday, March 31, 2005 11:28am



RUNWAY 1R OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	*RUNWAY 1R OUTER APPROACH FAN*	–	–	–

RUNWAY 1L OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	*RUNWAY 1L OUTER APPROACH FAN*	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surface, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES DRAWING, sheets 6, 7 and 8 of these plans.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWING, sheets 9, 10, 11, 12, 13 and 14 of these plans.
5. Airport Datum in NAD-83 AND NAVD-88, USGS MAPS NAD-27.
6. The base map used on this drawing is a composite of USGS Mapping developed in 1959 and photorevised 1970-1982. Overlay mapping developed in 2004 by the City of Wichita, Ks and Sedgwick County, Ks for Geographic Information Systems (GIS).
7. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ods/0987_03.pdf ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT___99B.F77

Magnetic Declination 5° 23' East (May 2003) Annual Rate of Change 6.93' West (May 2003)

ROSE-I-

0 2000 4000 6000

SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

WICHITA MID-CONTINENT AIRPORT

AIRPORT AIRSPACE DRAWING 1R-1L APPROACH FANS

Wichita, Kansas

City of Wichita, Wichita Airport Authority

PLANNED BY: *Stephen E. Wagner*

DETAILED BY: *Larry D. Johnson*

APPROVED BY: *Jeanette V. Coffman*

April 12, 2005

SHEET 5 OF 17

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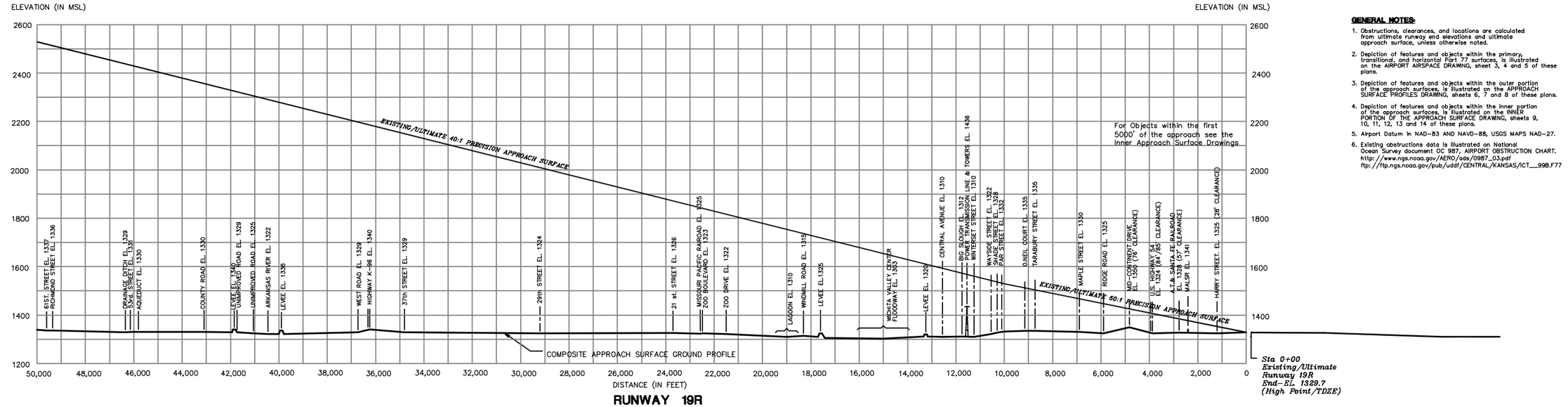
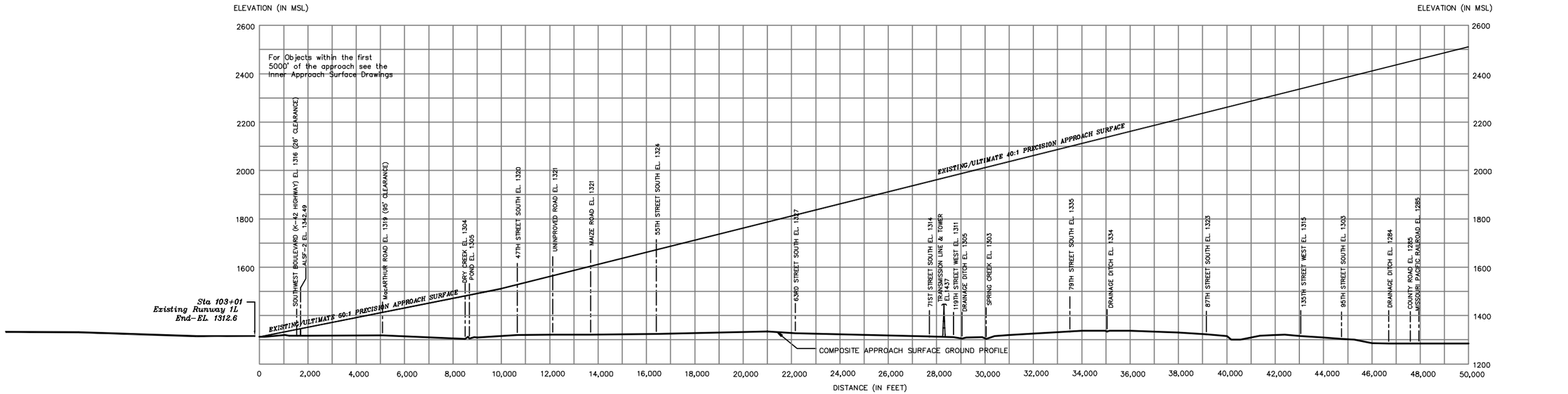
Coffman Associates--LSJ ICT_ah1D-Part77.dwg Tuesday, April 12, 2005 10:44am



RUNWAY 19R



RUNWAY 1L

GENERAL NOTES:

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2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
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5. Airport Datum is NAD-83 AND NAVD-88, USGS MAPS NAD-27.
6. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ods/0987_03.pdf ftp://ftp.ngs.noaa.gov/pub/udat/CENTRAL/KANSAS/ICT___99B.F77

RUNWAY 19R OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 34:1 Slope	Proposed Object Disposition
– None	–	–	–	–	–	–

RUNWAY 1L OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 34:1 Slope	Proposed Object Disposition
– None	–	–	–	–	–	–

0 2000 4000 6000
HORIZONTAL SCALE IN FEET

0 200 400 600
VERTICAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

RUNWAY 1L-19R APPROACH SURFACE PROFILES

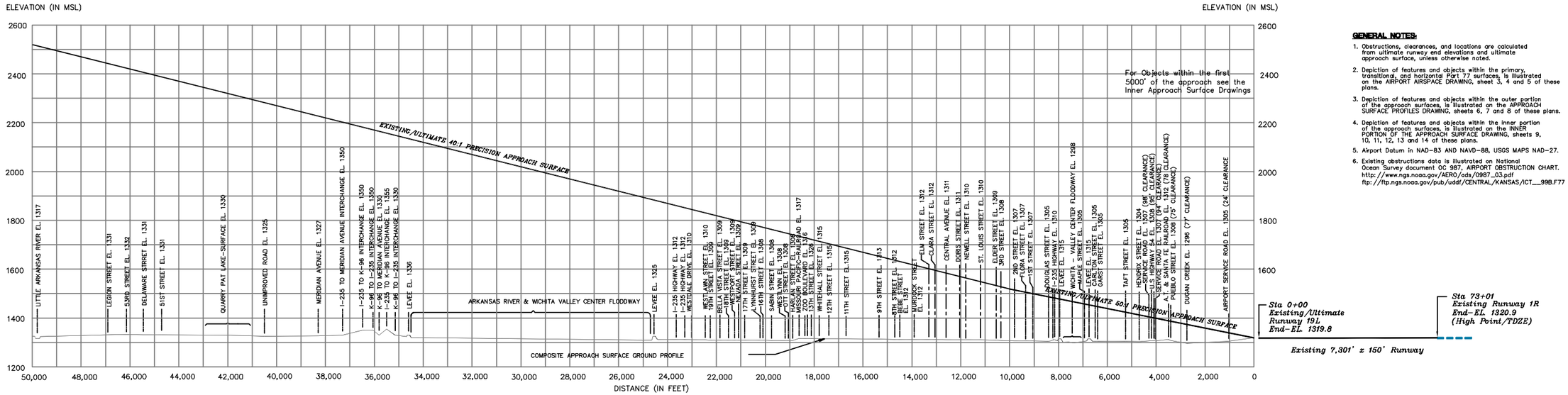
Wichita, Kansas

PLANNED BY: Stephen K. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005 SHEET 6 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Coffman Associates—LSJ ICT_ALP—9-Part77.dwg Tuesday, April 12, 2005 11:01:6am



RUNWAY 19L

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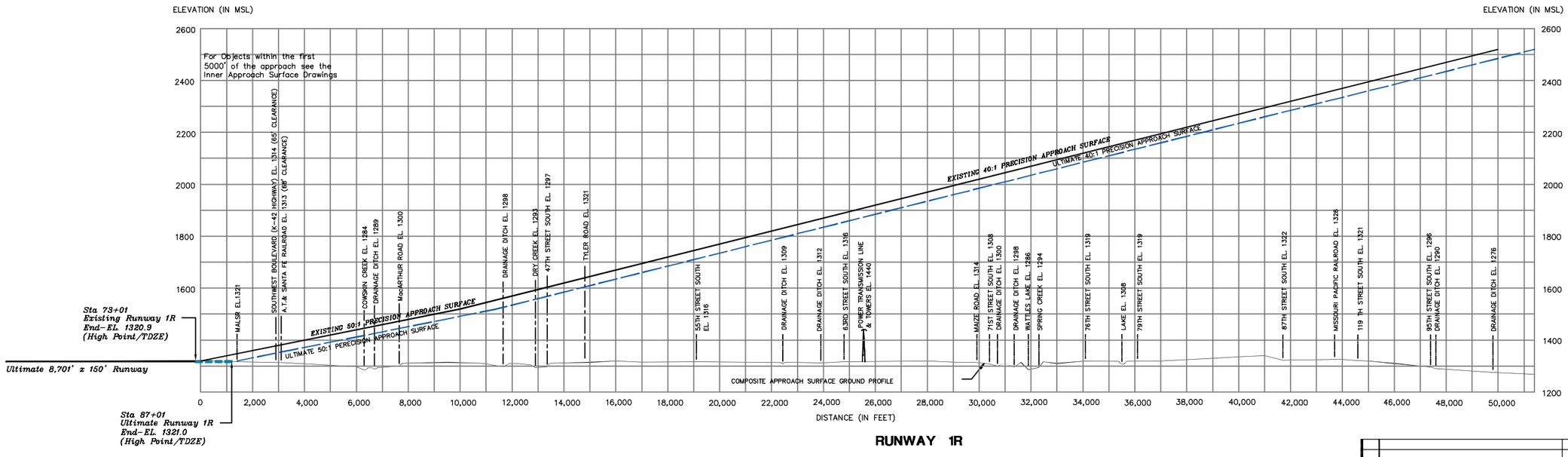

RUNWAY 1R

RUNWAY 19L OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 34:1 Slope	Proposed Object Disposition
- None	-	-	-	-	-	-

RUNWAY 1R OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 34:1 Slope	Proposed Object Disposition
- None	-	-	-	-	-	-

0 2000 4000 6000
HORIZONTAL SCALE IN FEET

0 200 400 600
VERTICAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

RUNWAY 1R-19L APPROACH SURFACE PROFILES

Wichita, Kansas

Wichita Airport Authority

PLANNED BY: Stephen B. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005 | SHEET 7 OF 17

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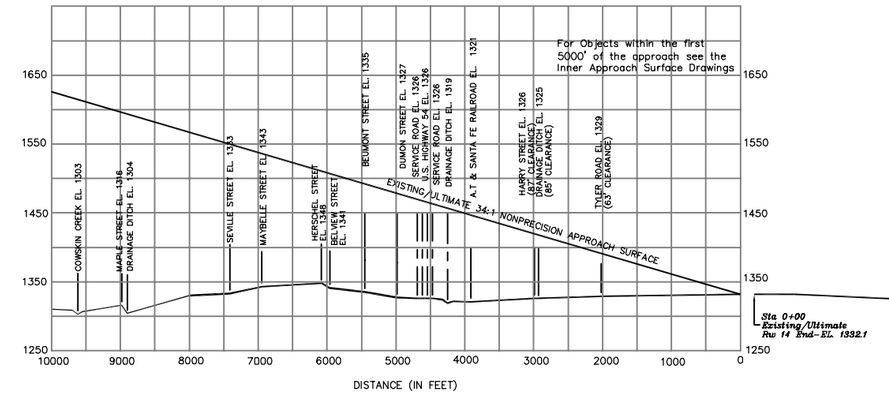
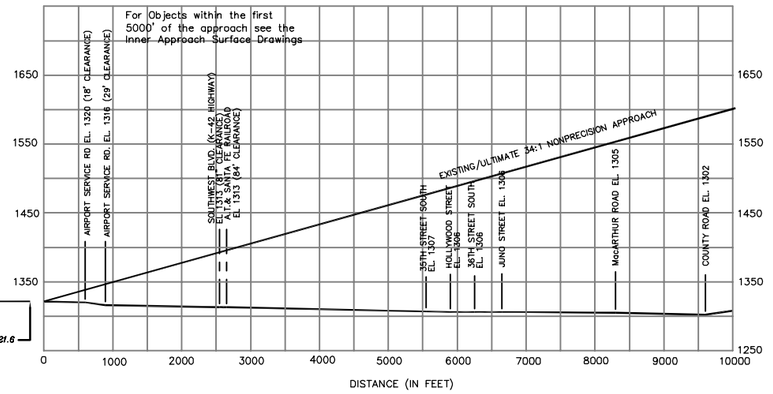
RUNWAY 14



Sta 0+00
Existing/Ultimate
Rw 14 End-EL. 1332.1

Sta 63+01
Existing/Ultimate
Rw 32 End-EL. 1321.6
(Low Point)

RUNWAY 32



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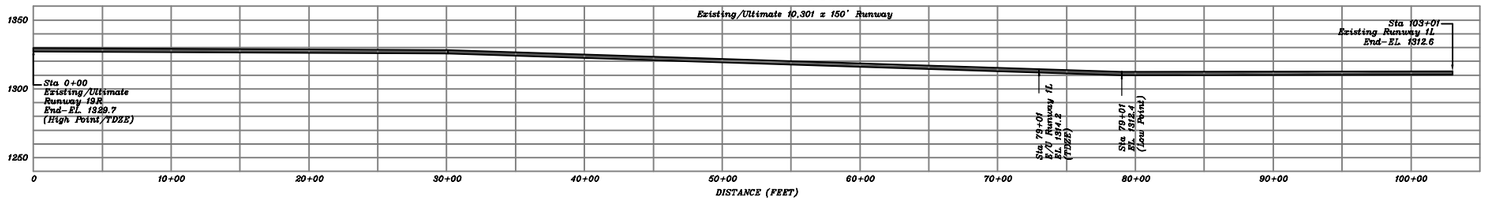
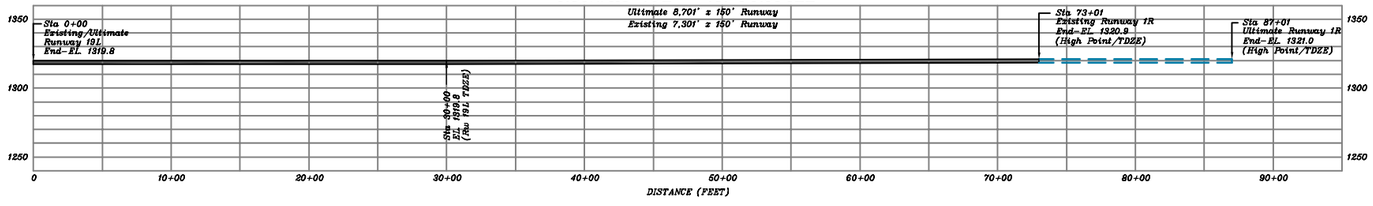
6. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ads/0987_03.pdf ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT___99B.F77

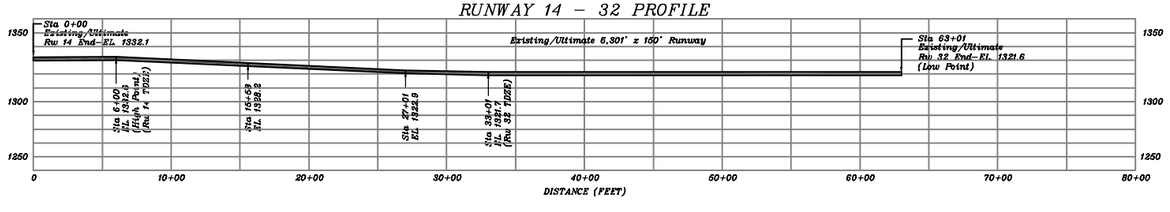
RUNWAY 19R – 1L PROFILE



RUNWAY 19L – 1R PROFILE



RUNWAY 14 – 32 PROFILE



RUNWAY 14 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 20:1 Slope	Proposed Object Disposition
– None	–	–	–	–	–	–

RUNWAY 32 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 20:1 Slope	Proposed Object Disposition
– None	–	–	–	–	–	–

HORIZONTAL SCALE 0 1000 2000 3000
SCALE IN FEET

VERTICAL SCALE 0 100 200 300
SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

RUNWAY 14-32 APPROACH SURFACE PROFILES

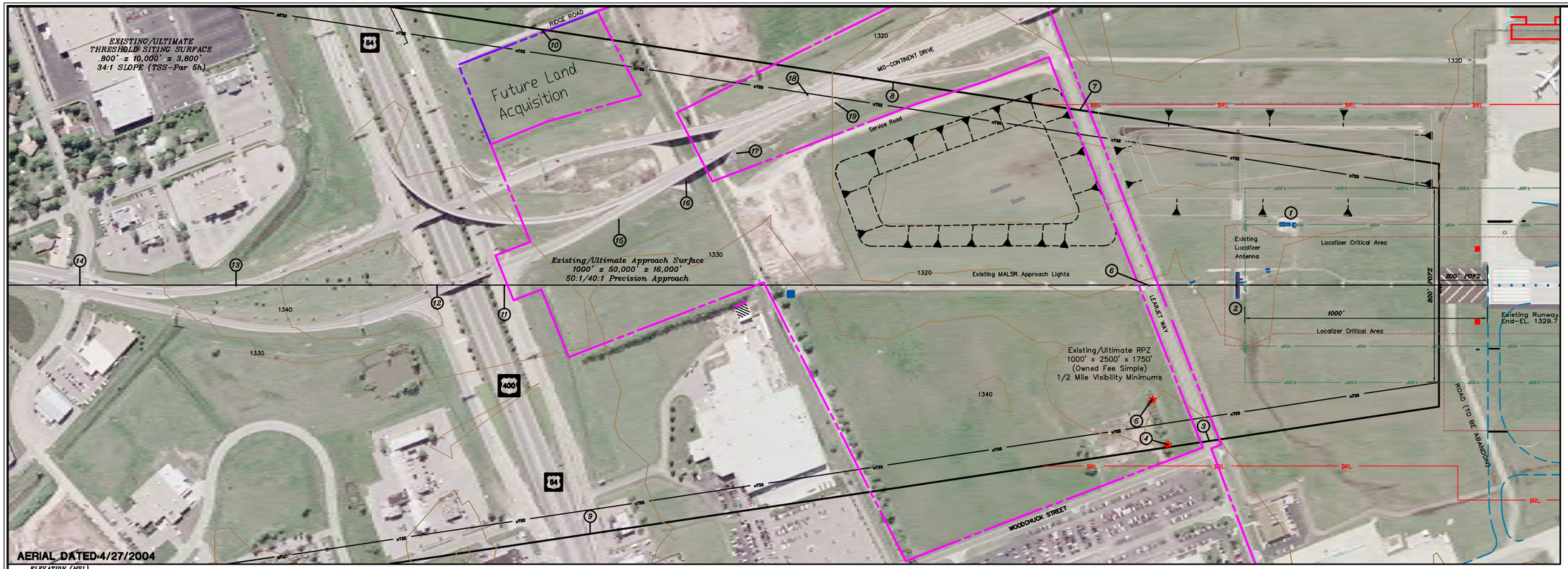
Wichita, Kansas

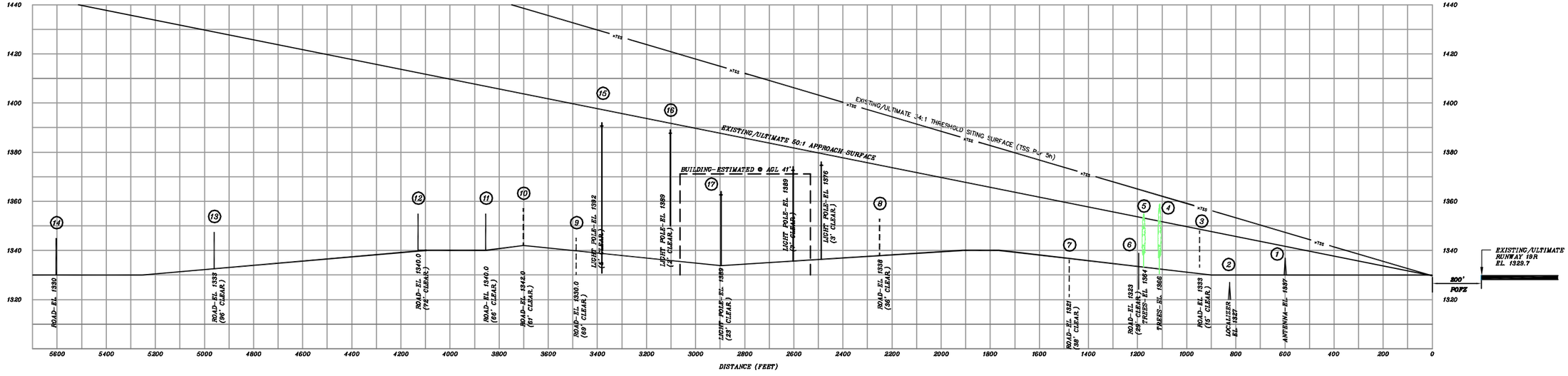
PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005 | SHEET 8 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Coffman Associates - LDJ K:\C_etc\8-a-Part77.dwg Tuesday, April 12, 2005 11:15:01am





RUNWAY 19R INNER APPROACH SURFACE OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 34:1 SLOPE	Proposed Object Disposition
4 TREES	1366 MSL	50:1 APPROACH	1352 MSL	14'	CLEAR	WERE REMOVED IN 2004
5 TREES	1364 MSL	50:1 APPROACH	1353 MSL	11'	CLEAR	WERE REMOVED IN 2004

GENERAL NOTES:

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Magnetic Declination
5° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

0 20 40
VERTICAL SCALE IN FEET
0 200 400
HORIZONTAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT
INNER PORTION OF RUNWAY 19R APPROACH SURFACE DRAWING
Wichita, Kansas

PLANNED BY: Stephen C. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanelle V. Coffman
April 12, 2005
SHEET 9 OF 17

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Airport Consultants
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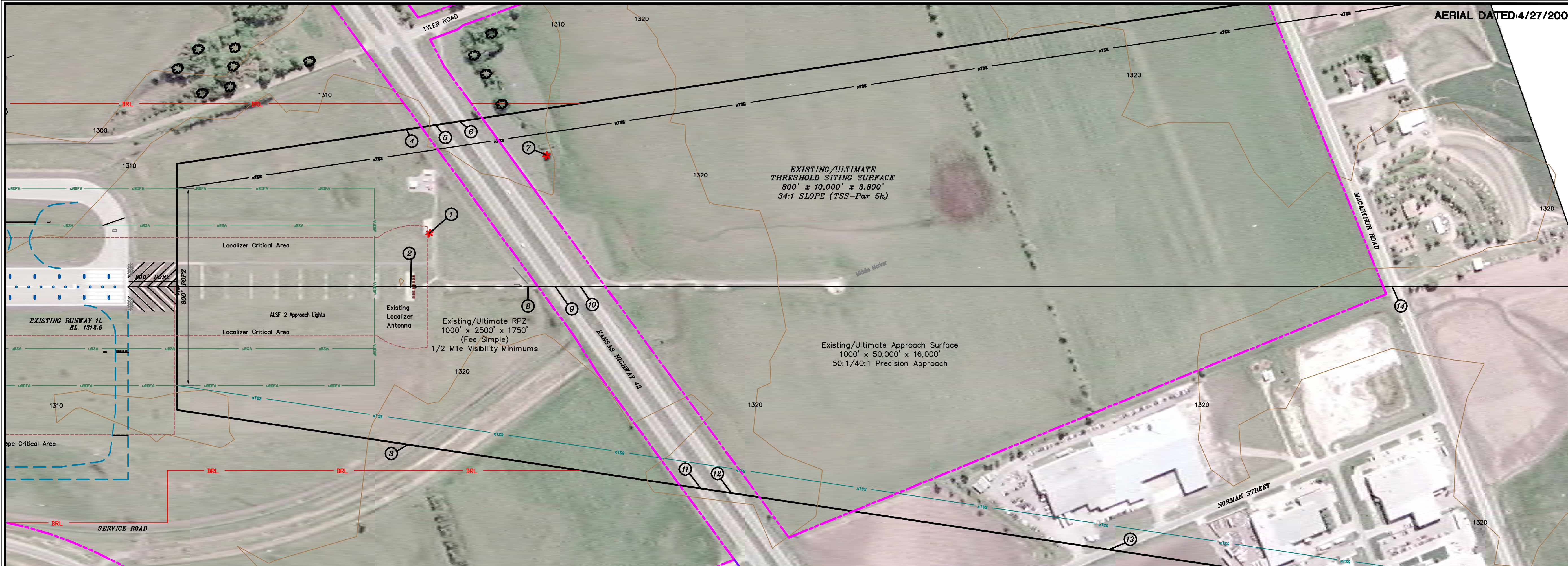

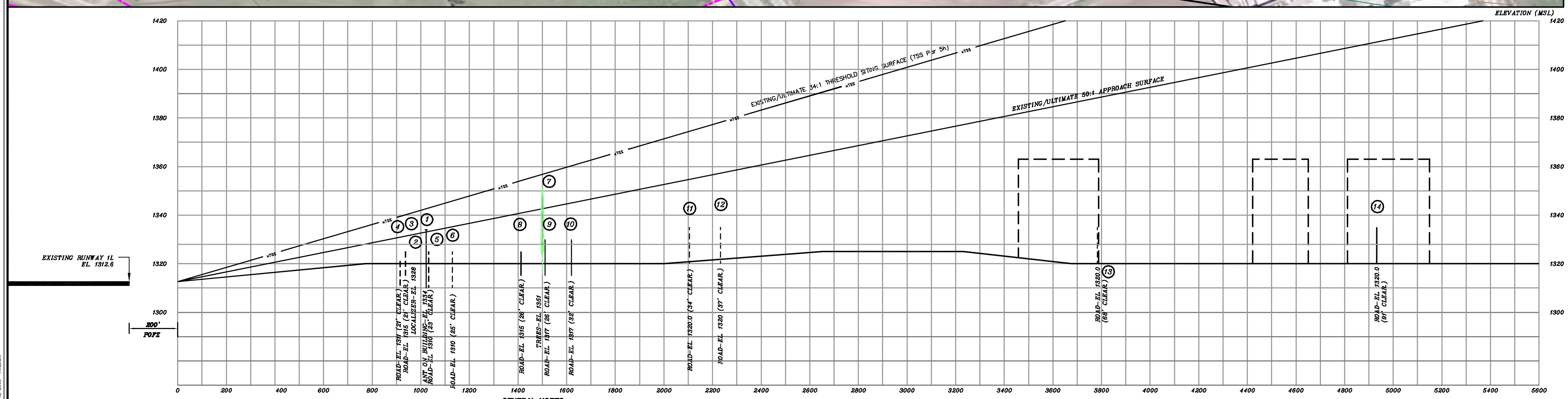

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http://www.ngs.noaa.gov/AERO/ads/0987_03.pdf
ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT__99B.F77

RUNWAY 1L INNER APPROACH SURFACE OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	TSS 34:1 SLOPE	Proposed Object Disposition
1 ANTENNA on BUILDING	1334 MSL	50:1 APPROACH	1333 MSL	1'	CLEAR	ADD OL TO FACILITY
7 TREES	1351 MSL	50:1 APPROACH	1342 MSL	9'	CLEAR	REMOVE

Magnetic Declination
5° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

0 20 40
VERTICAL SCALE IN FEET

0 200 400
HORIZONTAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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City of Wichita
Wichita Airport Authority

WICHITA MID-CONTINENT AIRPORT

INNER PORTION OF RUNWAY 1L APPROACH SURFACE DRAWING

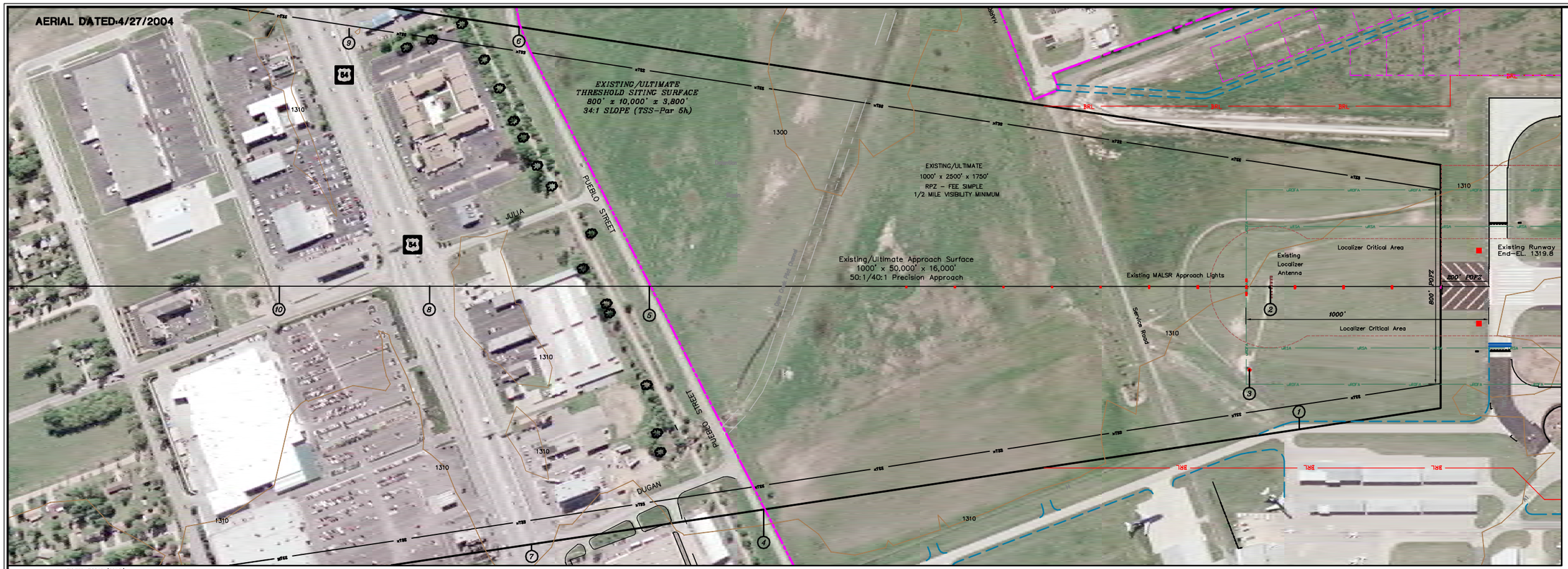
Wichita, Kansas

PLANNED BY: Stephen C. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Coffman Associates—LDJ ICT_sh10-14-las.dwg Tuesday April 12 2005



RUNWAY 19R INNER APPROACH SURFACE OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Existing TSS 20:1 SLOPE	Ultimate TSS 34:1 SLOPE	Proposed Object Disposition
1 TAXIWAY "H"	1354 MSL	50:1 APPROACH	1331 MSL	23'	N/A	N/A	"NO ACTION" AIRCRAFT TAIL HEIGHT
3 ANT ON BLDG	1337 MSL	50:1 APPROACH	1336 MSL	2'	CLEAR	CLEAR	REQUEST "OL" LIGHTING

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Magnetic Declination
5° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

VERTICAL SCALE IN FEET
0 20 40

HORIZONTAL SCALE IN FEET
0 200 400

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WICHITA MID-CONTINENT AIRPORT
INNER PORTION OF RUNWAY 19L APPROACH SURFACE DRAWING
Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanelle V. Coffman
April 12, 2005
SHEET 11 OF 17

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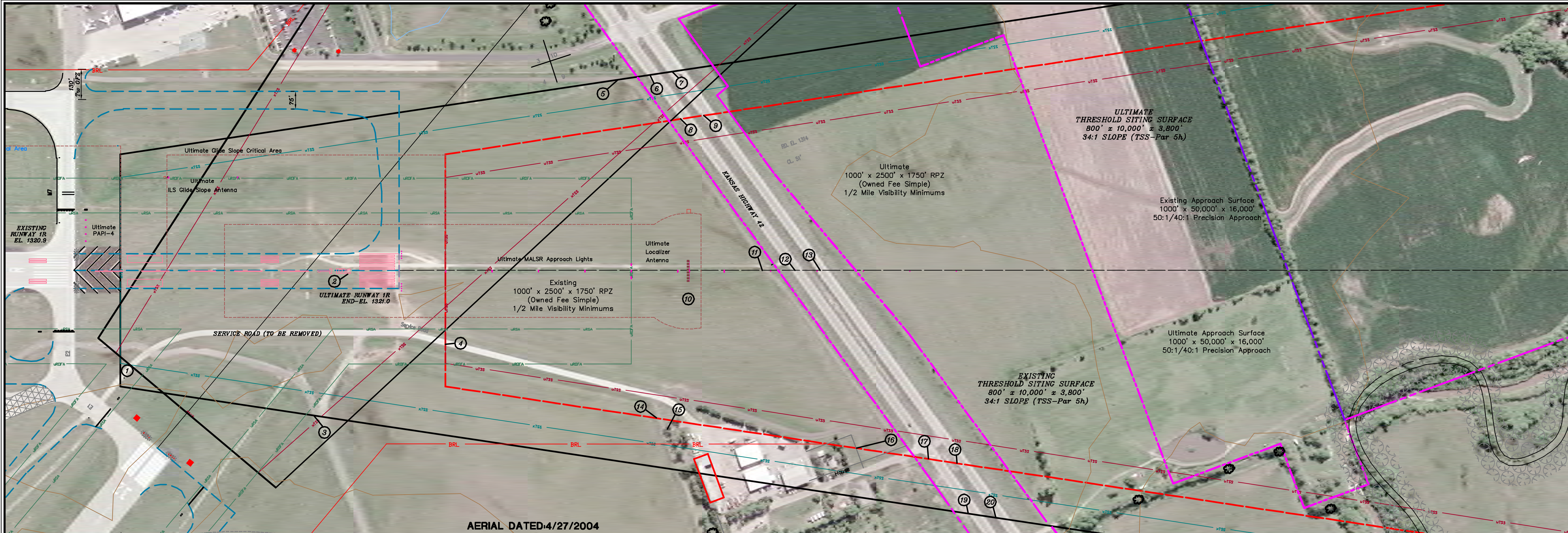
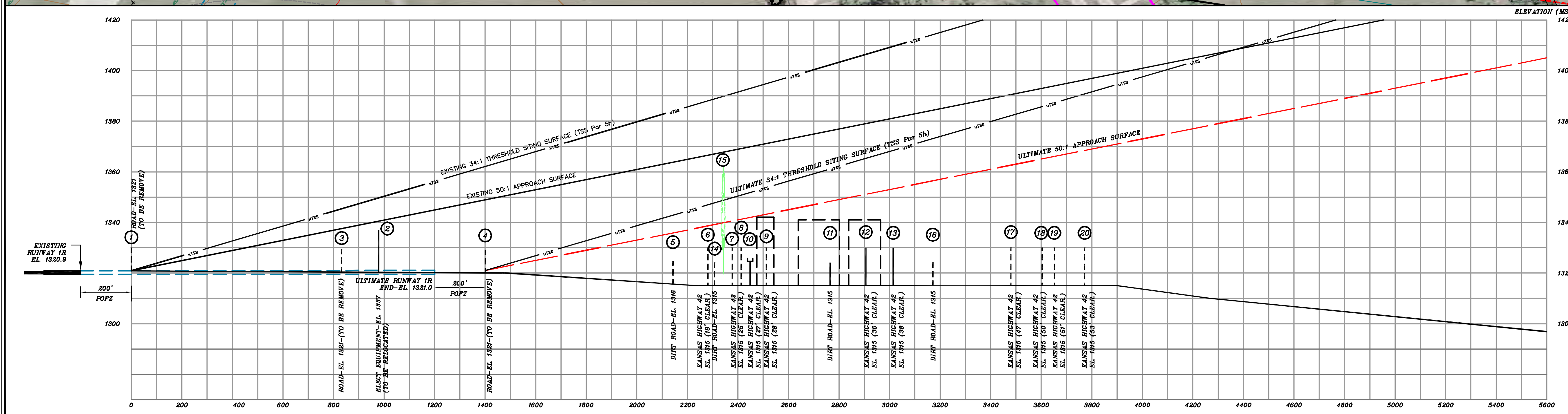
Airport Consultants
www.coffmanassociates.com

Coffman Associates--LDJ ICT_arch-1e-base.dwg Tuesday April 12 2005 11:29am





RUNWAY 1R INNER APPROACH SURFACE OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Existing TSS 34:1 SLOPE	Ultimate TSS 34:1 SLOPE	Ext./Ult. POFZ	Proposed Object Disposition
1 PRIVATE ROAD	1331 MSL	50:1 APPROACH	1321 MSL	10'	10'	N/A	N/A	REMOVE
4 ROAD	1331 MSL	50:1 APPROACH	1331 MSL	10'	CLEAR	10'	YES	REMOVE
15 TREE	1366 MSL	50:1 APPROACH	1340 MSL	26'	CLEAR	17'	N/A	REMOVE

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Magnetic Declination
6° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

VERTICAL SCALE IN FEET: 0 20 40

HORIZONTAL SCALE IN FEET: 0 200 400

No.	REVISIONS	DATE	BY	APP'D.

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City of Wichita
Wichita Airport Authority

WICHITA MID-CONTINENT AIRPORT
INNER PORTION OF RUNWAY 1R APPROACH SURFACE DRAWING
Wichita, Kansas

PLANNED BY: Stephen C. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005 SHEET 12 OF 17

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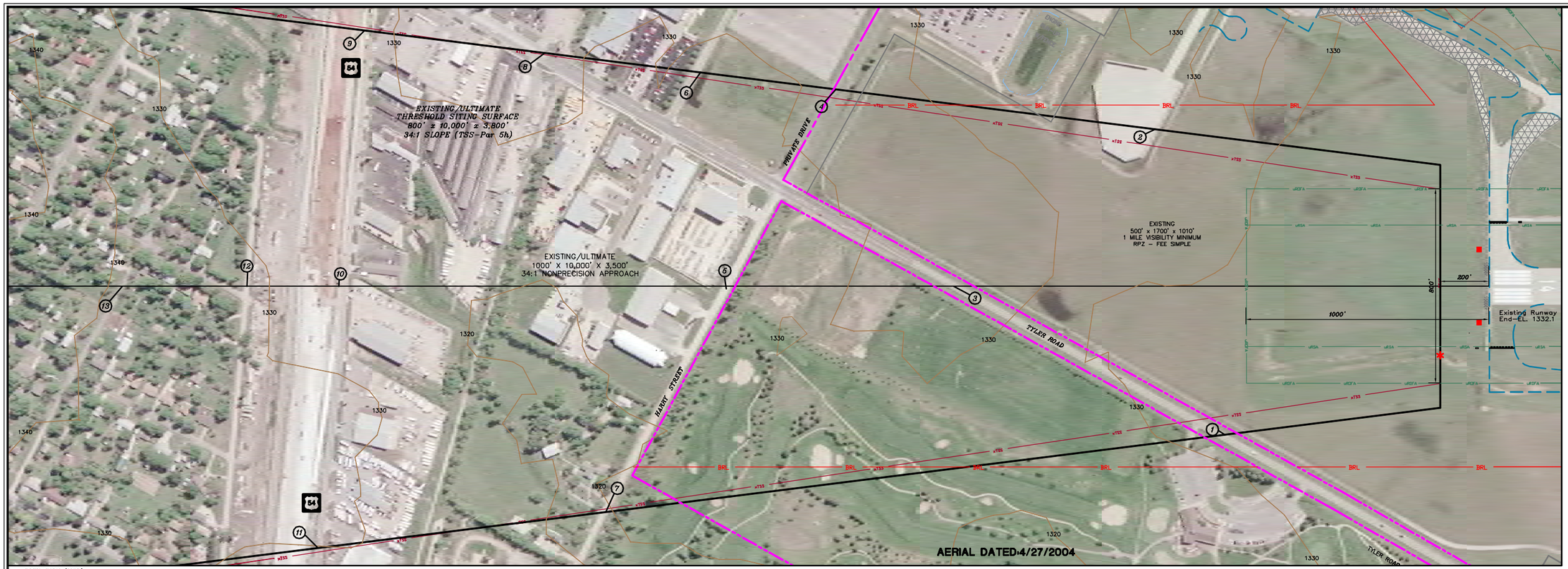

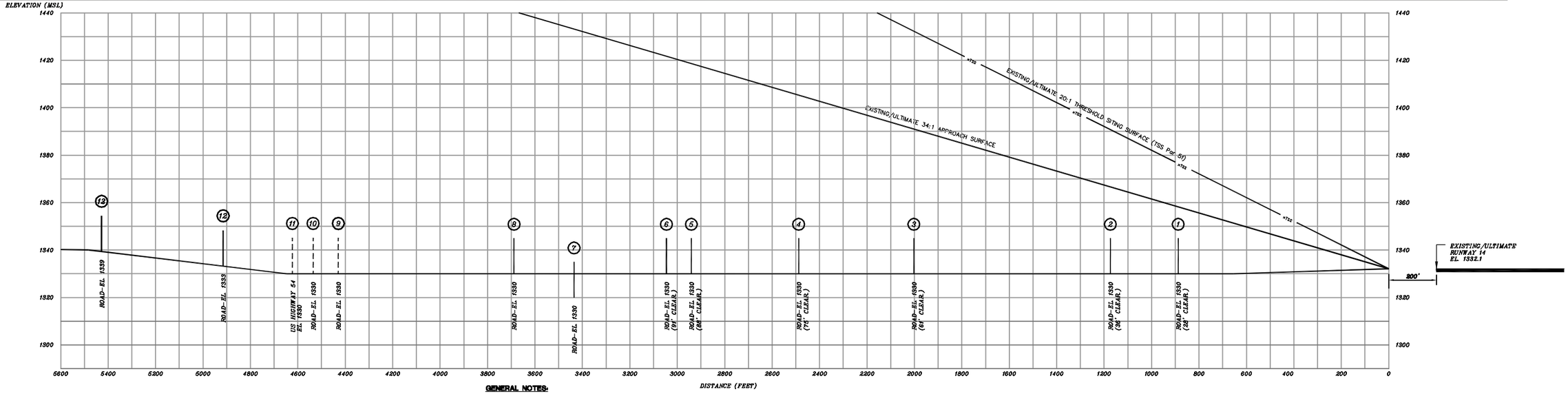

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surface, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES DRAWING, sheets 6, 7 and 8 of these plans.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWINGS.
5. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ads/0987_03.pdf ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT___99B.F77

RUNWAY 14 INNER APPROACH SURFACE OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed 34:1 Part 77 Surface	Surface Elevation	Object Penetration	TSS 20:1 SLOPE	Proposed Object Disposition
NONE						

Magnetic Declination 5° 23' East (May 2003)
Annual Rate of Change 6.93' West (May 2003)

VERTICAL SCALE IN FEET: 0, 20, 40
HORIZONTAL SCALE IN FEET: 0, 200, 400

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT
INNER PORTION OF RUNWAY 14 APPROACH SURFACE DRAWING
Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanelle V. Coffman

April 12, 2005 — SHEET 13 OF 17

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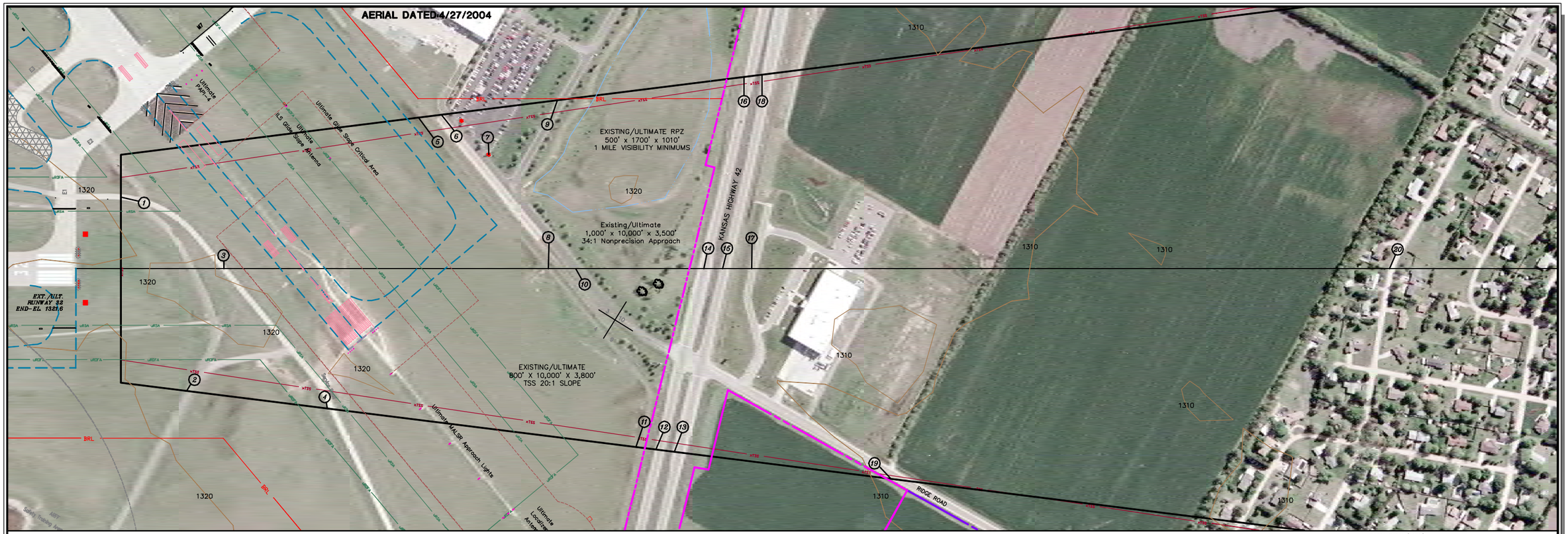

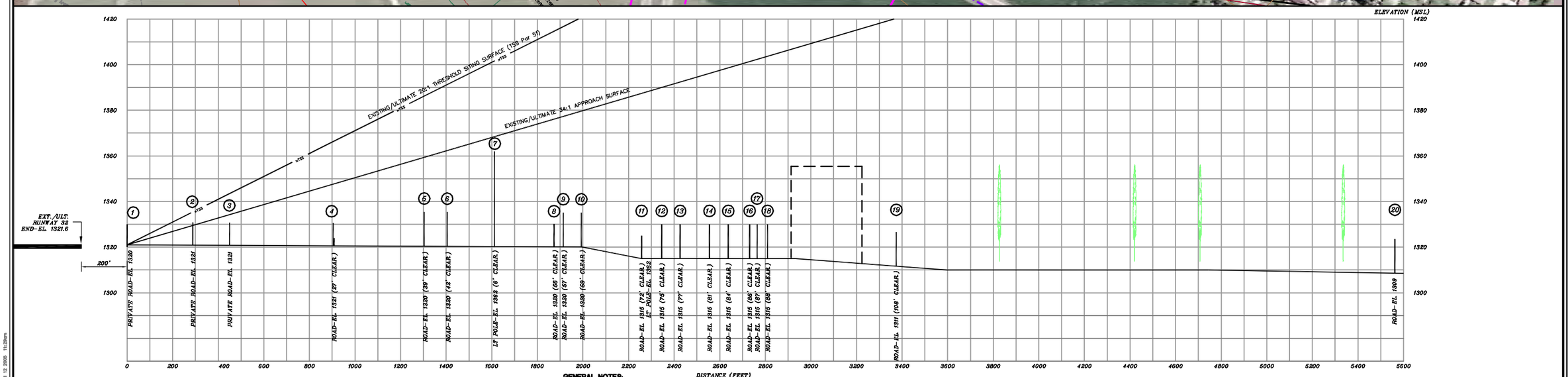

RUNWAY 32 INNER APPROACH SURFACE OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Existing TSS 20:1 SLOPE	Ultimate TSS 20:1 SLOPE	Ext./Ult. POFZ	Proposed Object Disposition
1 PRIVATE ROAD	1330 MSL	34:1 APPROACH	1321 MSL	9'	9'	9'	N/A	REMOVE
2 PRIVATE ROAD	1331 MSL	34:1 APPROACH	1329 MSL	2'	CLEAR	CLEAR	N/A	REMOVE

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway and elevations and ultimate approach surface, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3, 4 and 5 of these plans.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES DRAWING, sheets 6, 7 and 8 of these plans.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWINGS.
5. Existing obstructions data is illustrated on National Ocean Survey document OC 987, AIRPORT OBSTRUCTION CHART. http://www.ngs.noaa.gov/AERO/ads/D987_03.pdf ftp://ftp.ngs.noaa.gov/pub/uddf/CENTRAL/KANSAS/ICT__99B.F77

Magnetic Declination 6° 23' East (May 2003) Annual Rate of Change 6.93' West (May 2003)

VERTICAL SCALE IN FEET: 0, 20, 40

HORIZONTAL SCALE IN FEET: 0, 200, 400

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WICHITA MID-CONTINENT AIRPORT
INNER PORTION OF RUNWAY 32 APPROACH SURFACE DRAWING
Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanelle V. Coffman
April 12, 2005
SHEET 14 OF 17

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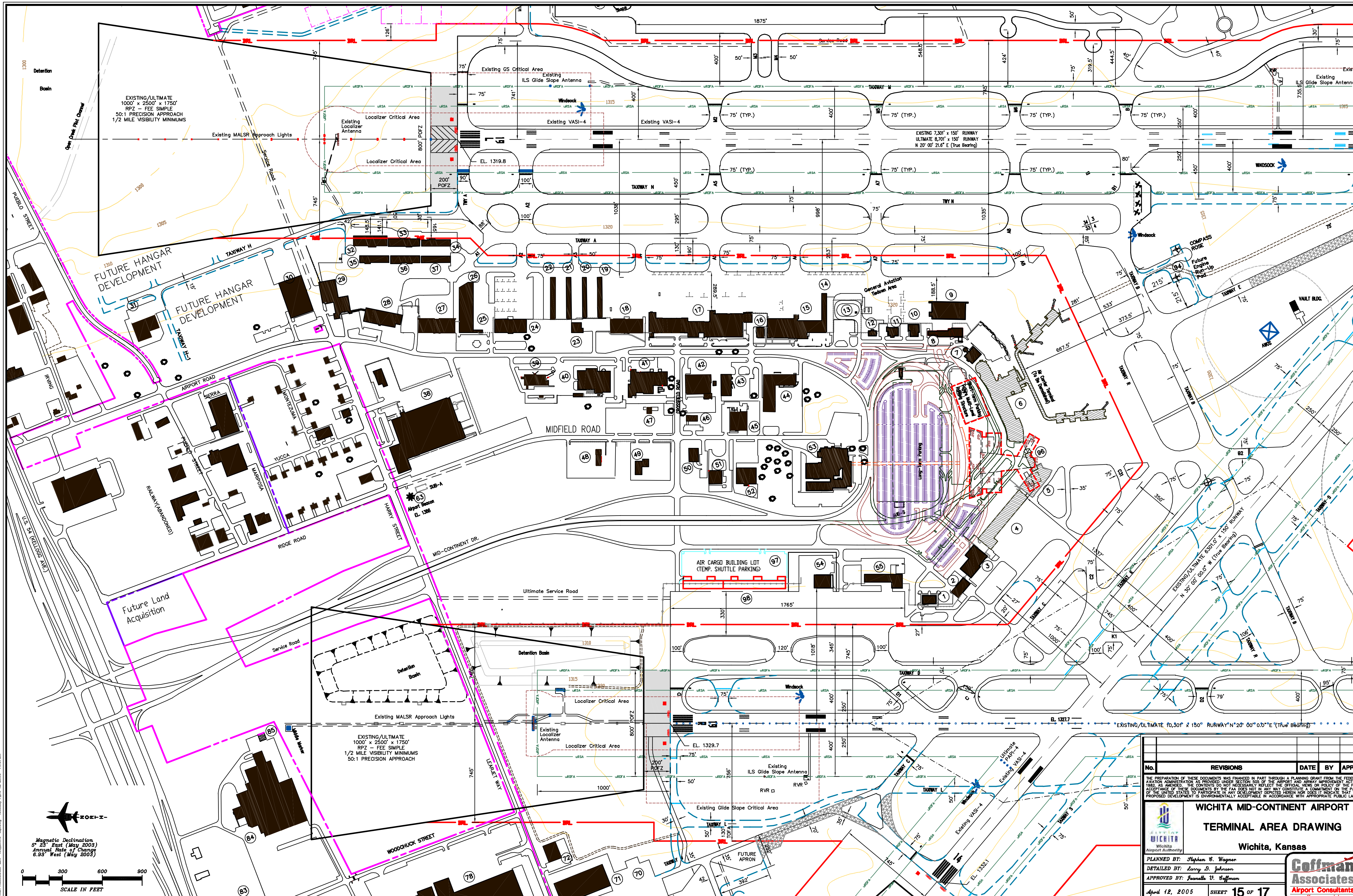
EXISTING/ULTIMATE
1000' x 2500' x 1750'
RPZ – FEE SIMPLE
50:1 PRECISION APPROACH
1/2 MILE VISIBILITY MINIMUMS
Existing MALSR Approach Lights
Existing GS Critical Area
Existing ILS Glide Slope Antenna
Existing Localizer Antenna
Localizer Critical Area
Existing VASI-4
EXISTING 7,301' x 150' RUNWAY
ULTIMATE 8,701' x 150' RUNWAY
N 20° 00' 21.6" E (True Bearing)
EL. 1319.8
TAXIWAY N
TAXIWAY A
TAXIWAY H
FUTURE HANGAR DEVELOPMENT
FUTURE HANGAR DEVELOPMENT
Windsock
COMPASS ROSE
Future Engine Run-Up Pad
VAULT BLDG.
General Aviation Tiedown Area
AIRPORT ROAD
MIDFIELD ROAD
MID-CONTINENT DR.
RIDGE ROAD
HARRY STREET
PUEBLO STREET
IRVING
SIERRA
MONTEZUMA
YUCCA
MARIPOSA
RAILWAY (ABANDONED)
U.S. 54 (KELLOGG AVE.)
Future Land Acquisition
AIR CARGO BUILDING LOT (TEMP. SHUTTLE PARKING)
Ultimate Service Road
Service Road
Detention Basin
Existing MALSR Approach Lights
EXISTING/ULTIMATE
1000' x 2500' x 1750'
RPZ – FEE SIMPLE
1/2 MILE VISIBILITY MINIMUMS
50:1 PRECISION APPROACH
EL. 1329.7
Existing Glide Slope Critical Area
FUTURE APRON
LEARJET WAY
WOODCHUCK STREET
EXISTING/ULTIMATE 6,301.0' x 150' RUNWAY N 30° 00' 00.0" W (True Bearing)
EXISTING/ULTIMATE 10,301' x 150' RUNWAY N 20° 00' 0.0" E (True Bearing)
Magnetic Declination
5° 23' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)
SCALE IN FEET
0 300 600 900

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

TERMINAL AREA DRAWING

Wichita, Kansas

CITY OF WICHITA
Wichita Airport Authority

PLANNED BY: Stephen C. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman

April 12, 2005 — SHEET 15 OF 17

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ON AIRPORT LAND USE LEGEND

- Current Airport Property Line
- Potential Land Acquisition
- Building Restriction Line (BRL)
- Runway Visibility Zone (RVZ)
- Passenger Terminal Facilities (PTF)
- General Aviation (GA)
- Aviation–Related (RS–1) Airfield Access
- Aviation–Related (RS–2) No Airfield Access
- Air Cargo (AC)
- Airfield, Approach Protection (AO)
- Limits of 100 Year Floodplain
- Airport Management, Maintenance (M)
- Building To Be Removed
- Pavement To Be Removed
- Runway Protection Zone (RPZ)

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

AIRPORT LAND USE DRAWING

Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jeanette V. Coffman
April 12, 2005 — SHEET 16 OF 17

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AERIAL DATED:4/27/2004

NORTH — 0 600 1200 1800 SCALE IN FEET

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LEGEND

- BOUNDARY OF PROPERTY OWNED BY WICHITA AIRPORT AUTHORITY
- FUTURE PROPERTY LINE
- (74) LAND TRACT NUMBER (TYP.)
- ORIGINAL PURCHASE. FUNDS FROM MILITARY FOR CONDEMNATION OF PRIOR AIRPORT
- LOCAL FUNDS-AIRPORT REVENUES
- FEDERAL FUNDS-FAAP
- FEDERAL FUNDS-ADAP
- FEDERAL FUNDS-AIP
- PASSENGER FACILITY CHARGES-PFC

EXISTING/ULTIMATE
500' x 1700' x 1010'
RPZ
FEE SIMPLE
34:1 APPROACH
1 MILE VISIBILITY MINIMUM

Magnetic Declination
6° 28' East (May 2003)
Annual Rate of Change
6.93' West (May 2003)

0 600 1200 1800
SCALE IN FEET

1000' ULTIMATE RPZ x 2500' x 1750' FEE SIMPLE PRECISION APPROACH SURFACE 1/2 MILE VISIBILITY MINIMUM

1000' EXISTING RPZ x 2500' x 1750' FEE SIMPLE PRECISION APPROACH SURFACE 1/2 MILE VISIBILITY MINIMUM

EXISTING/ULTIMATE
500' x 1700' x 1010'
RPZ
FEE SIMPLE
34:1 APPROACH
1 MILE VISIBILITY MINIMUM
34:1 OBSTRUCTION APPROACH

EXISTING AIRPORT PROPERTY

TRACT No.	PROPERTY INTEREST	ACREAGE	COMMENTS
1	FEE SIMPLE	150.000	ORIGINAL PURCHASE
2	FEE SIMPLE	19.800	ORIGINAL PURCHASE
3	FEE SIMPLE	59.300	ORIGINAL PURCHASE
4	FEE SIMPLE	79.200	ORIGINAL PURCHASE
5	FEE SIMPLE	118.500	ORIGINAL PURCHASE
6	FEE SIMPLE	118.900	ORIGINAL PURCHASE
7	FEE SIMPLE	79.300	ORIGINAL PURCHASE
8	FEE SIMPLE	79.600	ORIGINAL PURCHASE
9	FEE SIMPLE	70.000	ORIGINAL PURCHASE
10	FEE SIMPLE	10.000	ORIGINAL PURCHASE
11	FEE SIMPLE	68.300	ORIGINAL PURCHASE
12	FEE SIMPLE	79.800	ORIGINAL PURCHASE
13	FEE SIMPLE	79.900	ORIGINAL PURCHASE
14	FEE SIMPLE	239.100	ORIGINAL PURCHASE
15	FEE SIMPLE	38.400	ORIGINAL PURCHASE
16	FEE SIMPLE	38.600	ORIGINAL PURCHASE
17	FEE SIMPLE	78.500	ORIGINAL PURCHASE
18	FEE SIMPLE	158.000	ORIGINAL PURCHASE
19-1	FEE SIMPLE	117.800	ORIGINAL PURCHASE
19-2	FEE SIMPLE	3.060	ORIGINAL PURCHASE
20	FEE SIMPLE	130.100	ORIGINAL PURCHASE
21	FEE SIMPLE	1.060	ORIGINAL PURCHASE
22	FEE SIMPLE	62.200	FAAP 9-14-084-C301
23	FEE SIMPLE	1.980	FAAP 9-14-084-C301
24	FEE SIMPLE	5.950	FAAP 9-14-084-C301
25	FEE SIMPLE	3.950	FAAP 9-14-084-C301
26	FEE SIMPLE	9.920	FAAP 9-14-084-C301
27	FEE SIMPLE	0.870	FAAP 9-14-085-C301
28	FEE SIMPLE	1.000	FAAP 9-14-084-C301
29-1	FEE SIMPLE	35.000	FAAP 9-14-084-C301
29-2	FEE SIMPLE	2.850	FAAP 9-14-084-C301
29-3	FEE SIMPLE	42.450	FAAP 9-14-084-C301
30	FEE SIMPLE	1.000	FAAP 9-14-084-C301
31	FEE SIMPLE	0.320	FAAP 9-14-084-C301
32-1	FEE SIMPLE	1.600	AIRPORT REVENUES
32-2	FEE SIMPLE	1.140	AIRPORT REVENUES
32-3	FEE SIMPLE	1.590	AIRPORT REVENUES
32-4	FEE SIMPLE	4.820	AIRPORT REVENUES
33	FEE SIMPLE	0.940	FAAP 9-14-084-C301
34	FEE SIMPLE	3.650	FAAP 9-14-084-C301
35	FEE SIMPLE	35.000	FAAP 9-14-084-C301
36	FEE SIMPLE	3.040	ORIGINAL PURCHASE
37	FEE SIMPLE	1.170	ORIGINAL PURCHASE
38	FEE SIMPLE	0.570	ORIGINAL PURCHASE
39	SOLD TO CESSNA		
40	FEE SIMPLE	83.800	FAAP 9-14-084-C301
41	FEE SIMPLE	0.880	FAAP 9-14-084-C301
42	FEE SIMPLE	1.000	FAAP 9-14-084-C301
43	FEE SIMPLE	18.350	FAAP 9-14-084-C301
44	FEE SIMPLE	1.420	R.O.W. DEDICATION
45	FEE SIMPLE	1.100	R.O.W. AGREEMENT
46	FEE SIMPLE	4.480	VACATION K-42 HIGHWAY
47	FEE SIMPLE	42.900	FAAP 9-14-084-C301
47-1	SOLD TO K-DOT CONDEMNATION (2.2 AC.)		
48	FEE SIMPLE	53.200	FAAP 9-14-084-C301
49	FEE SIMPLE	1.000	FAAP 9-14-084-C301
50	AGREEMENT TO BUY PARCELS 51		
51-1	FEE SIMPLE	20.000	AIRPORT REVENUES
51-2	FEE SIMPLE	19.600	AIRPORT REVENUES
51-3	FEE SIMPLE	13.810	AIRPORT REVENUES
51-4	FEE SIMPLE	5.600	AIRPORT REVENUES
51-5	FEE SIMPLE	19.300	AIRPORT REVENUES
52	FEE SIMPLE	0.630	VACATION HARRY STREET
53	FEE SIMPLE	1.400	R.O.W. AGREEMENT
54	FEE SIMPLE	80.800	FAAP 9-14-084-C402

TRACT No.	PROPERTY INTEREST	ACREAGE	COMMENTS
55	FEE SIMPLE	64.596	FAAP 9-14-084-C402
56	FEE SIMPLE	1.910	FAAP 9-14-084-C503
57	FEE SIMPLE	0.600	FAAP 9-14-084-C503
58	PURCHASE NOT COMPLETED		
59	FEE SIMPLE	100.000	FAAP 9-14-084-C503
60	FEE SIMPLE	1.000	FAAP 9-14-084-C704
61	FEE SIMPLE	0.800	VACATION 31ST. STREET
62	FEE SIMPLE	60.000	ADAP 8-20-0088-04
63	FEE SIMPLE	30.060	ADAP 8-20-0088-04
64	FEE SIMPLE	4.210	ADAP 8-20-0088-11
65	FEE SIMPLE	66.390	ADAP 8-20-0088-04
66	FEE SIMPLE	45.770	ADAP 8-20-0088-04
66-1	SOLD TO K-DOT VIA CONDEMNATION (0.98 AC.)		
67	FEE SIMPLE	1.000	AIRPORT REVENUES
68	FEE SIMPLE	4.610	AIRPORT REVENUES
69	FEE SIMPLE	0.459	ADAP 8-20-0088-11
70	FEE SIMPLE	10.700	ADAP 8-20-0088-04
71	FEE SIMPLE	5.650	AIRPORT REVENUES
71-1	SOLD TO K-DOT VIA CONDEMNATION (0.47 AC.)		
71-A	FEE SIMPLE	23.441	AIP 3-20-0088-03
71-A-1	SOLD TO K-DOT VIA CONDEMNATION (1.07 AC.)		
72	FEE SIMPLE	6.481	ADAP 8-20-0088-11
73	FEE SIMPLE	1.205	ADAP 8-20-0088-11
74	FEE SIMPLE	73.605	ADAP 8-20-0088-11
75	FEE SIMPLE	70.628	ADAP 8-20-0088-07
76	FEE SIMPLE	84.339	ADAP 8-20-0088-11
77	FEE SIMPLE	0.630	ADAP 8-20-0088-11
78	FEE SIMPLE	2.570	AIP 3-20-0088-03
79	FEE SIMPLE	0.690	R.O.W. DEDICATION
80	FEE SIMPLE	0.380	ADAP 8-20-0088-11
81	FEE SIMPLE	0.633	ADAP 8-20-0088-11
82	FEE SIMPLE	0.160	ADAP 8-20-0088-11
83	FEE SIMPLE	0.464	AIP 3-20-0088-03
84	FEE SIMPLE	0.557	AIP 3-20-0088-04
85	FEE SIMPLE	0.460	AIP 3-20-0088-03
86	FEE SIMPLE	0.560	AIP 3-20-0088-03
87	FEE SIMPLE	0.430	AIP 3-20-0088-03
88	FEE SIMPLE	0.460	AIP 3-20-0088-03
89	FEE SIMPLE	0.470	AIP 3-20-0088-03
90	FEE SIMPLE	0.950	AIP 3-20-0088-04
91	FEE SIMPLE	0.950	AIP 3-20-0088-04
92	FEE SIMPLE	0.460	AIP 3-20-0088-06
93	FEE SIMPLE	0.470	AIP 3-20-0088-06
94	FEE SIMPLE	0.490	AIRPORT REVENUES
94-1	FEE SIMPLE	0.730	AIRPORT REVENUES
95	FEE SIMPLE	0.974	AIP 3-20-0088-02
96	FEE SIMPLE	2.900	AIRPORT REVENUES
97	FEE SIMPLE	2.300	AIRPORT REVENUES
98	FEE SIMPLE	74.590	AIP 3-20-0088-06
98-1	SOLD TO K-DOT VIA CONDEMNATION (17.67 AC.)		
99	FEE SIMPLE	68.530	AIP 3-20-0088-04
100	FEE SIMPLE	0.557	AIP 3-20-0088-06
101	FEE SIMPLE	0.464	AIP 3-20-0088-06
102	FEE SIMPLE	2.044	AIP 3-20-0088-06
103	FEE SIMPLE	0.464	AIP 3-20-0088-06
104	FEE SIMPLE	0.919	AIP 3-20-0088-06
105	FEE SIMPLE	3.002	AIP 3-20-0088-14
106	FEE SIMPLE	0.049	Q.C. DEED-SW BELL
107	FEE SIMPLE	3.760	ADAP 5-20-0089-01
108	DEVELOPMENT RIGHTS ONLY	5.660	ADAP 5-20-0089-01
109	FEE SIMPLE	13.280	AIRPORT REVENUES
110	SOLD TO CITY OF WICHITA (1.5 AC.)		
111	FEE SIMPLE	7.900	PFC
112	FEE SIMPLE	4.176	PFC
113	FEE SIMPLE	3.260	PFC
114	FEE SIMPLE	3.173	PFC
114	FEE SIMPLE	7.667	AIRPORT REVENUE

LEGEND

EXISTING	ULTIMATE	
N/A		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
N/A		AIRPORT REFERENCE POINT (ARP)
	N/A	AIRPORT ROTATING BEACON
N/A		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
		FACILITY CONSTRUCTION
		FENCING
VASI-4		NAVIGATIONAL AID INSTALLATION (GYRO)
		RUNWAY THRESHOLD LIGHTS and REIL
		SECTION CORNER

No.	REVISIONS	DATE	BY	APP'D.

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WICHITA MID-CONTINENT AIRPORT

AIRPORT PROPERTY MAP

Wichita, Kansas

PLANNED BY: Stephen E. Wagner
DETAILED BY: Larry D. Johnson
APPROVED BY: Jennelle V. Coffman
April 12, 2005
SHEET 17 OF 17

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Coffman Associates-LDJ ict_ahi17-prop.dwg Tuesday, April 12, 2005 11:34am

Chapter Six
CAPITAL IMPROVEMENT PROGRAM

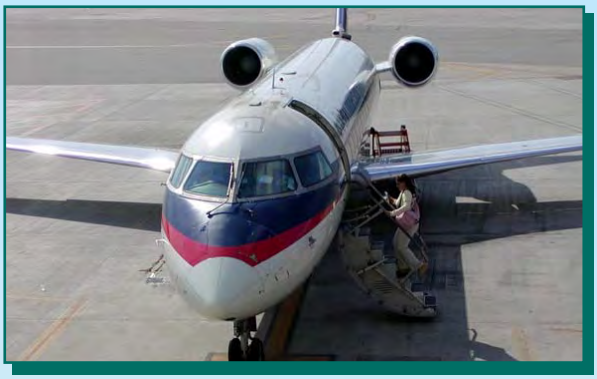
Capital Improvement Program

Wichita Airport Authority

The successful implementation of the Wichita Mid-Continent Airport master plan will require the sound judgment on the part of the Wichita Airport Authority to meet changing needs. Among the more important factors influencing decisions to carry out a given recommendation are timing and airport activity. Both of these factors should be used as references in plan implementation.

Experience has indicated that problems have materialized from the standard time-based format of traditional planning documents. The problems center around their inflexibility and inherent inability to deal with unforeseen changes that may occur on the airport.

While it is necessary for scheduling and budgeting purposes to consider the timing of airport development, the actual need for facilities is established by



airport activity. Proper master planning implementation suggests the use of airport activity levels, rather than time as guidance for development.

This chapter of the master plan is intended to become one of the primary references used by the Wichita Airport Authority for implementing the plan recommendations. Consequently, the following narrative and graphic presentations must provide understanding of each recommended development item. This understanding of the overall program will be critical in main-

taining a realistic and cost-effective program that provides maximum benefit to the City of Wichita, Wichita Airport Authority, and the Federal Aviation Administration.

AIRPORT DEVELOPMENT SCHEDULE AND COST SUMMARIES

Once the specific needs and improvements for the airport have been established, the next step is to determine a realistic schedule and cost for implementing the plan. This section examines the overall cost of development and a demand-based schedule.

The development schedule can be initially established, dividing the improvement needs into the three planning horizons: short, intermediate, and long term. **Table 6A** summarizes the key activity milestones for each planning horizon.

TABLE 6A
Aviation Activity Planning Horizons
Wichita Mid-Continent Airport

	Base Year	Short Term	Intermediate Term	Long Term
Annual Operations	204,007[1]	291,260	314,560	367,140
Commercial	57,107	49,560	50,560	54,040
General Aviation	137,747	232,700	255,000	304,100
Military	9,153	9,000	9,000	9,000
Passenger Enplanements	750,000[2]	825,000	875,000	950,000
Air Freight (enplaned/deplaned tons)	34,743[1]	43,700	53,000	77,600

Miscellaneous air taxi included in GA category for future years.
[1] 2002. [2] 2003 est.

The short term horizon covers items of highest priority, as well as items that should be developed as the airport approaches the short term activity milestones. A separate terminal master plan has recommended the development of a new replacement terminal in the area west of the existing terminal. The terminal program is reflected in a multi-year project through the short-term period. Other items in the short-term period include a shuttle lot, pavement rehabilitation, taxiway extensions, de-icing pads, compass roses, air cargo facility expansion, and land acquisition.

Because of their priority over the next five years, these items will need to be incorporated in Wichita Airport Authority and FAA programming for the FY 2005-2009 programming period. However, since the priorities will need to be reestablished each year for programming the projects which are intended to receive federal aid, the Wichita Airport Authority and FAA will need to revisit the program each year.

As the Wichita Airport Authority reestablishes their projects and develops

an updated five-year program, they will need to add projects included in the intermediate planning period. While demand levels will change over time, projects may need to be accelerated or delayed. However, the master plan program should remain viable over a 10-year period, before it becomes necessary to update the overall plan.

Due to the conceptual nature of a master plan, implementation of capital projects should occur only after further refinement of their design and costs through architectural and engineering analyses. Under normal conditions, the cost estimates reflect an allowance for engineering and contingences that may be anticipated on the project. Capital costs presented in this chapter should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for performing the feasibility analyses in this chapter. Cost estimates for each development project have been presented in **Table 6B** and are given in current (2004) dollars, without future inflationary adjustment. Equipment, maintenance, and utility projects (many multi-year) are separated from other development projects and land acquisition. **Exhibit 6A** graphically presents the staging of the development program.

SHORT TERM IMPROVEMENTS

The short term capital program includes projects which are assumed to be necessary over the next five years. The terminal master plan has recommended a multi-year program to replace the existing terminal facility. This project will extend throughout the short-term period, with anticipated completion in 2009. Other projects include: the rehabilitation of Taxiway A, A-1 and north G.A. taxilane, construction of a shuttle lot which will ultimately be used to support air cargo users, acquisition of property in the approach to Runway 1R, construction of Taxiway L (towards Bombardier from Runway 19R), and the construction of compass roses (at Taxiway J). A multi-year project included in the short-term period is the upgrade and extension of airport perimeter roads on the airport, to mitigate the potential for runway incursions and to provide year-round driving surfaces.

It will be necessary late in the short-term period to provide for additional air cargo apron, a sortation building, truck court and road extensions. The exact timing of the project will be dictated by the demand created by local air cargo companies.

A major project in this period will be the reconstruction of existing general aviation ramp and the expansion of the ramp towards Taxiway A.

The acquisition of property on the south side of the airport will provide protection under the approach to Runway 1R.

TABLE 6B
Capital Development Projects 2005-2024
Wichita Mid-Continent Airport
Airport Master Plan

Phasing	Project Description	Total Cost (2004$)	AIP (Federal)	WAA (and/or PFC)
Short-Term	Taxiway H Extension & Twy H-1 Construction	$650,000	$310,000	$340,000
Short-Term	Taxiway L, Apron & Compass Rose	4,800,000	3,648,000	1,152,000
Short-Term	North Cargo Building Construction	5,540,000	0	5,540,000
Short-Term	Passenger Boarding Bridges (9)	3,620,000	0	3,620,000
Multi-Year	Terminal Program (2005-2010)	147,520,000	55,000,000	92,520,000
Multi-Year	Land Acquisition-North of Post Office (2005-2013)	4,700,000	4,230,000	470,000
Short-Term	GA Ramp Reconstruction (Phase I) (see Note 5)	4,950,000	4,700,000	250,000
Short-Term	North T-Hangar Complex Rehabilitation	205,000	195,000	10,000
Short-Term	Runway 1R-19L Shoulder & Blast Pad Rehab.	485,000	461,000	24,000
Short-Term	GA Ramp Reconstruction (Phase II)	570,000	542,000	28,000
Short-Term	Runway 1L-19R Shoulder & Blast Pad Rehab.	500,000	450,000	50,000
Short-Term	Parking Garage	1,000,000	0	1,000,000
Short-Term	Parking Garage	8,000,000	0	8,000,000
Mid-Term	Parking Garage	8,000,000	0	8,000,000
Mid-Term	Land Acquisition-Eisenhower Street (no appraisal)	3,000,000	2,700,000	300,000
Mid-Term	Land Acquisition-K-42/Tyler Road (no appraisal)	300,000	270,000	30,000
Mid-Term	De-Icing Pad - Runway 1L/Taxiway D	4,000,000	3,600,000	400,000
Mid-Term	De-Icing Pad - Runway 1R	4,000,000	3,600,000	400,000
Mid-Term	North Air Cargo Ramp Expansion	3,700,000	3,330,000	370,000
Mid-Term	GA Ramp Reconstruction (Phase III)	1,850,000	1,665,000	185,000
Mid-Term	GA Ramp Reconstruction (Phase IV)	2,750,000	2,475,000	275,000
Mid-Term	Runway 1L-19R & Taxiway D Rehab. (s. 3300 ft.)	250,000	225,000	25,000
Mid-Term	Runway 1L-19R Rehab.	250,000	225,000	25,000
Mid-Term	Parallel Taxiway P (Runway 14-32)	7,700,000	6,930,000	770,000
Mid-Term	Taxiway R Extension	1,520,000	1,368,000	152,000
Mid-Term	Taxiway K Extension	2,960,000	2,664,000	296,000
Mid-Term	Runway 1R & Taxiway M Extension	8,580,000	7,722,000	858,000
Mid-Term	By-Pass Taxiways (Runway 1L-19R)	1,000,000	900,000	100,000
Mid-Term	Extend Taxiway N (AA) South to Runway 1R	3,350,000	3,015,000	335,000
Long-Term	Extend Taxiway (M1) and Roadway for G.A.	250,000	225,000	25,000
Long-Term	Parallel Taxiway T (Runway 1L-19R)/De-Icing Pad	18,230,000	16,407,000	1,823,000
Totals		**$254,230,000**	**$126,857,000**	**$127,373,000**

Table 6B (Continued)
Other Capital Projects/Equipment Replacement/Planning/Misc.
Wichita Mid-Continent Airport
Airport Master Plan

Phasing	Project Description	Total Cost (2004$)	AIP (Federal)	WAA (and/or PFC)
Multi-Year	Airport Development	$10,000,000	$0	$10,000,000
Multi-Year	Airfield Equipment (see note 4)	8,000,000	0	8,000,000
Multi-Year	Environmental Compliance	600,000	0	600,000
Multi-Year	FAA AFSS Improvements	633,000	0	633,000
Multi-Year	FAA Office Building Improvements	4,000,000	0	4,000,000
Multi-Year	Roof Replacements	2,000,000	0	2,000,000
Multi-Year	Street Improvements	5,300,000	0	5,300,000
Multi-Year	Utility Improvements	4,700,000	0	4,700,000
Multi-Year	Terminal/Concourse Improvements	2,000,000	0	2,000,000
Multi-Year	Tenant Facility Improvements	6,000,000	0	6,000,000
Multi-Year	Pavement Condition Studies	300,000	270,000	30,000
Multi-Year	Benefit-Cost Studies	300,000	270,000	30,000
Multi-Year	Master Plan Updates	800,000	720,000	80,000
Short-Term	HVAC Improvements	100,000	0	100,000
Short-Term	Telecommunication Study/Update	400,000	0	400,000
Short-Term	Gates B Security Improvements	88,000	0	88,000
Short-Term	ARFF Fire Training Pit Reconstruction	450,000	0	450,000
Short-Term	Maintenance Multi-Purpose Facility	950,000	855,000	95,000
Short-Term	Maintenance Yard Maintenance	200,000	0	200,000
Totals		**$46,821,000**	**$2,115,000**	**$44,706,000**
Grand Totals		**$301,051,000**	**$128,972,000**	**$172,079,000**

Sources: Wichita Airport Authority, HNTB (Terminal), PCI (Pavement Rehabilitation), and Coffman Associates.

Notes:
1. Updated November 12, 2004 based upon updated terminal costs and pavement rehabilitation costs.
2. All costs subject to further refinement during pre-design. Staging may change with future CIP revisions.
3. Staging Key: Short Term 2005-2009; Mid Term 2010-2014; Long Term 2015-2024
4. Identified equipment needs include airfield sweeper, airfield sweeper truck, paint truck, de-icing vehicle, plow truck with sander, multi-purpose snow vehicle, and front end loader.
5. Maximum federal participation rate of 95 percent used only on limited short-term projects.

Several items have been included for the update of airfield equipment, airport rescue and firefighting (ARFF) equipment, and airport maintenance facilities.

INTERMEDIATE TERM IMPROVEMENTS

The intermediate term planning period is generally assumed to coincide with the 6-10 year period. Several projects will extend taxiways to improve operational efficiency, while others will provide access to new development areas.

The parking garage construction is anticipated in the intermediate term planning, based upon recommendations of the terminal master plan.

The rehabilitation of the south 3,300 feet of Runway 1L-19R and Taxiway D are included in this period, and the completion of Taxiway N to the south end of Runway 1R.

Several land acquisition projects are included at this time, including, residential properties along Harry Street, and a parcel along Tyler Road.

The intermediate term period reflects a limited number of projects to allow for any slippage in projects identified in the short term period. Other pavement rehabilitation projects may also need to be added to the program.

LONG TERM IMPROVEMENTS

The long term planning period is generally assumed to coincide with the 11-20 year period. Additional projects are proposed in the general aviation areas to provide stubs/ramp for additional hangar development (both large and small hangars). Acquisition of property along Eisenhower Street is recommended to provide the ability to expand general aviation in this area.

The extension of Runway 1R and parallel Taxiway M are included as long-term projects, as is the extension of a full-length parallel taxiway on the west side of Runway 1L-19R (Taxiway T). Pavement rehabilitation projects will also need to be added to the program through this period, based upon input from the pavement condition studies.

CAPITAL IMPROVEMENTS FUNDING

Financing for capital improvements at Wichita Mid-Continent Airport does not utilize any general tax monies. Rather, the contributors to the airport's development are its users, through a system of leases and fees. These sources include not only the rates and charges for airport use imposed by the Wichita Airport Authority, but also federal airport improvement programs. Grants received un-

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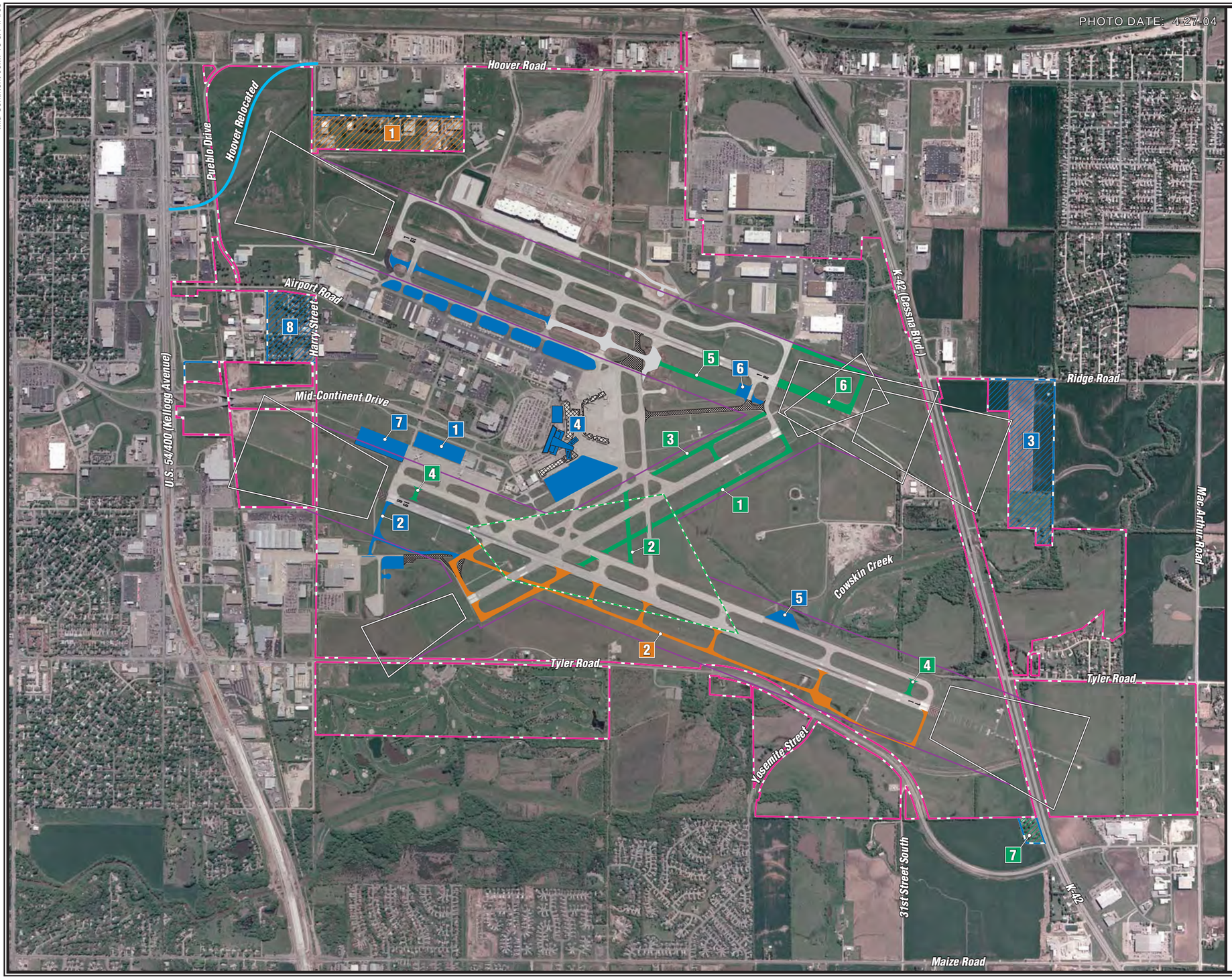

LEGEND

- Current Airport Property Line
- Potential Land Acquisition
- Building Restriction Line (BRL)
- Runway Visibility Zone (RVZ)
- Building To Be Removed
- Pavement To Be Removed
- New Pavement
- Runway Protection Zone (RPZ)

0 — 1,800 — 3,600
SCALE IN FEET

NORTH

SHORT TERM

1. Future Air Cargo
2. Taxiway L / Compass Rose
3. Land Acquisition - 1R Approach
4. New Terminal Program
5. De-Icing Pad (1L)
6. De-Icing Pad (1R)
7. Air Cargo Ramp Expansion
8. Land Acquisition - Harry St. (opportunity purchases only) *Continuing Through Intermediate Term*

INTERMEDIATE TERM

1. Taxiway P
2. Taxiway R
3. Taxiway K
4. By-Pass Taxiways
5. Taxiway N Extension
6. Runway 1R Extension
7. Land Acquisition - K-42 / Tyler Rd. (opportunity purchases only)

LONG TERM

1. Land Acquisition - Eisenhower
2. Parallel Taxiway L (South of Taxiway C)

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Exhibit 6A
DEVELOPMENT STAGING

der these programs since 1982 have been itemized in **Table 6C**. The following paragraphs outline the key sources for funding.

TABLE 6C
Federal Grants 1982-2004
Wichita Mid-Continent Airport

FAA Fiscal Year	Grant	Project Description	Grant/Amendment Amount
1982	3-20-0088-01	Runway 14-32 HIRL, taxiway signing, construct cargo apron, relocate Harry St.	1,192,590.00
1983	3-20-0088-02	Taxiway A3, pave Harry Street, etc.	1,231,380.00
	3-20-0088-03	Land reimbursement	398,433.00
1984	6-20-0088-09	Amendment No. 4	178,017.41
	6-20-0088-10	Amendment No. 4	206,096.41
	3-20-0088-05	Update Master Plan (Mid-Continent and Jabara)	219,420.00
	3-20-0088-04	Land acquisition, Taxiway A13	1,237,537.00
1985	3-20-0088-06	Land acquisition, CFR vehicle	1,000,000.00
	3-20-0088-07	Taxiway A12, air carrier apron – Phase I	3,679,460.00
1986	3-20-0088-08	Air Carrier Apron – Phase II	1,664,412.00
	3-20-0088-01	Amendment No. 1	9,476.43
	3-20-0088-09	Taxiway CC, cargo apron, portion of Runway 14-32	3,000,000.00
1987	3-20-0088-10	Reconstruct Runway 1L-19R	5,390,000.00
	3-20-0088-09	Amendment No. 1	1,665,770.00
1988	3-20-0088-11	Air carrier apron – Phase III	1,926,270.00
	3-20-0088-04	Amendment No. 1	9,374.08
	3-20-0088-07	Amendment No. 1	118,143.69
1989	3-20-0088-12	Reconstruct Runway 14-32	2,038,694.00
	3-20-0088-12	Grant increase	1,188,755.00
1990	3-20-0088-13	Taxiway B-K-L and RA, overlay GA apron	2,032,255.00
	3-20-0088-10	Amendment No. 2	99,689.00
1991	3-20-0088-13	Grant increase	1,807,145.00
	3-20-0088-14	Reconstruct Taxiway D	8,050,374.08
1992	3-20-0088-14	Grant increase	773,245.00
	3-20-0088-15	Computer controlled access system, ductbank system, vault bldg.	4,481,561.00
1993	3-20-0088-16	Taxiway C, signage, Runway 1R-19L study, air cargo apron – Phase III design	4,592,725.00
	3-20-0088-13	Grant increase	74,696.80
1994	3-20-0088-17	Master Plan update	296,100.00
	3-20-0088-18	Storm water pollution prevention plan, upgrade runway sensors	130,500.00
	3-20-0088-19	Acquire snowblower and pavement sweeper	317,203.00
	3-20-0088-20	Air Carrier Apron West reconstruction	1,187,263.00
	3-20-0088-14	Grant increase	389,782.47
1995	3-20-0088-20	Grant increase	670,781.00
	3-20-0088-21	North Cargo Apron and friction meter	816,426.00
1996	3-20-0088-21	North cargo apron	1,449,906.00
	3-20-0088-22	Runway 1R-19L	7,915,276.00
1997	3-20-0088-23	Taxiway E reconstruction (design), airfield service road, SMGCS, Runway 1L-19R lights, apron lights, ARFF vehicle, front loader, snow broom	1,790,276.00
1998	3-20-0088-21	North cargo apron (grant increase)	77,418.39
	3-20-0088-24	Repair and seal shoulders Runway 1L-19R, Phase II SMGCS	390,600.00
	3-20-0088-25	Taxiway E, Seal GA apron	2,139,830.00
	3-20-0088-22	Runway 1L-19R	6,785.00
1999	3-20-0088-26	Terminal remodel, deicing vehicle	1,361,296.00
	3-20-0088-27	Air Carrier Apron East, reconstruction	800,000.00
	3-20-0088-28	Air Carrier Apron East, reconstruction	1,154,440.00
	3-20-0088-29	Terminal remodel	493,372.00
	3-20-0088-30	Motor grader, terminal area pavement Phase I	328,500.00

TABLE 6C (Continued)
Federal Grants 1982-2004
Wichita Mid-Continent Airport

FAA Fiscal Year	Grant	Project Description	Grant/Amendment Amount
2000	3-20-0088-31	Snowblower/Sweeper vehicle, Runway 1R-19L and blast pad rehab, baggage claim area security upgrade (fence) airfield electrical vault improvements, terminal apron rehab Phase II	885,563.00
2001	3-20-0088-32	GA Apron Taxilane AAA Phase II	450,000.00
	3-20-0088-33	South Air Cargo Apron Rehab/Air Cargo Service Road extension	1,061,940.00
	3-20-0088-34	GA Apron Taxilane AAA Phase I	921,600.00
2002	3-20-0088-32	Grant Description Revised/ Taxiway "M"	
	3-20-0088-34	Grant Description Revised/ Taxiway "M"	
	3-20-0088-35	Security: patrol vehicle, Blast Effects Analysis, finger print system, hand-held radios, safety building expansion-design, security camera upgrade-design	1,186,310.00
	3-20-0088-36	Master Plan	440,415.00
	3-20-0088-37	Taxiway "M"	8,223,247.00
	3-20-0088-38	Safety building expansion & CCTV upgrade construction	1,040,263.00
	3-20-0088-39	ARFF vehicle, 3,000 gallon	850,000.00
2003	3-20-0088-40	ARFF vehicle, 1,500 gallon	554,980.00
	3-20-0088-41	Safety building expansion & CCTV upgrade construction	401,940.00
	3-20-0088-42	Runway 1L-19R shoulders rehab	344,250.00
	3-20-0088-43	Terminal planning	781,200.00
	3-20-0088-44	Taxiway N	7,141,800.00
	3-20-0088-45	Runway 1L-19R shoulders rehab Phase II	287,613.00
	3-20-0088-46	Snow Plows (19') with material spreaders (2)	540,000.00
	3-20-0088-47	Safety building expansion & CCTV upgrade construction	313,953.00
2004	3-20-0088-48	Taxiway "A"	6,012,469.00

FEDERAL GRANTS

The United States Congress has long recognized the need to develop and maintain a system of aviation facilities across the nation for the purpose of national defense and promotion of interstate commerce. Various grants-in-aid programs to public airports have been established over the years for this purpose. The most recent legislation was the Airport Improvement Program (AIP) of 1982. AIP has been reauthorized several times. The **Wendell H. Ford Aviation Investment and Reform Act for the 21st Century** covered four years (through federal fiscal year 2003), while **Vision 100 – Century of Aviation Reauthorization Act** covers FY 2004-2007.

The source for AIP funds is the Aviation Trust Fund. The Trust Fund is the depository for all federal aviation taxes such as those on airline tickets, aviation fuel, lubricants, tires and tubes, aircraft registrations, and other aviation-related fees. The funds are distributed under appropriations set by Congress to airports in the United States which have certified eligibility. The distribution of grants is administered by the Federal Aviation Administration.

Under the AIP program, examples of eligible development projects include the airfield, aprons, and access roads. Passenger terminal building improvements (such as bag claim and public waiting lobbies) may also be eligible for a limited amount of FAA funding. However, improvements such as automobile parking, fueling facilities, utilities, hangar buildings, airline ticketing and airline operations areas are not generally eligible for AIP funds. The airport is eligible for 95 percent funding under **Vision 100**, although the FAA has recommended that airports only assume 90 percent participation after 2007 (when the current bill expires).

The program provides funding for eligible projects at airports. Through an entitlement program, primary commercial service airports receive a guaranteed minimum of federal assistance each year, based on their enplaned passenger levels and Congressional appropriation levels. A primary airport is defined as any commercial service airport enplaning at least 10,000 passengers annually. Wichita was the 94th busiest primary airport in the U.S. in CY 2003.

Under the current formula, airports enplaning at least 10,000 passengers annually are entitled to a minimum of $1,000,000. For the first 50,000 enplanements, the airport receives $15.60 per enplanement. For the next 50,000 enplanements, the airport receives $10.40 per enplanement. The next 400,000 boardings provide $5.20 per enplanement. For the next 500,000, the airport receives $1.30 per enplanement. For all enplanements over one million, the airport receives $1.00 per enplaned passenger.

In addition, airports that have over 100 million pounds of landed weight by all-cargo carriers receive a cargo entitlement. This entitlement is based upon the airport's percentage of the total landed weight at all eligible airports. Wichita was the 80th busiest cargo airport in the U.S. in CY 2003, but contributed only 0.2% of the total landed weight by qualifying airports.

Exhibit 6B depicts the history of AIP authorizations and appropriations. Unfortunately, the funding levels authorized in the legislation have not always been the levels appropriated in the annual Congressional budget process. For example, the AIP authorized level for fiscal year 1996 was $2.161 billion, but only $1.45 billion was appropriated.

The **Wendell H. Ford Aviation Investment and Reform Act for the 21st Century** (AIR 21) adjusted allocation formulas to increase entitlements over previous levels and to establish special set-asides for noise programs, general aviation and non-primary airports, and other special programs.

Table 6D outlines estimates of annual entitlement funds for Wichita Mid-Continent Airport for each of the planning horizon milestones assuming the current entitlement formula remains in place over the planning period.

In a number of cases, airports face major projects that will require funds in excess of the airport's annual entitlements. Thus, additional funds from discretionary apportionments under AIP become desirable. The primary feature about discretionary funds is that they are distributed on a priority basis. These priorities are established by the FAA, utilizing a priority code system. Under this system, projects are ranked by their purpose. Projects ensuring airport safety and security are ranked as the most important priorities, followed by maintaining current infrastructure development, mitigating noise and other environmental impacts, meeting standards, and increasing system capacity. Capacity projects requiring greater than $5 million in discretionary funding require a benefit-cost analysis to prove that the benefit-cost (B/C) ratio is greater than 1.0.

Other funds can come through the Facilities and Equipment (F&E) section of the FAA. As activity conditions warrant, the airport will be considered by F&E for various navigational aids to be installed, owned, and maintained by the FAA.

TABLE 6D
Potential FAA Entitlement Funds
Wichita Mid-Continent Airport

Period	Annual Enplanements	Annual Entitlement Funding Level
Current	750,000	$3,600,000
Short Term	825,000	$3,800,000
Intermediate Term	875,000	$3,870,000
Long Term	950,000	$3,970,000

Whereas entitlement monies are guaranteed on an annual basis, discretionary funds are not assured. **Table 6B** has outlined the amount of funding for the development program that Wichita will desire from the FAA. If the combination of entitlement and discretionary funding does not provide enough capital for planned development, projects would either be delayed or require funding from the airport's revenues or other authorized sources such as those described in the following subsections.

PASSENGER FACILITY CHARGES

The **Aviation Safety and Capacity Expansion Act of 1990** contained a provision for airports to levy passenger facility charges (PFCs) for the purposes of enhancing airport safety, capacity, or security, or to reduce noise or enhance competition.

PFC collections by the Wichita Airport Authority since 1995 (and interest earned) are summarized in **Table 6E**.

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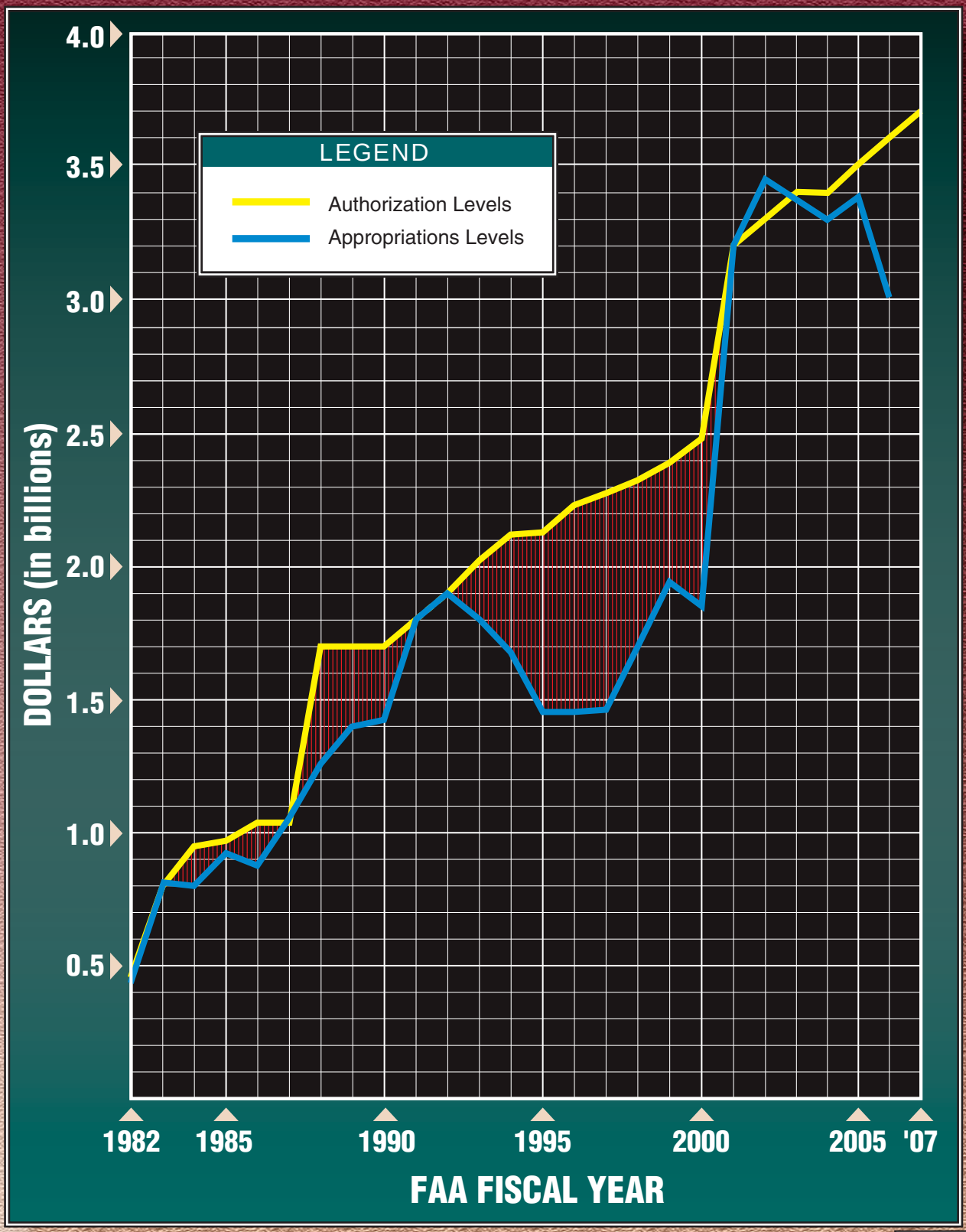

Source: FAA

CITY OF WICHITA
Wichita Airport Authority

Exhibit 6B
AIP AUTHORIZATION AND APPROPRIATIONS HISTORY

TABLE 6E
PFC Collections By Year
Wichita Airport Authority

Year	PFC Collections	Interest Earned	Total PFC Revenue
1995	$1,520,760	$24,568	$1,545,328
1996	$1,958,973	$44,297	$2,003,270
1997	$1,890,603	$42,483	$1,933,086
1998	$1,841,427	$32,953	$1,874,380
1999	$1,572,924	$127,795	$1,700,719
2000	$1,571,614	$156,796	$1,728,410
2001	$1,540,029	$174,120	$1,714,149
2002	$1,763,864	$109,262	$1,873,126
2003	$1,926,988	$69,422	$1,996,410
2004	$2,015,796	$56,160	$2,071,956

Source: WAA

14 CFR Part 158 of May 29, 1991, establishes the regulations that must be followed by airports choosing to levy PFCs. Passenger facility charges may be imposed by public agencies controlling a commercial service airport with at least 2,500 annual passengers with scheduled service. Authorized agencies were allowed to impose a charge of $1.00, $2.00, or $3.00 per enplaned passenger. Recent legislation (AIR 21) passed in early 2000, has allowed the cap to increase to $4.50.

Prior approval is required from the Department of Transportation (DOT) before an airport is allowed to levy a PFC. DOT must find that the projected revenues are needed for specific, approved projects. Any AIP-eligible project, whether development or planning related, is eligible for PFC funding. Gates and related areas for the movement of passengers and baggage are eligible, as are on-airport ground access projects. Any project approved must preserve or enhance safety, security, or capacity; reduce/mitigate noise impacts; or enhance competition among carriers.

PFCs may be used only on approved projects. However, PFCs can be utilized to fund 100 percent of a project. They may be used as matching funds for AIP grants or to augment AIP-funded projects. PFCs can be used for debt service and financing costs of bonds for eligible airport development. These funds may also be commingled with general revenue for bond debt service. Before submitting a PFC application, the airport must give notice and an opportunity for consultation to airlines operating at the airport.

PFCs are to be treated similar to other airport improvement grants, rather than as airport revenues, and will be administered by the FAA. Participating airlines are able to retain up to eight cents per passenger for administrative handling purposes.

Wichita Mid-Continent Airport has imposed a PFC and is dedicating revenues from this source to several

projects. An escalation of the current $3.00 level to $4.50 will begin May 1, 2005. **Table 6F** outlines the estimated PFC revenues at $3.00 and $4.50 per enplaned passenger.

TABLE 6F
Potential PFC Revenues
Wichita Mid-Continent Airport

	Annual PFCs (at $3.00)	Annual PFCs (at $4.50)
Current	$1,760,000	NA
Short Term	$2,160,000	$3,280,000
Intermediate Term	$2,290,000	$3,480,000
Long Term	$2,490,000	$3,780,000

Note: Based upon 90 percent revenue passengers and $0.08 per passenger to airlines for administrative costs.

LOCAL SHARE FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. Assuming federal funding, this essentially equates to 10 percent of the project costs if all eligible FAA funds are available.

There are several alternatives for local finance options for future development at the airport, including airport revenues, direct funding from the WAA, issuing bonds, and leasehold financing. These strategies could be used to fund the local matching share, or complete the project if grant funding cannot be arranged.

The capital improvement program has assumed that some landside facility development would be completed privately. Under this type of development, the Wichita Airport Authority would complete the necessary infrastructure improvements, as this development is grant-eligible.

There are several municipal bonding options available to Wichita Airport Authority through the City of Wichita including: general obligation bonds, limited obligation bonds, and revenue bonds. General obligation bonds are a common form of municipal bonds which are issued by voter approval and secured by the full faith and credit of the City of Wichita. City of Wichita tax revenues are pledged to retire the debt. As instruments of credit, and because the community secures the bonds, general obligation bonds reduce the available debt level of the community. Due to the community pledge to secure and pay general obligation bonds, they are the most secure type of municipal bond and are generally issued at lower interest rates and carry lower costs of issuance. The primary disadvantage of general obligation bonds is that they require voter approval and are subject to statutory debt limits. This requires that they be used for projects that have broad support among the voters, and that they are reserved for projects that have highest public priorities.

In contrast to general obligation bonds, limited obligation bonds (sometimes referred to as Self-Liquidating Bonds) are secured by revenues from a local source. While neither general fund revenues nor the taxing power of the local community is pledged to pay the debt service, these sources may be required to retire the debt if pledged revenues are insufficient to make interest and principal payments on the bonds. These bonds still carry the full faith and credit pledge of the local community and, therefore, are considered, for the purpose of financial analysis, as part of the debt burden of the local community. The overall debt burden of the local community is a factor in determining interest rates on municipal bonds.

There are several types of revenue bonds, but in general they are a form of a municipal bond which is payable solely from the revenue derived from the operation of a facility that was constructed or acquired with the proceeds of the bonds. For example, a Lease Revenue Bond is secured with the income from a lease assigned to the repayment of the bonds. Revenue bonds have become a common form of financing airport improvements. Revenue bonds present the opportunity to provide those improvements without direct burden to the taxpayer. Revenue bonds normally carry a higher interest rate because they lack the guarantees of general and limited obligation bonds.

Leasehold financing refers to a developer or tenant financing improvements under a long term ground lease. The obvious advantage of such an arrangement is that it relieves the community of all responsibility for raising the capital funds for improvements. However, the private development of facilities on a ground lease, particularly on property owned by a municipal agency, produces a unique set of problems. Companies that want to own their property as a matter of financial policy may not locate where land is only available for lease. The Wichita Airport Authority has used long term lease arrangements successfully to finance capital improvements at the airport in the past. Most hangar facilities were developed with private funds under a long term ground lease with the WAA.

The WAA is financially stable and has a low level of indebtedness.

IMPLEMENTATION

Experience has indicated that problems have materialized from the standard format of time-based planning documents. These problems center around the plan's inflexibility and inherent inability to deal with new issues that develop from unforeseen changes that may occur after it is completed. The format used in the development of this Master Plan has attempted to deal with this issue by providing more flexibility in the program. The primary issues upon which this Master Plan is based will remain valid for many years. The primary goal is for the airport to maintain a self-supporting position without sacrificing service to the public.

Appendix A
GLOSSARY OF TERMS AND ABBREVIATIONS

Appendix A
GLOSSARY OF TERMS

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): see declared distances.

AIR CARRIER: an operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transport mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRPORT REFERENCE CODE (ARC): a coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT ELEVATION: The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRCRAFT APPROACH CATEGORY: a grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- *Category A:* Speed less than 91 knots.
- *Category B:* Speed 91 knots or more, but less than 121 knots.
- *Category C:* Speed 121 knots or more, but less than 141 knots.
- *Category D:* Speed 141 knots or more, but less than 166 knots.
- *Category E:* Speed greater than 166 knots.

AIRPLANE DESIGN GROUP (ADG): a grouping of aircraft based upon wingspan. The groups are as follows:

- *Group I:* Up to but not including 49 feet.
- *Group II:* 49 feet up to but not including 79 feet.
- *Group III:* 79 feet up to but not including 118 feet.
- *Group IV:* 118 feet up to but not including 171 feet.
- *Group V:* 171 feet up to but not including 214 feet.
- *Group VI:* 214 feet or greater.

AIR TAXI: An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): a central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling, and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): a facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

ALERT AREA: see special-use airspace.

ANNUAL INSTRUMENT APPROACH (AIA): an approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): an airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: the altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

AUTOMATIC DIRECTION FINDER (ADF): an aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dewpoint, etc...)

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): the continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BEARING: the horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: a barrier used to divert or dissipate jet blast or propeller wash.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

CIRCLING APPROACH: a maneuver initiated by the pilot to align the aircraft with the runway for landing when flying

a predetermined circling instrument approach under IFR.

CLASS A AIRSPACE: see Controlled Airspace.

CLASS B AIRSPACE: see Controlled Airspace.

CLASS C AIRSPACE: see Controlled Airspace.

CLASS D AIRSPACE: see Controlled Airspace.

CLASS E AIRSPACE: see Controlled Airspace.

CLASS G AIRSPACE: see Controlled Airspace.

CLEAR ZONE: see Runway Protection Zone.

CROSSWIND: wind flow that is not parallel to the runway of the flight path of an aircraft.

COMPASS LOCATOR (LOM): a low power, low/medium frequency radiobeacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONTROLLED AIRSPACE: airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- *CLASS A:* generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- *CLASS B:* generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

- *CLASS C:* generally, the airspace from the surface to 4,000 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- *CLASS D:* generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airport that have an operational control tower. Class D air space is individually tailored and configured to encompass published instrument approach procedures. Unless otherwise authorized, all

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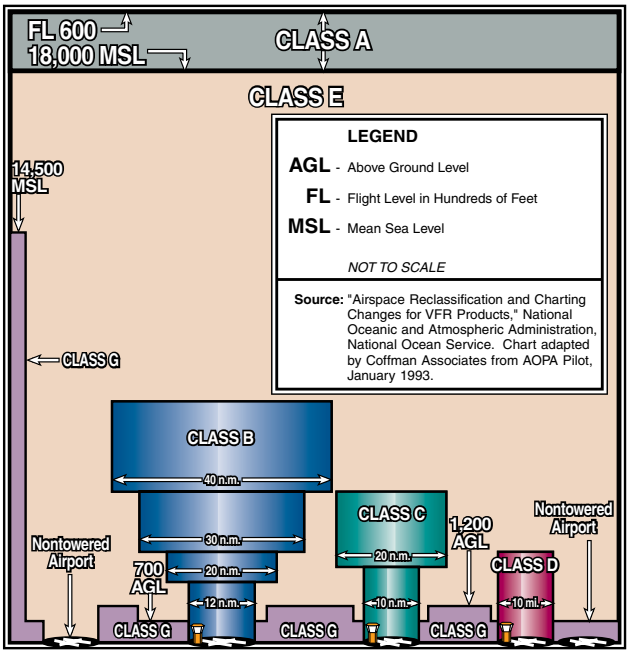
persons must establish two-way radio communication.

- *CLASS E:* generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- *CLASS G:* generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.



CONTROLLED FIRING AREA: see special-use airspace.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- *TAKEOFF RUNWAY AVAILABLE (TORA):* The runway length declared available and suitable for the ground run of an airplane taking off;

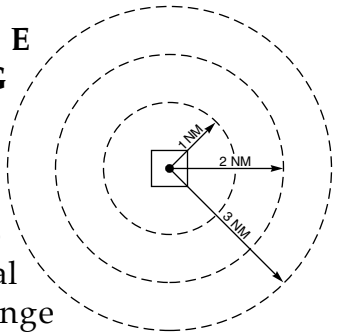
- *TAKEOFF DISTANCE AVAILABLE (TODA):* The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA;

- *ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):* The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff; and

- *LANDING DISTANCE AVAILABLE (LDA):* The runway length declared available and suitable for landing.

DISPLACED THRESHOLD: a threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range



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distance of an aircraft from the DME navigational aid.

DNL: The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ENPLANED PASSENGERS: the total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and non-scheduled services.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FRANGIBLE NAVAID: a navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

GENERAL AVIATION: that portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM: See "GPS."

GPS - GLOBAL POSITIONING SYSTEM: A system of 24 satellites

used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

HELIPAD: a designated area for the takeoff, landing, and parking of helicopters.

HIGH-SPEED EXIT TAXIWAY: a long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

INSTRUMENT APPROACH: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

LANDING DISTANCE AVAILABLE (LDA): see declared distances.

LOCAL TRAFFIC: aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch-and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): a facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LORAN: long range navigation, an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for enroute navigation.

MICROWAVE LANDING SYSTEM (MLS): an instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS AREA (MOA): see special-use airspace.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

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2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: the runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

NAVAID: a term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc..)

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NONDIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NONPRECISION APPROACH PROCEDURE: a standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

OBJECT FREE AREA (OFA): an area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): the airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

OPERATION: a take-off or a landing.

OUTER MARKER (OM): an ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline indicating to the pilot, that he/she is passing over the facility and can begin final approach.

PRECISION APPROACH: a standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- *CATEGORY I (CAT I):* a precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

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- *CATEGORY II (CAT II):* a precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- *CATEGORY III (CAT III):* a precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION OBJECT FREE AREA (POFA): an area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PROHIBITED AREA: see special-use airspace.

REMOTE COMMUNICATIONS OUTLET (RCO): an unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering enroute clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): see remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: an airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: see special-use airspace.

RNAV: area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used enroute and for approaches to an airport.

RUNWAY: a defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

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RUNWAY BLAST PAD: a surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: the average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY SAFETY AREA (RSA): a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISUAL RANGE (RVR): an instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

RUNWAY VISIBILITY ZONE (RVZ): an area on the airport to be kept clear of permanent objects so that there is an unobstructed line-of-site from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

SEGMENTED CIRCLE: a system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: an area adjacent to the edge of paved runways, taxiways or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SPECIAL-USE AIRSPACE: airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- *ALERT AREA:* airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.

- *CONTROLLED FIRING AREA:* airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.

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- *MILITARY OPERATIONS AREA (MOA):* designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- *PROHIBITED AREA:* designated airspace within which the flight of aircraft is prohibited.

- *RESTRICTED AREA:* airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.

- *WARNING AREA:* airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): a preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD TERMINAL ARRIVAL (STAR): a preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: a procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STRAIGHT-IN LANDING/APPROACH: a landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

TACTICAL AIR NAVIGATION (TACAN): An ultra-high frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): see declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): see declared distances.

TAXILANE: the portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: a defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TETRAHEDRON: a device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: the beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

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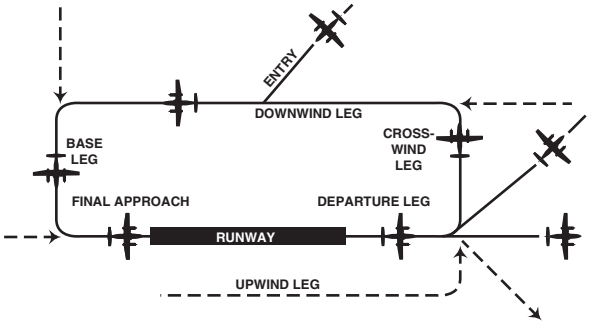
TOUCH-AND-GO: an operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100-foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.

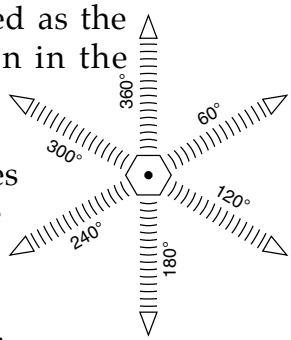


UNICOM: A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE STATION (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.



VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

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VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

WARNING AREA: see special-use airspace.

ABBREVIATIONS

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach light ing system with sequenced flashers (CAT II configuration)

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and firefighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulations

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity for aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity for aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LOC: ILS localizer

LOM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system

MALSR: medium intensity approach lighting system with runway alignment indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076 .1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule-making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW: public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: Runway Safety Area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with sequenced flashers

SSALR: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel type landing gear

STWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TDZ: touchdown zone

TDZE: touchdown zone elevation

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

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