Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

Prepared for
Oklahoma City Airport Trust

November, 1992

» Barnard Dunkelberg & Company
HTB, Inc.

The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration (FAA) as provided under Section 505 of the Airport and Airway Improvement Act of 1982 as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report 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 law.

RESOLUTION

A RESOLUTION OF THE OKLAHOMA CITY PLANNING COMMISSION DECLARING THAT THE WILL ROGERS WORLD AIRPORT MASTER PLAN, THE WILEY POST AIRPORT MASTER PLAN, AND THE CLARENCE E. PAGE AIRPORT MASTER PLAN ARE IN CONFORMANCE WITH THE OKC PLAN: 1989-2010 AND APPROVING SAID AIRPORT MASTER PLANS AS STRATEGIC DOCUMENTS FOR IMPLEMENTING THE OKC PLAN: 1989-2010

WHEREAS, Title 11, Section 47-101 et seq of the Oklahoma Statutes (1991), entitled "City Planning--Cities over 200,000" authorizes a Planning Commission for The City of Oklahoma City and establishes the powers and responsibilities of said Planning Commission; and

WHEREAS, Title 11, Section 47-106, of the Oklahoma Statutes (1991), provides that it is the function and duty of the Commission to make and adopt a master plan for the physical development of the municipality including "the general, location, character and extent of ... aviation fields ..."; and

WHEREAS, the Oklahoma City Planning Commission, adopted the OKC Plan: 1989-2010 on February 20, 1990 as the Master Plan for the City of Oklahoma City; and

WHEREAS, the OKC Plan: 1989-2010 provides that various planning documents which are in conformance with the goals and policies of the OKC Plan may be approved as strategic documents for implementing the goals and policies of the OKC Plan; and

WHEREAS, notice of a Public Hearing to consider approving the Will Rogers World Airport Master Plan, the Wiley Post Airport Master Plan, and the Clarence E. Page Master Plan has been duly published as required by statute and Commission regulations; and

WHEREAS, upon holding said Public Hearing the Oklahoma City Planning Commission has determined that the proposed airport master plans are in conformance with the OKC Plan: 1989-2010 and that approving said airport master plans as strategic documents for implementing the goals and policies of the OKC Plan: 1989-2010 would be beneficial to The City of Oklahoma City and its citizens.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of The City of Oklahoma City that the Will Rogers World Airport Master Plan, the Wiley Post Airport Master Plan, and the Clarence E. Page Airport Master Plan are declared to be in conformance with the OKC Plan: 1989-2010 and that said airport master plans are hereby approved as strategic documents for implementing the goals and policies of the OKC Plan: 1989-2010.

Adopted by the Planning Commission of The City of Oklahoma City this 25th day of February, 1993.

CHAIRMAN

ATTEST:

SECRETARY

APPROVED as to form and legality this 25th day of February, 1993.

ASSISTANT MUNICIPAL COUNSELOR

The applicant was present. Protestors were present. A protest of 401 total signatures was received.

Commissioner Wilson moved to deny Item 16. Commissioner Carbin seconded the motion. Ayes: Paschal, Evans, Cordum, Wilson, McNayr and Carbin. Noes: None. Absent: Bowman, Banker and Paque. SP-247 RECOMMENDED FOR DENIAL.

VIII. ADDITIONAL ITEMS

Item 18. Public Hearing for Master Plans for Will Rogers World Airport, Wiley Post Airport and Clarence E. Page Airport.

Commissioner Evans moved to approve Item 18. Commissioner McNayr seconded the motion. Ayes: Paschal, Evans, Cordum, Wilson and McNayr. Noes: None. Absent: Bowman, Banker, Carbin and Paque. MASTER PLANS FOR AIRPORTS RECOMMENDED FOR APPROVAL.

IX. CITIZENS TO BE HEARD

X. OTHER BUSINESS

XI. ADJOURNMENT

Commissioner McNayr moved to adjourn. Commissioner Cordum seconded the motion. Ayes: Paschal, Evans, Cordum, Wilson and McNayr. Noes: None. Absent: Bowman, Banker, Carbin and Paque. HEARING ADJOURNED AT 5:21 P.M.

Chairperson
Oklahoma City Planning Commission

Contents

Tables

Illustrations

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

A Inventory

Inventory

Introduction

The present Master Plan for Clarence E. Page Airport was completed in 1984. This document represents an *update* of that Plan.

Conditions have changed since the present Master Plan was adopted. The decade of the eighties was punctuated by an economic downturn in the energy industry, and a commensurate slowing of growth in the general aviation industry in many, if not most, areas of the United States. However, during the next five years, with diversification and recovery in the energy and agriculture sectors, the regional and local economies are expected to have slow and steady growth. The airport will play an even greater role in retaining and attracting industry and commerce to the local economy; therefore, it must keep pace with anticipated demands. Appropriate plans must be developed and aggressive programs must be established and implemented to enable the airport to keep pace in the future. Plans must be current and reflect opportunities based on established fact, sound judgment, community character and philosophy and fully supported by projections of activity. These considerations demand that the Airport Master Plan be reevaluated and updated accordingly and a new plan and program for the Airport be formulated.

Clarence E. Page Airport is a vital part of the regional and national system of airports. This system must be considered as a whole which is composed of many significant parts. This airport is also a very important part of the transportation infrastructure which serves the City of Oklahoma City and the surrounding area as it is a designated reliever for Will Rogers World Airport. The airport provides transportation facilities which are an absolute necessity for some businesses and which are a "required" convenience for others. Not to be overlooked, the airport also provides the City with a valuable asset in the form of land. The land surrounding Clarence E. Page Airport, owned by the City, first serves to provide a safe and functional aircraft operation, maintenance and storage environment. In addition, the area which is unnecessary for aviation purposes offers an excellent opportunity for compatible development of a non-aviation nature.

The function of Clarence E. Page Airport cannot be separated from the national, regional and local aviation and economic influences. In fact, a sound and significant corollary exists among all these considerations. These aviation and economic conditions certainly serve as an insight to the needs of the airport and the future development of the facility. However, these conditions are, in turn, influenced by future airport development as defined by the Master Plan. The Clarence E. Page Airport Master Plan is viewed as an opportunity for the community to maximize its continuing effort of stimulating and accommodating a positive attitude toward planned growth and development.

This document will begin the effort of updating the Clarence E. Page Airport Master Plan by analyzing existing conditions pertaining to the airport and the airport's environs. Subsequent chapters will detail forecasts of aviation activity at the airport, the ability of airport facilities to safely and efficiently meet the needs associated with the forecasted aviation activity, the compatibility of the airport with surrounding land uses, and recommended future development within and around airport property.

Facilities Inventory

Clarence E. Page Airport along with Wiley Post Airport and Will Rogers World Airport, are owned by the City of Oklahoma City, Oklahoma and leased to the Oklahoma City Airport Trust. Under the direction of the Mayor, City Council, City Manager and Director of Airports, these airports are operated as a Department of the City of Oklahoma City.

As can be seen in the following figures, entitled *AIRPORT LOCATION MAP* and *AIRPORT VICINITY MAP*, Clarence E. Page Airport is located in western Oklahoma City, in Canadian County, approximately twenty (20) miles west of the Oklahoma City Central Business District. The Airport Reference Point (ARP) is located at Latitude 35° 29' 18" N and Longitude 97° 49' 16" W. The airport, designated as Site 19138.1A by the Federal Aviation Administration (FAA), has an elevation of one thousand three hundred fifty-three (1,353) feet above mean sea level (AMSL). Clarence E. Page Airport is designated by the FAA in the *National Plan of Integrated Airport Systems (NPIAS) 1986-1995*, as having a Reliever Airport service level and an airport role of serving Transport type aircraft. The airport property occupies approximately one thousand (1,000) acres, which is devoted, for the most part, to aviation use and support facilities.

There are two entrances to Clarence E. Page Airport, the airport entrance road and the fuel storage road. The major access route to the airport is Cimarron

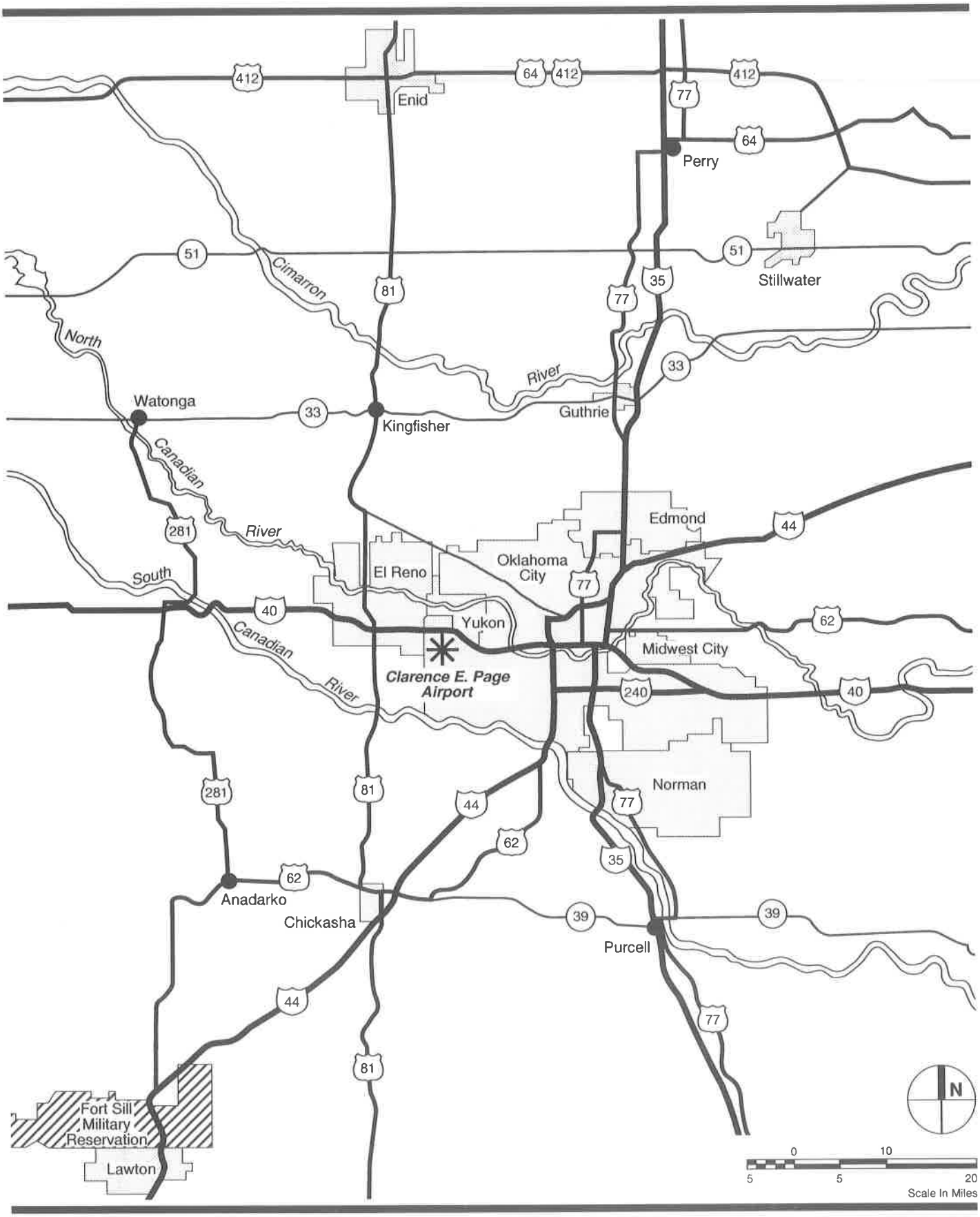

Figure A1 ***Airport Location Map***

Clarence E. Page Airport Master Plan

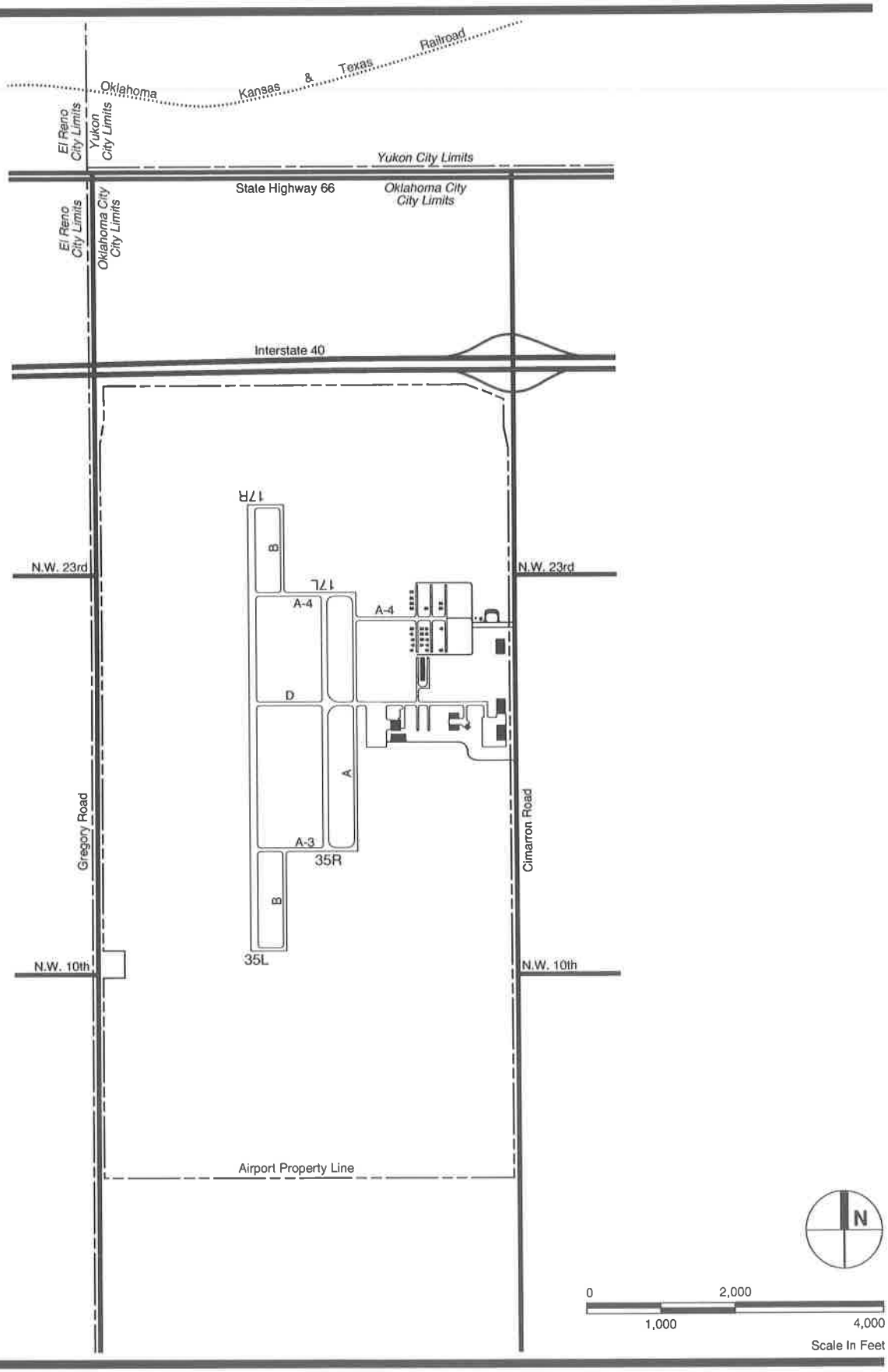

Figure A2 ***Airport Vicinity Map***

Clarence E. Page Airport Master Plan

Road which parallels the runways on the east side of airport property. Cimarron Road intersects with I-40 approximately one mile north of the airport entrance road and intersects with SH-66 approximately one and one-half miles north of the airport entrance road. I-40 connects the Central Business District of Oklahoma City with Clarence E. Page Airport.

Clarence E. Page Airport currently operates with two runways, taxiways serving those runways, a fuel farm, a fire station, hangars and aircraft parking aprons. The existing airport facilities are described in detail in the following text.

Runways

Clarence E. Page Airport is presently developed around two parallel runways, Runway 17R/35L and Runway 17L/35R. Runway 17R/35L is 6,013 feet in length and 100 feet in width. It is constructed of concrete and has a dual-wheel gross weight bearing capacity of 60,000 pounds. Runway 17R/35L is equipped with High Intensity Runway Lights (HIRL).

Runway 17L/35R is the second parallel runway. It is 3,502 feet in length and 75 feet in width. The runway is constructed of asphalt/concrete and has a single-wheel gross weight bearing capacity of 17,000 pounds. This runway is equipped with Medium Intensity Runway Lights (MIRL).

Taxiways

Runway 17L/35R is served by Taxiway A, a full parallel taxiway 40 feet in width located to the east of the runway. This parallel taxiway connects Runway 17L/35R with the apron and hangar areas located on the eastern portion of airport property. Runway 17R/35L is served by partial parallel Taxiway B located to the east of the runway and at both of the approach ends of the runway. Runway 17R/35L is connected to Runway 17L/35R and the apron and hangar areas to the east by connecting Taxiways A-3 and A-4. Taxiway D is a connecting taxiway providing access to the apron and hangar areas from the midpoint of each runway. In addition, there are several stub taxiways providing access from the taxiways to the hangar areas.

Hangars and Aircraft Parking Aprons

The airport is currently served by one (1) FBO, one (1) FBO/maintenance hangar, two (2) corporate hangars, two (2) industrial structures, twenty-three (23) individual hangars and one (1) T-hangar containing sixteen (16) units. The FBO is located east of Taxiway A and the FBO/maintenance hangar is located at the east end of Taxiway D. The corporate hangars are located between the FBO and the FBO/maintenance hangar south of Taxiway D. The industrial structures are located

north of the FBO/maintenance hangar adjacent to Cimarron Road. The individual hangars and T-hangar are located east of Taxiway A and north of the FBO. There are two major aprons on the airport providing aircraft parking and storage. The first is located directly east of Taxiway A and adjacent to the FBO. This apron provides approximately 126,000 square feet of aircraft parking space. The second apron area is located on the east end of Taxiway D directly adjacent to and west of the FBO/maintenance hangar. This apron provides approximately 84,000 square feet of aircraft parking space. The fuel farm is located east of the T-hangars and north of the industrial structures and consists of four (4) 25,000 gallon above ground tanks. Two (2) of the tanks are currently inactive, one (1) is used for 100LL AVGAS and one (1) is used for Jet A fuel.

Other Airport Structures and Utilities

An airport maintenance building is located directly west of the fuel farm, and the airport is currently served by a fire station located west of the maintenance building. The National Oceanic Atmosphere Administration operates a radar facility located in the southeast corner of airport property adjacent to Cimarron Road. Seven oil wells on airport property generate revenue for the Trust escrow, which is earmarked for the Airport System, usually in the form of FAA Airport Improvement Program (AIP) matching funds.

Utility service to the airport includes water service from Oklahoma City, above ground electrical service, above ground telephone service and an on-site sanitary sewer septic system.

Existing Land Use, Zoning and Planning Inventory

Existing land use, existing zoning and future land use are important elements in the process of planning for compatible land uses within the airport environs. So as to ensure land use compatibility with future airport development, knowledge of existing and future land uses and existing city zoning ordinances are essential. The following narrative reviews existing planning data in the environs of Clarence E. Page Airport.

Existing Land Use

The majority of the land surrounding the airport is presently in agricultural/open space use. The land to the west, north and east is almost entirely agricultural/open space with scattered rural residences located next to Gregory Road on the west, SH-66 on the north and Cimarron Road on the east. There is a large tract of industrial development east of Cimarron Road, north of I-40 and south of SH-66. There is a

cemetery located east of Gregory Road and north of N.W. 10th Street adjacent to the western boundary of the airport. South of airport property, agriculture/open space is the predominant land use with a grouping of residences located directly south of airport property adjacent to Cimarron Road. Most of these residences are farm related and are located on large lots. Existing land use within the airport environs is presented in the following figure, entitled *AIRPORT ENVIRONS EXISTING LAND USE*.

Existing Zoning

Zoning of the land north, east and south of airport property is the responsibility of the City of Oklahoma City. The majority of land in the vicinity of Clarence E. Page Airport is generally zoned agricultural. At the junction of I-40 and Cimarron Road, industrial zoning occurs at the northwest, northeast and southeast corners. Industrial zoning occurs south of and adjacent to I-40 east of Cimarron Road. To the northeast of the airport, beyond I-40, there is small area of rural residential zoning. The airport itself is zoned agricultural, as is all the land to the east and south of the airport. Existing zoning within the vicinity of the airport environs is presented in the figure entitled *AIRPORT ENVIRONS ZONING*.

In addition to traditional land use zoning, Oklahoma City has adopted an Airport Environs overlay zone. This particular overlay zone regulates the type of uses which can be developed within certain defined noise contours associated with the airports in Oklahoma City.

The City has also adopted a height zoning ordinance for the surrounding area. This height zoning ordinance was adopted in 1980, and is based on *FAA PART 77-OBJECTS AFFECTING NAVIGABLE AIRSPACE* regulations and has been updated as a portion of this Airport Master Plan.

Comprehensive Plan

The City of Oklahoma City has adopted a future land use plan, *FRAMEWORK FOR GROWTH, THE OKC PLAN, 1989-2010*, which was adopted in January, 1990. The OKC Plan indicates that the airport will continue to be an important public facility which will enhance the ability of Oklahoma City to attract an expanding base of industries as a result of the improved access to the western portion of the city created by the airport. The land to the east of the airport is programmed for industrial reserve. This designation reserves relatively large tracts of unencumbered land in rural areas for long term industrial development which are likely to remain undeveloped beyond the year 2010. The land to the south of Reno Avenue is planned to remain in rural use. This designation includes residential development on lots of one acre and larger, with the predominant land uses being agricultural and

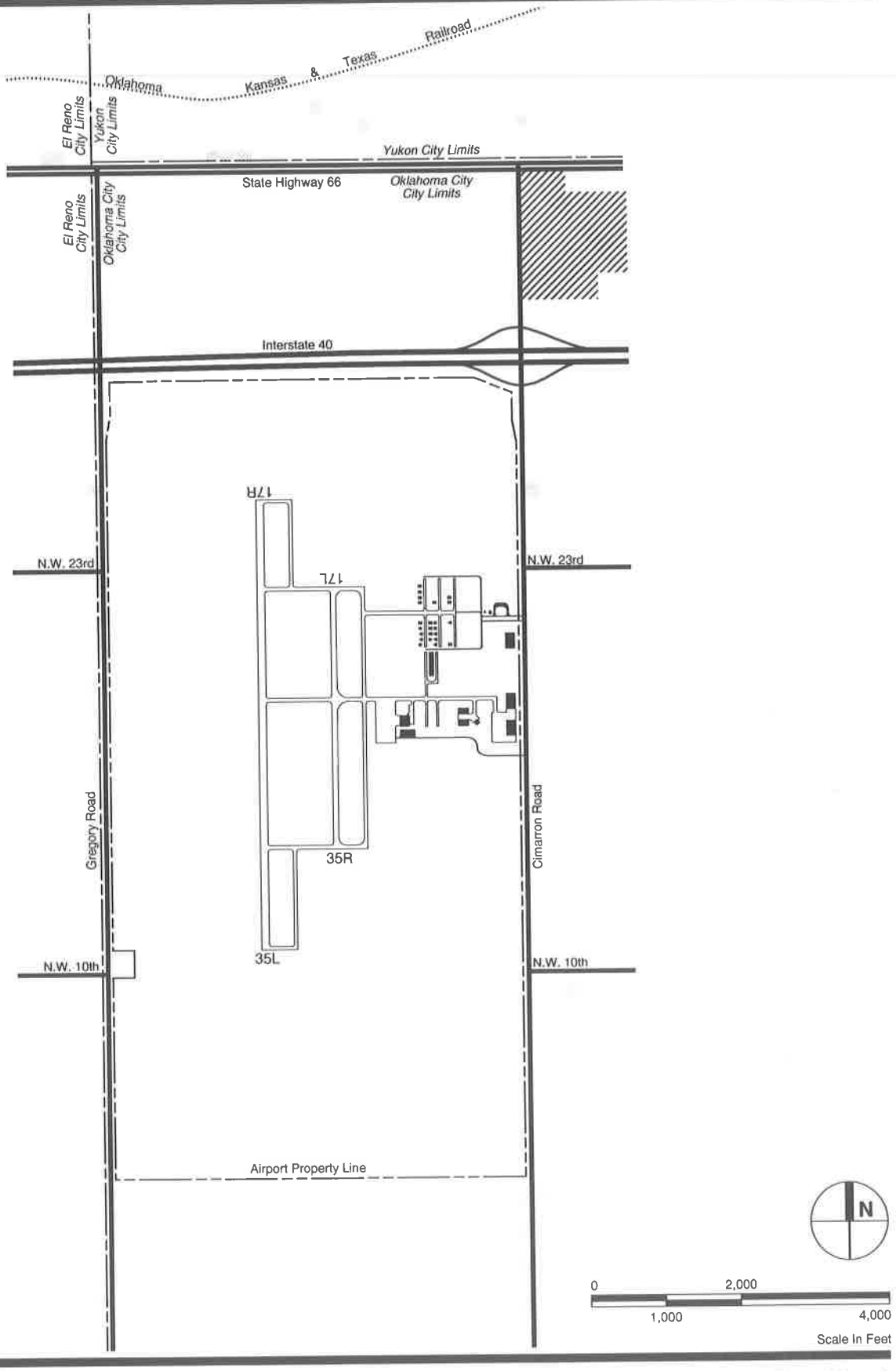

Figure A3 ***Airport Environs Existing Land Use***

Residential

Industrial

Agricultural/Open Space

Clarence E. Page Airport Master Plan

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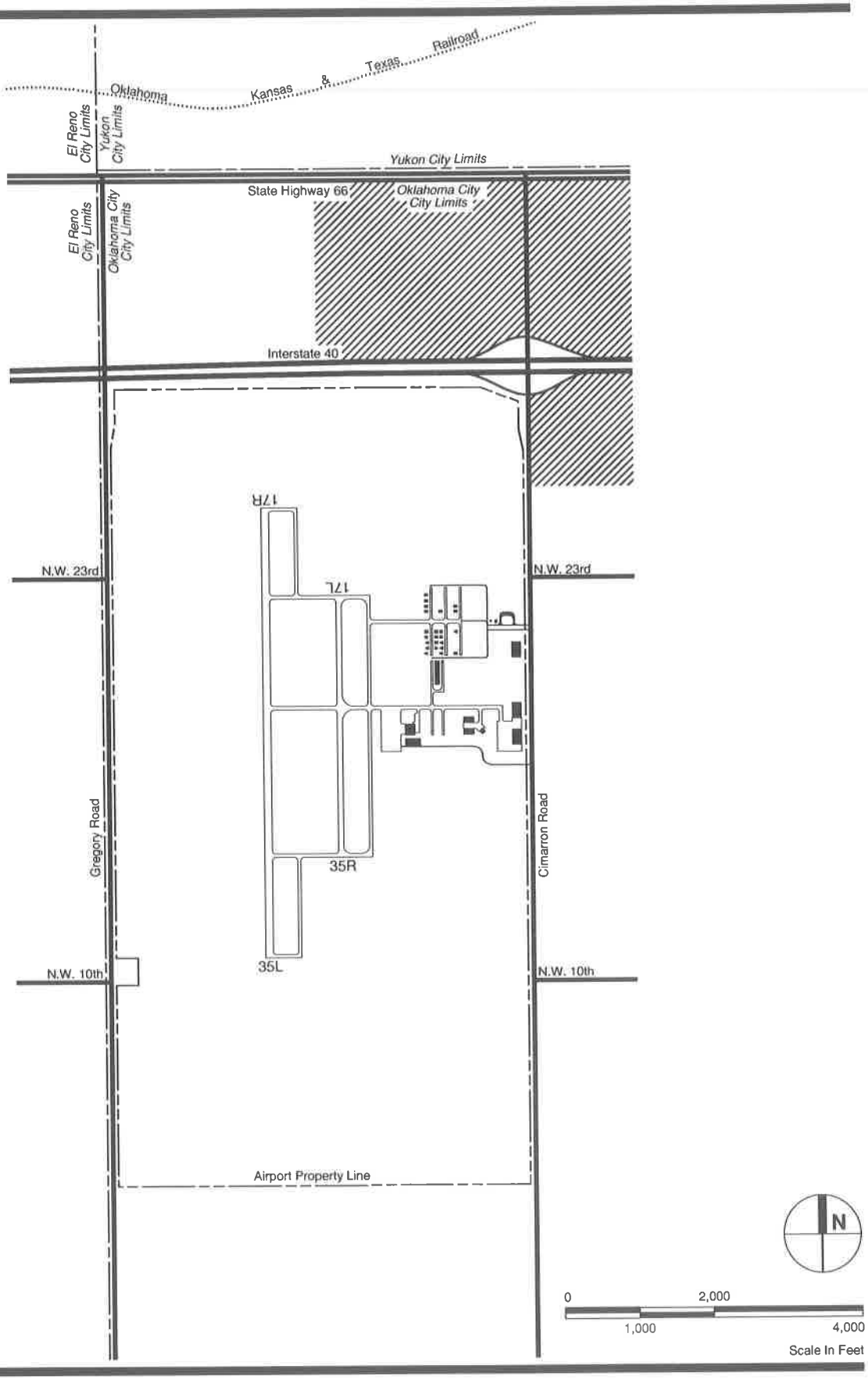

Figure A4 ***Airport Environs Existing Zoning***

Clarence E. Page Airport Master Plan

Industrial

Agricultural

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open space. Future land use within the vicinity of the airport environs is presented in the figure entitled *AIRPORT ENVIRONS FUTURE LAND USE*.

Airports Inventory

There are several existing public and private airports located in the general vicinity of Clarence E. Page Airport within an approximate twenty-five nautical mile (25 NM) range. According to the U. S. Department of Commerce, *DALLAS-FORT WORTH SECTIONAL AERONAUTICAL CHART*, these airports include five (5) public airports, five (5) privately-owned and publicly-used airports, one (1) privately-owned and publicly-used heliport, sixteen (16) privately-owned and privately-used airports and one (1) military airport. Each of the public airports and the privately-owned publicly-used airports are described here in terms of relevant physical characteristics and facilities. The public airports include Will Rogers World Airport, Wiley Post Airport, University of Oklahoma Max Westheimer Airpark, Chickasha Municipal Airport and El Reno Municipal Airpark. The *private/publicly used* airports are El Reno, Expressway Airpark, Downtown Airpark, Sundance Airpark and Kingfisher. The *private/publicly used* heliport is BMC Helipad.

The *privately-owned and privately-used* airports within the environs of Page Municipal Airport include Place, Reherman, Flying L Angus Ranch, Wakefield, Edmond, Wynn, Moore, Low Pass, Odom Roost, D & G Farms, Cole, Martin Farms, Thompson, Brandley, Harman and Okarche.

Will Rogers World Airport. This airport has an elevation of 1,295 feet above mean sea level (AMSL) and coordinates 35° 23' 35.3" N, 97° 36' 01.8" W. The airport consists of four Runways: Runway 17L/35R, Runway 17R/35L, Runway 13/31 and Runway 18/36. Runway 17L/35R is 9,800 feet in length and 150 feet in width. This runway is constructed of concrete/asphalt, is equipped with high intensity runway lights, Visual Approach Slope Indicators (VASI) on Runway 17L and an approach lighting system (ALSF2) on Runway 35R. Runway 17R/35L is 9,800 feet in length and 150 feet in width. This runway is constructed of concrete, is equipped with high intensity runway lights, VASI on Runway 35L and an approach lighting system (MALSR) on Runway 17R. Runway 13/31 is 7,800 feet in length and 150 feet in width. This runway is constructed of concrete/asphalt, is equipped with medium intensity runway lights, VASI for both runway approach ends and runway end identifier lights (REIL) on Runway 13. Runway 18/36 is 2,975 feet in length, 75 feet in width and is constructed of asphalt. Will Rogers World Airport is an air carrier airport providing services of aircraft charter, aircraft sales, flight instruction, aircraft rental, fuel sales, major airframe and power plant repair. Airport facilities include an air traffic control tower, a rotating beacon, a lighted wind indicator, a segmented circle, hangars and tie-downs. In 1991 there were

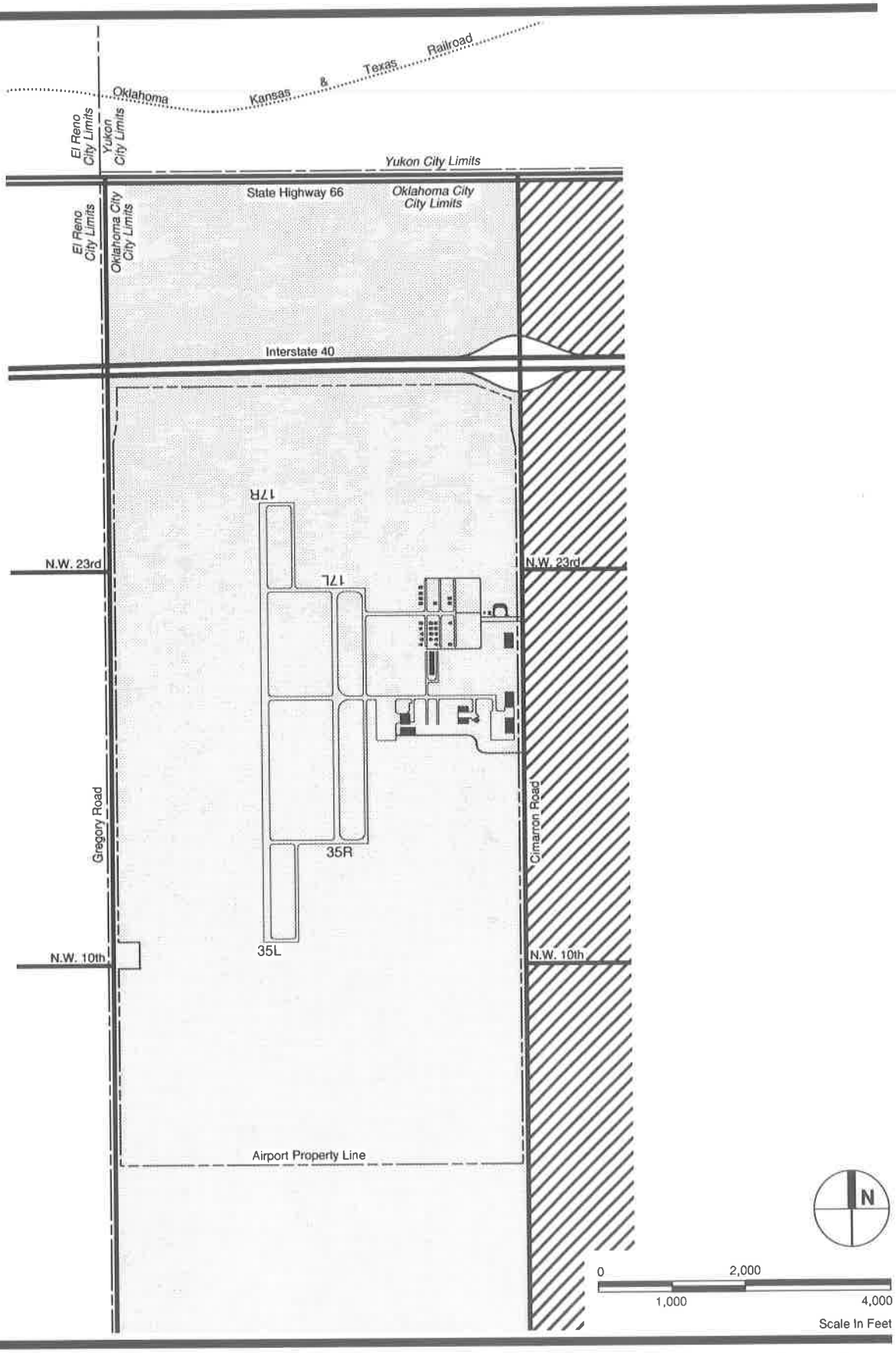

Figure A5 ***Airport Environs Future Land Use***

Clarence E. Page Airport Master Plan

Industrial

Transportation/Communication/Utilities

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150,244 operations at Will Rogers World Airport. The airport has seven published instrument approaches: an ILS approach to Runway 35R, an ILS approach to Runway 17R, a localizer approach to Runway 35L, a VOR approach to Runway 17L, a VOR approach to Runway 35R, a NDB approach to Runway 17R and an ASR approach to Runways 17L, 17R, 35L, 35R. The airport is located approximately 12 NM southeast of Clarence E. Page Airport.

Wiley Post Airport. This airport has an elevation of 1,299 feet AMSL and coordinates 35° 32' 03.6" N, 97° 38' 49.6" W. The airport consists of four paved runways: Runway 17L/35R; Runway 13/31; Runway 03/21; Runway 17R/35L. Runway 17L/35R is 7,198 feet long and 150 feet wide. This runway is constructed of concrete, is equipped with high intensity runway lights, an approach lighting system (MALSR) for Runway 17L and VASI for both runways. Runway 13/31 is 4,213 feet long and 100 feet wide. This runway is constructed of concrete, equipped with medium intensity runway lights and VASI for both runways. Runway 03/21 is 3,409 feet long and 75 feet wide. This runway is constructed of asphalt and is equipped with VASI for both runway approach ends. Runway 17R/35L is 4,232 feet long and 75 feet wide. This runway is constructed of asphalt, is equipped with medium intensity runway lights, and VASI for both runway approach ends. Services provided by the airport include fuel sales, aircraft charter, aircraft rental, aircraft sales, flight instruction, major airframe and power plant repairs. Airport facilities include an air traffic control tower, a rotating beacon, hangars, tie-downs, a segmented circle, and a lighted wind indicator. In 1992, there were 304 based aircraft and 128,479 operations at Wiley Post Airport . There are five published instrument approaches for the airport. The first is an ILS approach for Runway 17L. The second is a VOR approach for Runway 17L that allows for either a circle-to-land or a straight-in procedure. The third is a circle-to-land VOR-A procedure. The fourth is a VOR approach procedure for Runway 35R. The fifth is an ASR approach for Runway 35R that allows both straight-in and circle-to-land procedures. The airport is located approximately 9 NM east of Clarence E. Page Airport.

Max Westheimer Airport. This airport is 1,182 feet AMSL and coordinates 35° 14' 43.6" N, 97° 28' 19" W. The airport consists of two paved runways, Runway 03/21 and Runway 17/35. Runway 03/21 is 4,750 feet in length and 100 feet in width. This runway is constructed of asphalt, is equipped with medium intensity runway lights, VASI for both runways and an approach lighting system (MALS) on Runway 03. Runway 17/35 is 5,200 feet in length and 100 feet in width. This runway is constructed of asphalt, is equipped with medium intensity runway lights and VASI on both runways. Max Westheimer Airport is a reliever airport for Will Rogers World Airport. The airport facilities include an air traffic control tower, a rotating beacon, a lighted wind indicator, a segmented circle, tie-downs and hangars for transient aircraft. The airport services include fuel sales, major airframe and power plant repairs, aircraft rental, aircraft charter and flight instruction. In

1992, there were 127 based aircraft and 109,012 aircraft operations at Max Westheimer Airport. The airport has two published instrument approaches that allow both straight-in and circle-to-land procedures: a LOC approach to Runway 03 and a NDB approach to Runway 03. The airport is located approximately 22 NM southeast of Clarence E. Page Airport.

Chickasha Municipal Airport. This airport is 1,150 AMSL with coordinates of 35° 05' 46" N, 97° 57' 58" W. The airport consists of two paved runways and four turf runways. Runway 17/35 is 5,100 feet in length and 100 feet in width. This runway is constructed of concrete and is equipped with medium intensity runway lights. The turf runways are: Runway 04/22, which is 2,525 feet in length and 100 feet in width; Runway 13/31, which is 2,730 feet in length and 100 feet in width; Runway 18L/36R, which is 3,180 feet in length and 90 feet in width; Runway 08/26, which is 2,310 feet in length and 100 in width; and Runway 18R/36L, which is 3,390 feet in length and 100 feet in width. In 1992, there were 31 based aircraft and 17,870 operations at Chickasha Municipal Airport. Airport services include fuel sales, major airframe and power plant repairs, aircraft rental and flight instruction. Airport facilities include tie-downs, hangar storage for transient aircraft, a rotating beacon, a lighted wind indicator and a segmented circle. The airport has one published instrument approach, a circle-to-land VOR DME-A approach. The airport is located approximately 25 NM south of Clarence E. Page Airport.

El Reno Municipal Air Park. This airport is 1,417 feet AMSL and has coordinates of 35° 28' 18" N, 98° 00' 22" W. The airport consists of one paved runway and one turf runway. Runway 17/35 is 4,200 feet in length and 60 feet in width. This runway is constructed of asphalt, is equipped with medium intensity runway lights and Visual Approach Slope Indicators (VASI) on both runway approach ends. Runway 18/36 is a turf runway 5,000 feet in length and 190 feet in width. In 1992, there were 18 aircraft based at the airport and 17,282 aircraft operations. Airport services include fuel sales, major airframe and power plant repairs, aircraft sales and flight instruction. Additional airport facilities include tie-downs, hangars for transient aircraft, a rotating beacon, a lighted wind indicator and a segmented circle. El Reno Municipal Airpark has one published instrument approach to Runway 35, a NDB that allows both straight-in and circle-to-land procedures. The airport is located approximately 9 NM west of Clarence E. Page Airport.

El Reno Airport. This airport is 1,395 feet AMSL and has coordinates of 35° 31' 00" N, 97° 58' 46" W. The airport consists of one turf runway, Runway 17/35. This runway is 2,600 feet in length and 100 feet in width. Airport facilities include a wind indicator. In 1992, there were 135 operations and two (2) based aircraft at El Reno. There are no published instrument approaches and this airport is located approximately 8 NM west of Clarence E. Page Airport.

Expressway Airpark. This airport is 1,070 feet AMSL and has coordinates of 35° 32' 24" N, 97° 27' 15" W. The airport consists of one runway, Runway 02/20. This runway is 3,350 feet in length and 50 feet in width. It is constructed of asphalt and equipped with low intensity runway lights. In 1992, there were 68 based aircraft and 30,336 aircraft operations at this airport. Airport facilities include a rotating beacon, a lighted wind indicator, tie-downs and hangars for transient aircraft. Airport services include fuel sales, minor airframe and power plant repairs, flight instruction and aircraft rental. There are no published instrument approaches for Expressway Airpark and it is located approximately 18 NM east of Clarence E. Page Airport.

Downtown Airpark. This airport is 1,180 feet AMSL with coordinates of 35° 26' 57" N, 97° 31' 59" W. The airport operates around one runway, Runway 16/34. This runway is 3,240 feet in length and 85 feet in width. It is constructed of asphalt and is equipped with low intensity runway lights. The airport services offered at the airport include fuel sales, major airframe and power plant repairs, aircraft charter and aircraft sales. Additional airport facilities include tie-downs, hangars for transient aircraft and a lighted wind indicator. In 1992, there were 45 based aircraft and 38,666 aircraft operations occurring at Downtown Airpark. There are no published instrument approaches to this airport and it is located approximately 15 NM east of Clarence E. Page Airport.

Sundance Airpark. This airport is 1,193 feet AMSL with coordinates of 35° 36' 07" N, 97° 42' 22" W. The airport operates around one runway, Runway 17/35, which is 5,000 feet in length and 100 feet in width. This runway is constructed of concrete, is equipped with medium intensity runway lights and VASI for both runways. Services offered at the airport include fuel sales, major airframe and power plant repairs, aircraft charter, aircraft rental, flight instruction and aircraft sales. Facilities provided at the airport include a rotating beacon, a wind indicator, a segmented circle, tie-downs and hangars for transient aircraft. There were 165 based aircraft and 31,625 aircraft operations at the airport in 1992. Sundance Airpark has one published instrument approach, a VOR approach providing straight-in and circle-to-land procedures for Runway 17. This airport is located approximately 9 NM northeast of Clarence E. Page Airport.

Kingfisher Airport. This airport is 1,067 feet AMSL with coordinates of 35° 52' 30" N, 97° 57' 01" W. The airport consists of one turf runway, Runway 17/35, which is 2,600 feet in length and 100 feet in width. The airport has a wind indicator, provides tie-downs for transient aircraft and offers agricultural flight services. In 1992, there were 12 based aircraft and 2,559 aircraft operations. This airport has no published instrument approach procedures and is located approximately 24 NM north of Clarence E. Page Airport.

BMC Helipad. This heliport is 1,276 feet AMSL with coordinates of 35° 31' 50" N, 97° 34' 41" W. The heliport consists of one concrete helipad, H1, which is 50 feet in length and 50 feet in width. The heliport also has a lighted wind indicator. In 1992, there were 318 helicopter operations from this helipad. There are no published instrument approach procedures and BMC Helipad is located approximately 12 NM east of Clarence E. Page Airport.

In addition, there is one (1) military airport located within the environs of Clarence E. Page Airport. The military airport is Tinker Air Force Base which is located in Midwest City, approximately 21 NM east of Clarence E. Page Airport.

Airspace and NAVAIDS Analysis

Clarence E. Page Airport is conveniently located among the numerous regional navigational aids (VORTAC stations) in central Oklahoma, being served by the Will Rogers VORTAC (IRW 114.1) which provides the airport with a published instrument approach and being in close proximity to the Kingfisher VORTAC (IFI 114.7). Clarence E. Page Airport is located approximately 13 nautical miles (NM) to the northwest of the Will Rogers VORTAC on the 300° radial and 21 NM to the southeast of the Kingfisher VORTAC on the 147° radial.

There are several low-altitude published airways in the vicinity of Clarence E. Page Airport, spanning between the navigational aids. These include Airway V17, an airway spanning between the Will Rogers VORTAC and the Gage VORTAC (115.6 GAG) from which Clarence E. Page Airport is situated approximately 2 NM to the northeast. Airway V140, spanning between the Kingfisher VORTAC and the Tulsa VORTAC (114.4 TUL), from which the airport is located approximately 22 NM to the south. Airway V210-507, spanning between the Will Rogers VORTAC and the point at which the airway splits, with airway V210 continuing to the Liberal VORTAC (112.3 LBL) and airway V507 continuing to the Gage VORTAC, from which the airport is located approximately 5 NM to the north. Airway V77, an airway spanning between the Will Rogers VORTAC and the Pioneer VORTAC (113.2 PER) from which the airport is situated approximately 11 NM to the west. Airway V354, which spans from the Will Rogers VORTAC to the aforementioned airway V140, before continuing to the Pioneer VORTAC, from which the airport is located approximately 13 NM to the west. Airway V272, an airway spanning between the Will Rogers VORTAC and the Sayre VORTAC (115.2 SYO) from which the airport is located approximately 8 NM to the north.

Military aircraft operations are conducted within the airspace surrounding Clarence E. Page Airport in the Vance 1B Military Operations Area (MOA), the Vance 1A Military Operations Area and the Washita Military Operations Area. The Vance 1B

Table A1
AIRPORTS INVENTORY SUMMARY
Clarence E. Page Airport Master Plan

Airport	Owner/ Use[1]	Distance and Direction from Page Municipal	Longest Runway Length (feet)
Will Rogers World Airport	PU/PU	12 NM southeast	9,802
Wiley Post Airport	PU/PU	9 NM east	7,198
Max Westheimer Airport	PU/PU	22 NM southeast	4,750
Chickasha Municipal Airport	PU/PU	25 NM south	5,100
El Reno Municipal Airport	PU/PU	9 NM west	5,000
El Reno Airport	PR/PU	8 NM west	2,600
Expressway Airpark	PR/PU	18 NM east	3,350
Downtown Airpark	PR/PU	15 NM east	3,240
Sundance Airpark	PR/PU	9 NM northeast	5,000
Kingfisher Airport	PR/PU	24 NM north	2,600
BMC Helipad	PR/PU	12 NM east	N/A
Place	PR/PR	20 NM north	1,800
Reherman	PR/PR	19 NM north	2,200
Flying L Angus Ranch	PR/PR	21 NM northeast	2,000
Wakefield	PR/PR	19 NM northeast	2,600
Edmond	PR/PR	22 NM northeast	2,400
Wynn	PR/PR	19 NM northwest	2,200
Moore	PR/PR	19 NM southeast	2,200
Low Pass	PR/PR	14 NM southeast	2,600
Odom Roost	PR/PR	15 NM southeast	2,500
D & G Farms	PR/PR	18 NM southeast	4,000
Cole	PR/PR	16 NM southeast	2,500
Martin Farms	PR/PR	20 NM south	2,700
Thompson	PR/PR	14 NM south	3,000
Brandley	PR/PR	11 NM west	2,600
Harman	PR/PR	12 NM northwest	2,500
Okarche	PR/PR	16 NM northwest	2,400
Tinker Air Force Base	Military	21 NM east	11,100

1 PU/Public PR/Private

MOA is located approximately 27 NM north of Page Municipal Airport. It experiences daily use Monday through Friday from one hour before sunrise to one hour after sunset between the altitudes of 7,000 feet and 18,000 feet AMSL. The Vance 1A MOA is located approximately 33 NM northwest of Clarence E. Page

Airport. It experiences daily use Monday through Friday from one hour before sunrise to one hour after sunset between the altitudes of 10,000 and 18,000 feet AMSL. The Washita MOA is located approximately 32 NM southwest of Clarence E. Page Airport. It experiences daily use Monday through Friday from sunrise to sunset between the altitudes of 11,000 feet and 18,000 feet AMSL. The existence of these Military Operations Area does not negatively impact the effective use of airspace by civilian aircraft in the vicinity of Clarence E. Page Airport; however, the awareness of these type of areas and their utilization is important in the planning process.

Navigational and visual landing aids on the airport include the previously mentioned runway lights, a rotating beacon, a lighted wind indicator and a segmented circle. Also, Clarence E. Page Airport has one published instrument approach procedure, a circling only VOR-B approach with ceiling minimums of 487 feet AGL, utilizing the Wiley Post Airport altimeter settings. This procedure has visibility minimums of one mile and one and one-half miles depending upon category of aircraft. The Automated Flight Service Station (AFSS) which serves Clarence E. Page Airport is located in McAlester, Oklahoma.

As can be noted on the following figure, entitled *AIRSPACE/NAVAIDS SUMMARY*, Clarence E. Page Airport is well positioned among several regional navigational aids and published low-altitude airways. Because of its central location within the system of regional navigational aids and airways, the airport has excellent access to the national airway system, and thus offers an efficient and convenient destination for air travel.

According to information contained in the FAA's Airport Master Record Form 5010, trees penetrate the approach slope surfaces of Runway 17L and Runway 35R and a fence penetrates the approach slope surface to Runway 17R. In addition, there are no unresolved airspace conflicts at the airport under existing conditions. The nearest public use airport is El Reno Airport, a privately owned facility, which is located approximately 8 NM to the west of Clarence E. Page Airport.

Historical and Legal Review

Clarence E. Page Airport is owned by the City of Oklahoma City and is leased to the Oklahoma City Airport Trust. Under the direction of the Mayor, City Council, City Manager and Director of Airports, the airport is operated as a Department of the City of Oklahoma City. The Airport Trust consists of three (3) members, the City Manager, an official of the Trust's bank and a citizen of Oklahoma City. The responsibility for the operation of Clarence E. Page Airport on a daily basis rests with the General Aviation Manager.

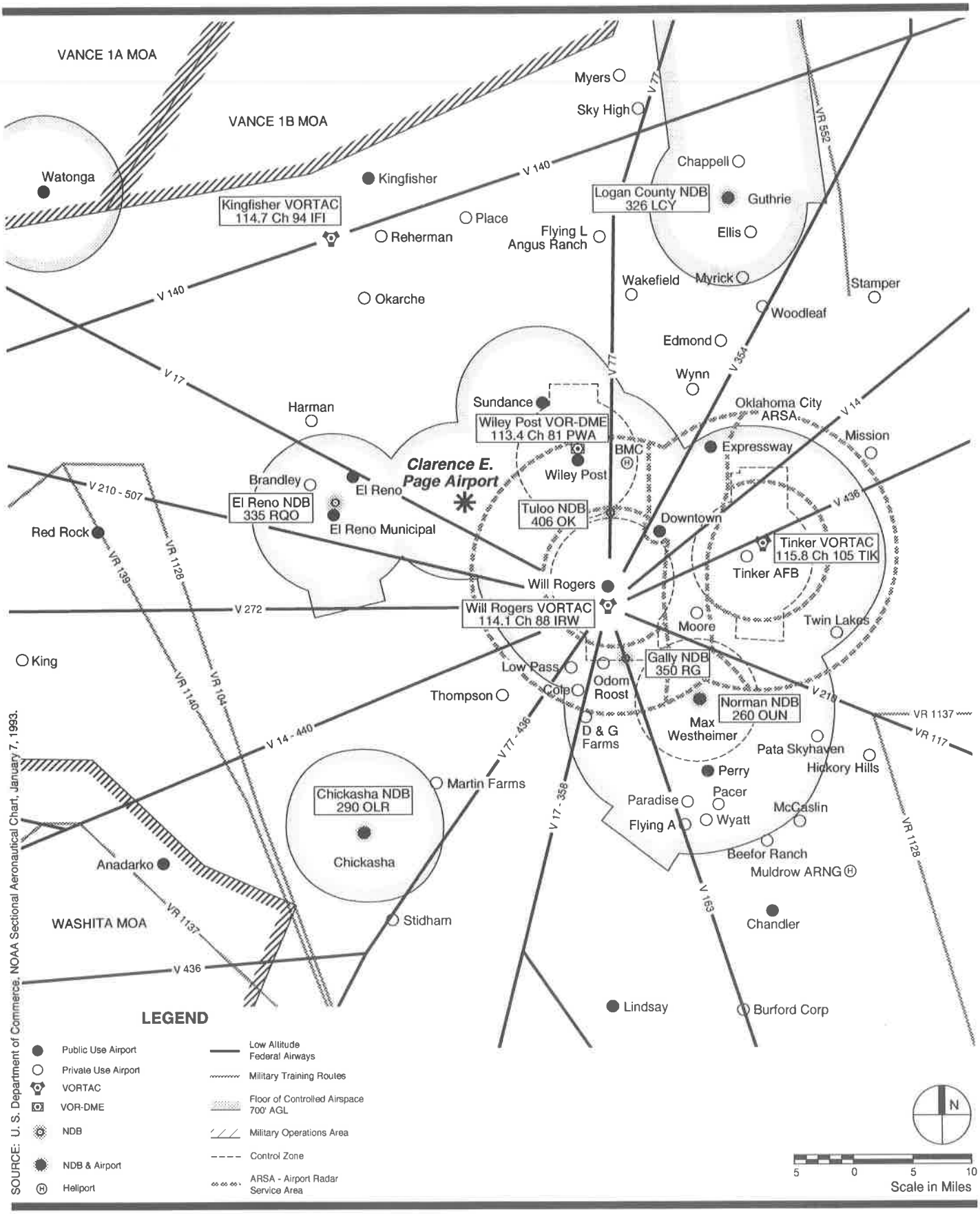


Figure A6 ***Airspace/NAVAIDS Summary***

Clarence E. Page Airport Master Plan

The City of Oklahoma City has received six (6) grants from the FAA for improvements at Clarence E. Page Airport:

Project 5-40-0071-04, for Phase I construction, marking and lighting of Runway 17R/35L and access taxiway.

Project 5-40-0071-05, for Phase II construction, marking and lighting of Runway 17R/35L and access taxiway.

Project AIP 3-40-0071-01, 02, for Runway 17R/35L.

Project AIP 3-40-0071-03, for installation of medium intensity runway and taxiway lights (MIRL, MITL).

Project AIP 3-40-0071-04, for development of Master Plan and Heliport Study.

Project AIP 3-40-0071-05, for development of Airport Master Plan Update.

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

B Forecasts of Aviation Activity

Forecasts of Aviation Activity

Introduction

The forecasting of aircraft operations and based aircraft expected to occur at Clarence E. Page Airport serves as one significant basis for analyzing existing airport facilities and identifying future needs and requirements. Forecasting, by its very nature, is not exact; however, it does establish some general parameters for development, and when soundly established, provides a defined rationale for various development activities as demands increase.

Forecasting generally commences utilizing the present time as an initial point, supplemented with historical trends obtained from previous year's activity and recorded information. Due to the lack of an Air Traffic Control Tower (ATCT), airport activity records have not been regularly assembled. However, historical data has been assembled by airport personnel and from other FAA records. Along with this historical data, certain quantifiable facts and trends can be identified which will impact the forecasts of future operations and based aircraft. These facts and trends are inherent in the forecasts themselves and can be summarized as considerations and assumptions which have particular relevance to Clarence E. Page Airport.

The following conditions and assumptions are presented, although not necessarily in order of importance or priority:

- **Weather Conditions.** With the exception of very few days, the airport is not adversely affected by poor weather conditions. Operations are able to continue on a regular basis throughout the year with little interruption due to weather.

- **Airport/Community Location, Proximity and Role.** Clarence E. Page Airport is well situated within the state and the region, located twenty (20) miles west of the Central Business District of Oklahoma City. The airport is located approximately one-half mile south of I-40 and one and

one-half miles south of SH-66. Because of the airport's location, it will continue to serve an important role as a general aviation reliever airport for Will Rogers World Airport and Wiley Post Airport.

- **Community Uniqueness.** The City of Oklahoma City is unique in many ways. Certainly among its most unique qualities is its ability to diversify its economy since the downturn in the oil industry that occurred in the mid 1980's. The liability of over-building accumulated during the boom years of the 80's has become an asset. This, along with a centralized geographic location, and an abundant skilled and reliable work force have placed Oklahoma City as a prime location for business. The Oklahoma City area also offers positive economic components in the areas of wage rates, housing availability, in-place infrastructure development, health care facilities and recreational opportunities.

- **Community Support.** The airport enjoys the support of the City government as well as other City functional departments and residents of the City of Oklahoma. The airport is recognized as playing a definite and important role in the area's future. The overall attitude of the City is one of sound growth and development, with special focus on the airport and the impetus it can provide for economic development as well as the need for facilities at the airport to accommodate anticipated area growth and accompanying air traffic.

  Additionally, the two nearby satellite communities of El Reno and Yukon provide an economic base which can draw additional industrial/business development to the area, and which has need for adequate airport facilities.

- **Facilities Potential.** Clarence E. Page Airport has the potential for developing into one of the finest airports of its size in the region. It has an abundance of land available to expand facilities to accommodate anticipated aircraft demands that could be placed on it. In addition, there is adequate land available to accommodate both related and unrelated development uses. These areas can be used to attract desired development to the City as well as serving as an income producing activity for the airport.

- **Negative or Neutral Factors.** As a general comment, the airport has very few negative factors. It is in an enviable position due to its many positive features and conditions. However, there are some factors which can, and do, have a negative impact on the airport which must be considered in the planning process. The first is the overall state of the

general aviation industry in the United States, which is undergoing considerable change. One of the major causes of this change is the expense of owning and operating an aircraft (insurance, fuel, maintenance, etc.). The industry is now focusing more on the business aircraft operator and less on the recreational operator.

Second is the lack of a precision instrument approach procedure for the airport. In order to attract business aircraft operators and instrument flight training operations, the airport needs to improve its ability to operate during inclement weather conditions.

Each of these considerations and assumptions has been incorporated into the forecast of aviation operations and based aircraft for Clarence E. Page Airport.

Historical and Existing Activity Summary

As a first step in forecasting aviation activity at Clarence E. Page Airport, a thorough examination of historical data must be performed. Records of aircraft operations were collected from various airport and FAA documentation, including airport records, the Clarence E. Page Airport Form 5010, the *National Plan of Integrated Airport Systems* (NPIAS), Oklahoma Aeronautics Commission (OAC) records and the *Oklahoma Airport System Plan 1988 Update* (OASP). These operational activity figures are presented in the following table, entitled *SUMMARY OF AVIATION ACTIVITY, 1981-1991.*

Air Taxi Operations

Operations by non-scheduled air taxi aircraft have not been recorded at Clarence E. Page Airport since 1983. Scheduled and non-scheduled commercial air taxi operations are not expected to occur at the airport in the future

Military Operations

Military operations have not had a major impact at Clarence E. Page Airport in the past, and are not expected to in the future.

General Aviation Operations

General aviation operations historically respond directly to economic fluctuations and pressures, and are much more reflective of general economic conditions than other types of aircraft operations. At non-towered airports, the number of general

Table B1
SUMMARY OF AVIATION ACTIVITY, 1981-1991
Clarence E. Page Airport Master Plan

Year	Air Taxi	Military	General Aviation Operations		Total Aircraft Operations
			Local	Itinerant	
1981	120	120	20,000	17,000	37,240
1982	120	120	25,000	1,000	26,240
1983	120	120	25,000	1,000	26,240
1984	0	0	5,000	10,000	15,000
1985	0	130	9,000	6,000	15,130
1986	0	130	9,000	6,000	15,130
1987	0	130	9,000	6,000	15,130
1988	0	130	9,000	10,000	19,130
1989	0	130	9,000	10,000	19,130
1990	0	130	9,000	10,000	19,130
1991	0	130	9,000	10,000	19,130

Source: FAA Form 5010 and local records.

aviation operations are very difficult to ascertain with any degree of certainty, and the FAA Master Record Form 5010 is often the only source of data. It should be kept in mind that it is not the actual numbers that are important, but the trend that those numbers represent. During the historical period illustrated in the preceding table, general aviation operations decreased from 1981 to 1987, with only a slight increase in 1985. The airport experienced an increase in 1988, to 19,130 operations and has remained at this level of activity. This is reflective of a typical general aviation airport which usually has many "peaks and valleys" in the number of aircraft operations in relation to the state of the local economy. The national trend in the number of general aviation operations for the past several years has been declining, due in part to the rising costs associated with owning and operating an aircraft.

The historic breakdown of operational forecasts between local and itinerant operations is listed on past years of FAA Form 5010 for Clarence E. Page Airport which shows a broad swing in the percentage between local and itinerant operations. In the years 1982 and 1983, the percentage of local operations was approximately ninety-five percent (95.2%). In the following years, this percentage fluctuated from thirty-three percent (33.3%) in 1984, to approximately sixty percent (59.5%) in the years 1985 through 1987. During the last four years activity, the percentage of local operations has remained steady at forty-seven percent (47%).

The itinerant operations have varied from a low of five percent (4.8%) in 1982 and 1983, to a high of sixty-seven percent (66.7%) in 1984. As with local operations, itinerant operations have remained constant during the last four years at fifty-three percent (53%). In recent years, local operations represent a lower percentage of total operations than is generally true for most general aviation airports, with the more usual condition being approximately sixty percent (60%) local to forty percent (40%) itinerant operations. A high number of itinerant operations indicates a high number of business operations relative to local or training flights.

Existing Operations Analysis

The current level of aviation activity is summarized in the following table, entitled *EXISTING OPERATIONS, 1991*. These figures have been assembled from available airport records, coupled with FAA data, and generally verified by local records and by other local sources (aircraft service records, user's reports, fuel sales, airport management, etc.).

This summary indicates total annual operations (an operation is defined as either a take-off or a landing) amounting to approximately 19,130 during fiscal year 1990. Approximately eighty percent (80%) of these were credited to single engine aircraft and approximately fifteen percent (15%) were multi-engine aircraft. Additionally, approximately three percent (3.3%) were credited to turboprop aircraft and approximately two percent (1.7%) were business jet operations.

Based Aircraft

Currently, there are sixty-two (62) based aircraft at Clarence E. Page Airport. Fifty (50) of these are single engine aircraft, ten (10) are multi-engine piston aircraft, and two (2) are multi-engine business jets. There are no turboprop aircraft or rotorcraft currently based at the airport, although historically there have been a number of based rotorcraft at Clarence E. Page Airport. Records of based aircraft have been maintained in the past and a historical summary is provided in the following table, entitled *SUMMARY OF BASED AIRCRAFT, 1981-1991*. These were compiled from FAA Form 5010 and airport records.

As can be seen, the number of based aircraft at the airport has generally decreased from 1981 until 1991, with increases occurring in 1982, 1986 and 1987. The relationship between single engine aircraft and multi-engine aircraft has varied somewhat during the period, with the percentage of single engine aircraft generally increasing to 1986, where it peaked at eighty-one percent (80.6%); and the percentage of multi-engine aircraft generally decreasing until 1985 where it dipped to twelve percent (12.2%). The percentage of both single engine and multi-engine aircraft has stabilized at eighty-one percent (80.6%) and nineteen percent (19.4%) respectfully. It is common for this single engine to multi-engine relationship to

vary; however, as a nation wide *trend,* it is projected that the increase in the percentage of multi-engine based aircraft will probably occur at a greater rate than the increase in single engine aircraft in the future.

Table B2
EXISTING OPERATIONS, 1991
Clarence E. Page Airport Master Plan

Aircraft Type	Operations	
General Aviation		
Single Engine	15,300	(80.0%)
Multi-engine	2,870	(15.0%)
Turboprop	630	(3.3%)
Business Jet	330	(1.7%)
TOTAL	19,130	(100%)

Source: FAA Form 5010 and local records.

Table B3
SUMMARY OF BASED AIRCRAFT, 1981-1991
Clarence E. Page Airport Master Plan

Year	Single Engine	Multi-Engine	Jet	Rotorcraft	Total
1981	53 (57.0%)	32 (34.4%)	---	8 (8.6%)	93
1982	72 (58.5%)	36 (29.3%)	---	15 (12.2%)	123
1983	72 (61.0%)	36 (30.5%)	---	10 (8.5%)	118
1984	72 (69.2%)	20 (19.3%)	2 (1.9%)	10 (9.6%)	104
1985	26 (63.4%)	5 (12.2%)	---	10 (24.4%)	41
1986	50 (80.6%)	12 (19.4%)	---	---	62
1987	50 (69.4%)	12 (16.7%)	---	10 (13.9%)	72
1988	50 (80.6%)	12 (19.4%)	---	---	62
1989	50 (80.6%)	12 (19.4%)	---	---	62
1990	50 (80.6%)	10 (16.1%)	2 (3.3%)	---	62
1991	50 (80.6%)	10 (16.1%)	2 (3.3%)	---	62

Source: FAA Form 5010 and local records.

As can be seen by a comparison of Tables B1 and B3, there is a direct relation between the number of based aircraft and the number of annual operations at Clarence E. Page Airport. The number of annual operations decreased fifty-nine percent (59%) from 37,240 in 1981, to 15,130 in 1985. The number of based aircraft decreased fifty-six percent (56%) from 93 to 41 in the same timeframe after experiencing a thirty-two percent (32%) increase to 123 aircraft in 1982. Also, both the number of based aircraft and the number of aircraft operations has stabilized in the last four years. These trends indicate that a large number of operations at the airport are by owners of the aircraft that are based there.

Activity Forecast

In developing the aviation activity forecasts, several potential "trend setting" conditions, as well as some existing forecasts were reviewed. Included in this assessment has been an evaluation of regional and national trends and forecasts as presented by the FAA's *Terminal Area Forecasts-Fiscal Years 1987-2000* (TAF), and the *National Plan of Integrated Airport Systems* (NPIAS), local trends and conditions with respect to community and area growth profiles, based aircraft assessments and an evaluation of certain factors which can (and are projected to do so) influence projections and forecasts of aviation activity in both a positive and negative sense. Taking advantage of historical data available through fiscal year 1991, the task of evaluation and development of new forecasts was initiated.

Several forecasting elements are pertinent to this planning effort: general aviation aircraft operations, local and itinerant operations, the type of aircraft mix utilizing the airport, the type of aircraft mix based at the airport and peak period aircraft operations. These elements will be discussed and analyzed in the following paragraphs.

General Aviation Activity Forecast

As discussed earlier, recessions and growth periods in the country's economic cycle have historically affected general aviation operations overall. However, because of the conditions that prevail at Clarence E. Page Airport, as discussed at the beginning of this section, it is anticipated that these adverse influences will be minimized and will possibly be overshadowed by increased itinerant traffic and business activity utilizing the facility.

The following table, entitled *GENERAL AVIATION OPERATIONS FORECAST, 1991-2012*, reflects various aircraft forecasts for Page Municipal Airport. They include forecasts presented in the *Terminal Area Forecasts* (TAF), the *National Plan of*

Integrated Airport Systems (NPIAS), the *Oklahoma Airport System Plan 1988 Update* (OASP), the *Oklahoma City Airports Master Plan 1984-2003 Volume II* (84 MP) and a straight line "trend projection" (TP) of historical data.

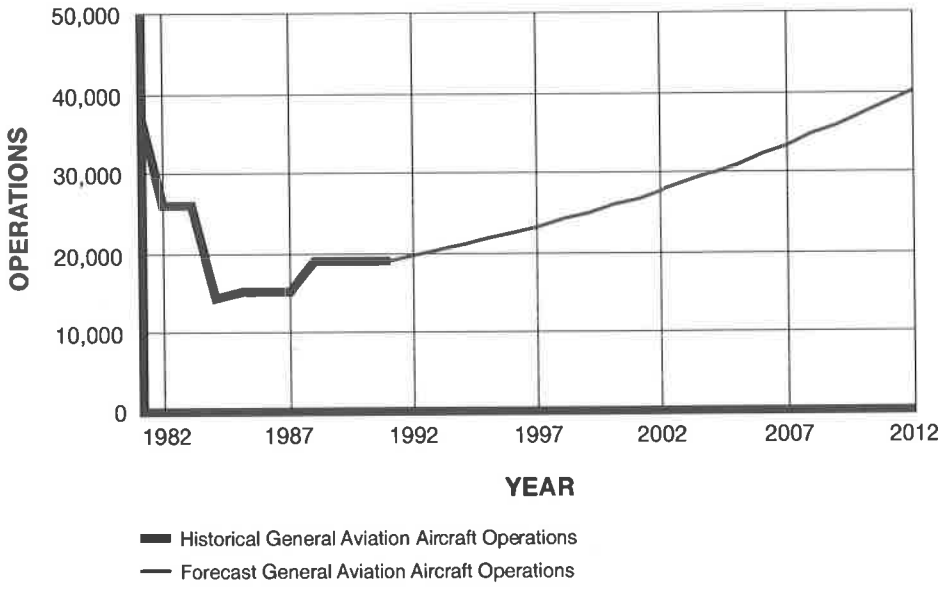
Table B4
GENERAL AVIATION OPERATIONS FORECAST, 1991-2012
Clarence E. Page Airport Master Plan

Year	TAF	NPIAS	OASP	84 MP	TP	MP
1991	---	---	---	---	---	19,130 [a]
1992	17,000	---	---	---	10,983	19,800
1993	17,000	---	---	77,600	9,481	20,500
1994	17,000	---	---	---	7,978	21,200
1995	18,000	---	23,198	---	6,476	21,900
1996	18,000	20,000	---	---	4,973	22,700
1997	18,000	---	---	---	---	23,500
2000	19,000	---	29,054	---	---	---
2002	20,000	---	---	---	---	27,900
2003	21,000	---	---	116,600	---	---
2005	21,000	---	34,909	---	---	---
2007	---	---	---	---	---	33,500
2012	---	---	---	---	---	40,300

TAF Terminal Area Forecasts, FAA 1988
NPIAS National Plan of Integrated Airport Systems, FAA 1986
OASP Oklahoma Airport System Plan, updated 1988
84 MP The Oklahoma City Airports Master Plan 1984-2003 Volume II
TP Trend Projection
MP 1992 Clarence E. Page Airport Master Plan
a Actual

By 1997, annual operations are anticipated to reach approximately 23,500, an approximate twenty-three percent (23%) increase over those operations presently occurring at the airport. By 2002, annual operations are projected to be approximately 27,900, an increase of approximately forty-six percent (46%) above current levels. By 2007, annual operations are projected to be approximately 33,500, an approximate seventy-five percent (75%) increase over current operations; and by 2012, there will be approximately 40,300 forecasted annual operations, an increase of approximately one hundred eleven percent (111%) over current levels. The forecast figures show a steady rate of increase over the entire twenty year period, see the following figure entitled *GENERAL AVIATION AIRCRAFT OPERATIONS/HISTORICAL AND FORECAST.*

Figure B1
GENERAL AVIATION AIRCRAFT OPERATIONS/HISTORICAL AND FORECAST
Clarence E. Page Airport Master Plan



Forecasts of general aviation operations have been categorized into local and itinerant operations based on the current and historical information available for Clarence E. Page Airport as well as the expectations of future trends. Because of expected community and regional aggressiveness, and the business activity, along with trends in general aviation, the itinerant operations are forecast to increase at a higher rate than local operations. Based on these considerations and the forecasts presented in the previous table, forecasts of local and itinerant operations through the year 2012 are indicated in the following table, entitled *SUMMARY OF LOCAL AND ITINERANT GENERAL AVIATION OPERATIONS, 1991-2012.*

As can be seen, the percentage of itinerant operations are expected to increase from the current fifty-three percent (53%) to approximately fifty-seven percent (57%) by 2002; and by 2012, this percentage is expected to be approximately sixty percent (60%). Conversely, local operations are expected to decrease from forty-seven percent (47%) currently, to approximately forty-three percent (43%) in 2002, and forty percent (40%) in 2012. This high itinerant operations to local operations percentage is the result of increased industrial development along the I-40 corridor west of Oklahoma City increasing business operations expected to occur at Clarence

Table B5
SUMMARY OF LOCAL AND ITINERANT GENERAL AVIATION OPERATIONS FORECAST, 1991-2012
Clarence E. Page Airport Master Plan

Year	Local Operations	Itinerant Operations	Total Operations
1991[a]	9,000 (47%)	10,130 (53%)	19,130
1992	9,108 (46%)	10,692 (54%)	19,800
1993	9,430 (46%)	11,070 (54%)	20,500
1994	9,540 (45%)	11,660 (55%)	21,200
1995	9,855 (45%)	12,045 (55%)	21,900
1996	9,988 (44%)	12,712 (56%)	22,700
1997	10,340 (44%)	13,160 (56%)	23,500
2002	11,997 (43%)	15,903 (57%)	27,900
2007	14,070 (42%)	19,430 (58%)	33,500
2012	16,120 (40%)	24,180 (60%)	40,300

[a] Actual

E. Page Airport. This information is shown graphically in the following figure entitled *GENERAL AVIATION AIRCRAFT OPERATIONS FORECAST: TOTAL, LOCAL AND ITINERANT.*

A further assessment of the forecasts involves the individual and collective utilization of the airport by various types of aircraft in relation to the overall usage in both the short-range and the long-range periods of time. Supplementary to an assessment of the local and itinerant usage of the airport, the type of aircraft and the operational requirements of the aircraft assist in determining the amount and type of facilities that are required to serve the aviation demand.

Operations Forecast By Aircraft Type

The following table, entitled *GENERAL AVIATION OPERATIONS FORECAST BY AIRCRAFT TYPE, 1991-2012,* depicts the approximate level of usage by each of the four aircraft types that are forecasted to use Clarence E. Page Airport, including single engine aircraft, multi-engine piston aircraft, turboprop aircraft and business jets, during the forthcoming twenty-year period. The base year breakdown of type was determined through input gleaned from airport management and various airport users. This reflects the growing percentage of multi-engine aircraft operations in the aviation fleet serving Clarence E. Page Airport, and the decreasing percentage of single engine piston aircraft operations. Again, this is indicative of the type of

Figure B2
GENERAL AVIATION AIRCRAFT OPERATIONS FORECAST: TOTAL, LOCAL AND ITINERANT
Clarence E. Page Airport Master Plan

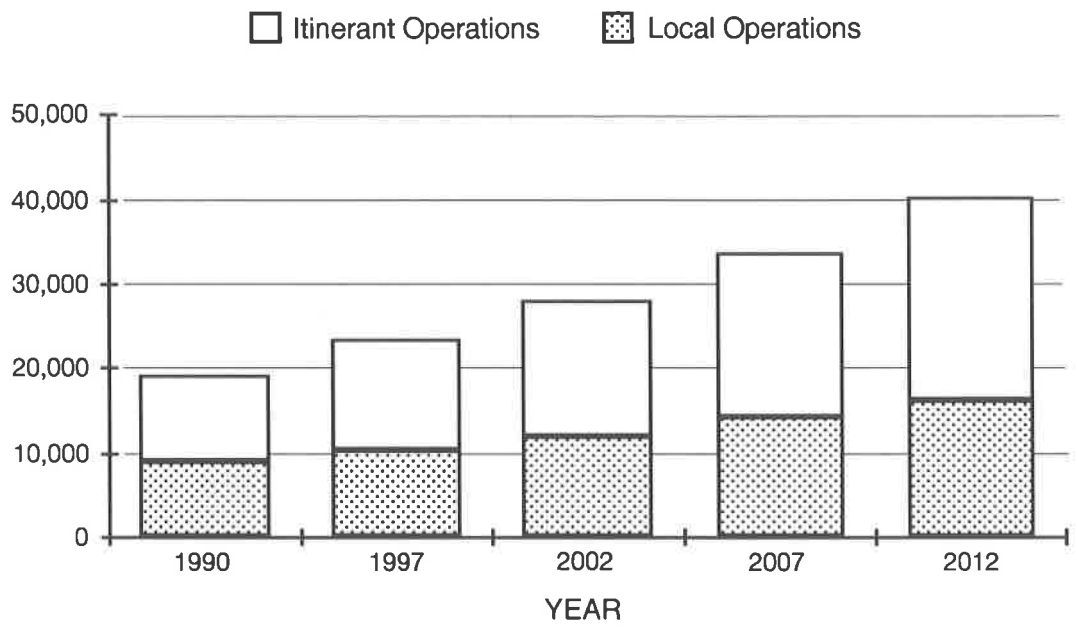


Table B6
GENERAL AVIATION OPERATIONS FORECAST BY AIRCRAFT TYPE, 1991-2012
Clarence E. Page Airport Master Plan

Year	Single Engine	Multi-Engine	Turboprop	Business Jet
1991[a]	15,300 (80.0%)	2,870 (15.0%)	630 (3.3%)	330 (1.7%)
1992	15,580 (78.7%)	3,170 (16.0%)	710 (3.6%)	340 (1.7%)
1993	15,660 (76.4%)	3,710 (18.1%)	780 (3.8%)	350 (1.7%)
1994	15,730 (74.2%)	4,240 (20.0%)	850 (4.0%)	380 (1.8%)
1995	15,810 (72.2%)	4,790 (21.9%)	900 (4.1%)	390 (1.8%)
1996	16,010 (70.5%)	5,310 (23.4%)	970 (4.3%)	410 (1.8%)
1997	16,190 (68.9%)	5,780 (24.6%)	1,080 (4.6%)	450 (1.9%)
2002	17,350 (62.2%)	8,650 (31.0%)	1,340 (4.8%)	560 (2.0%)
2007	20,030 (59.8%)	11,050 (33.0%)	1,680 (5.0%)	740 (2.2%)
2012	22,240 (55.2%)	14,870 (36.9%)	2,220 (5.5%)	970 (2.4%)

[a] Actual

facility the airport is expected to become and the business activity that is likely to prevail in the immediate area.

Based Aircraft Forecast

The number of aircraft which can be expected to base at an airport facility is dependent on several factors such as available facilities, airport operator's services, airport proximity and access, and similar factors. There is also a direct relationship, in many cases, between general aviation operations and based aircraft levels. Because these two elements have historically followed similar growth patterns on an overall basis, they are frequently compared, each affected by the factors listed above. In other words, the relationship of these two functions is examined in terms of the number of operations per based aircraft (OPBA). Such a review and resultant calculation can establish a trend for both based aircraft and annual operations. Generally, this trend in general aviation has been changing with more aircraft being utilized for business purposes and less for pleasure flying. This business use is impacting the OPBA in that business operations are usually itinerant in nature and business use aircraft are usually flown more often than pleasure use aircraft.

The following table, entitled *BASED AIRCRAFT FORECAST, 1991-2012,* presents the forecasts for the next twenty-year period. For information and comparison purposes, also noted are the projections developed as a part of the FAA *National Plan of Integrated Airport Systems* (NPIAS), the *Oklahoma Airport System Plan*

1988 Update (OASP), the trend projection (TP) of historical data and the comparison of operations per based aircraft (OPBA).

Table B7
BASED AIRCRAFT FORECAST, 1991-2012
Clarence E. Page Airport Master Plan

Year	TAF	NPIAS	OASP	84 MP	TP	OPBA	MP
1991	---	---	77	---	---	---	62[a]
1992	72	---	---	---	38	73	63
1993	72	---	---	135	32	75	65
1994	72	---	---	---	25	78	66
1995	72	---	90	---	18	80	68
1996	72	140	---	---	12	83	69
1997	72	---	---	---	---	86	71
2000	72	---	103	---	---	---	---
2001	72	---	---	---	---	---	---
2002	72	---	---	---	---	102	79
2003	72	---	---	200	---	---	---
2005	72	---	116	---	---	---	---
2007	---	---	---	---	---	123	88
2012	---	---	---	---	---	148	98

TAF Terminal Area Forecasts, FAA 1988
NPIAS National Plan of Integrated Airport Systems, FAA 1986
OASP Oklahoma Airport System Plan, updated 1988
84 MP The Oklahoma City Airports Master Plan 1984-2003 Volume II
TP Trend Projection
OPBA Operations Per Based Aircraft
MP 1992 Clarence E. Page Airport Master Plan
a Actual

The number of based aircraft at Clarence E. Page Airport is expected to increase by approximately fifty-eight percent (58%) to ninety-eight (98) aircraft during the twenty-year planning period. On an incremental basis, a fifteen percent (15%) growth is anticipated by 1997, to seventy-one (71) based aircraft; a twenty-seven percent (27%) growth to seventy-nine (79) by 2002; and a forty-two percent (42%) growth to eighty-eight (88) based aircraft by 2007. This is also shown graphically in the following figure entitled *BASED AIRCRAFT/HISTORICAL AND FORECAST.*

The mix of based aircraft for incremental periods throughout the planning period is shown in Table B8, entitled *BASED AIRCRAFT FLEET MIX, 1991-2012*. The

percentage of multi-engine piston, turboprop and business jet aircraft are expected to increase as a part of the total based aircraft population at the airport. This is in line, first of all, with overall trends in general aviation, but even more importantly, parallels the industrial, economic development and growth expectations and projections characteristic of the community and the area. By the end of the planning period, multi-engine aircraft are anticipated to comprise approximately thirty-nine percent (38.8%) of the total based aircraft fleet at Clarence E. Page Airport.

Figure B3
BASED AIRCRAFT/HISTORICAL AND FORECAST
Clarence E. Page Airport Master Plan

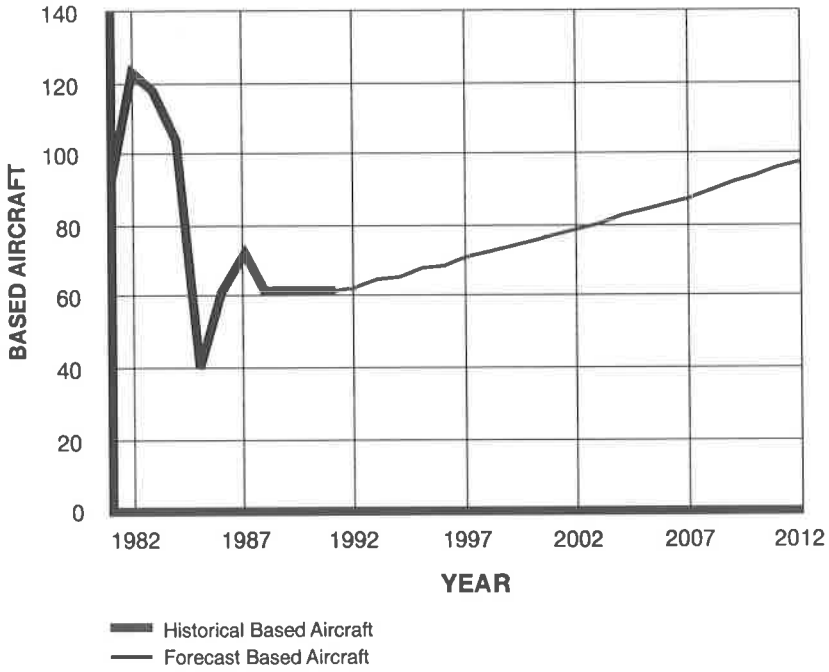


Table B8
BASED AIRCRAFT FLEET MIX, 1991-2012
Clarence E. Page Airport Master Plan

Aircraft Type	1991 [a]	1997	2002	2007	2012
Single Engine	50 (80.7%)	53 (74.7%)	55 (69.6%)	58 (65.9%)	60 (61.2%)
Multi-Engine	10 (16.1%)	11 (15.5%)	14 (17.7%)	17 (19.3%)	22 (22.5%)
Turboprop	---	4 (5.6%)	6 (7.6%)	8 (9.1%)	10 (10.2%)
Business Jets	2 (3.2%)	3 (4.2%)	4 (5.1%)	5 (5.7%)	6 (6.1%)
TOTAL	62	71	79	88	98

[a] Actual

Peak Period Forecast

An additional element of assessing airport usage and determining various requirements necessitated by capacity and demand considerations is the determination of peak period activities. Although operational data at Clarence E. Page Airport is inadequate to allocate peak period trends, statistics regarding peak period operations at airports with similar activity and operational characteristics have been utilized. The calculation of peak period demand begins with the total number of annual operations at the airport. The peak period operational activities are depicted in the following table, entitled *PEAK PERIOD AIRCRAFT OPERATIONS, 1991-2012.*

Summary

A summary of the forecasts of aviation activity prepared as a basis for the Clarence E. Page Airport Master Plan is presented in the following table, entitled *SUMMARY OF AVIATION ACTIVITY FORECASTS, 1991-2012.* Both the operations forecasts and based aircraft forecasts are listed in summary form throughout the planning period.

As can be noted, total annual operations are anticipated to increase rather significantly during the planning period, with itinerant operations steadily becoming a larger percentage of the total operations. Overall, total annual operations are expected to increase by approximately one hundred eleven percent (111%) by the year 2012. Itinerant operations are projected to represent approximately sixty percent (60%) of the total and local operations, approximately forty percent (40%),

Table B9
PEAK PERIOD AIRCRAFT OPERATIONS, 1991-2012
Clarence E. Page Airport Master Plan

Year	Annual	Peak Month	Average Day of Peak Month	Average Peak Hour
1991[a]	19,130	1,913	64	7
1997	23,500	2,350	78	9
2002	27,900	2,790	93	10
2007	33,500	3,350	112	12
2012	40,300	4,030	134	15

[a] Actual existing operations

Table B10
SUMMARY OF AVIATION ACTIVITY FORECASTS, 1991-2012
Clarence E. Page Airport Master Plan

Operations By Type	1991 [a]	1997	2002	2012
General Aviation				
Single Engine	15,300	16,190	17,350	22,240
Multi-Engine	2,870	5,780	8,650	14,870
Turboprop	630	1,080	1,340	2,220
Business Jet	330	450	560	970
TOTAL ANNUAL OPERATIONS	19,130	23,500	27,900	40,300
GA Local Operations	9,000	10,340	11,997	16,120
GA Itinerant Operations	10,130	13,160	15,903	24,180
Based Aircraft By Type				
Single Engine	50	53	55	60
Multi-Engine	10	11	14	22
Turboprop	---	4	6	10
Business Jet	2	3	4	6
TOTAL BASED AIRCRAFT	62	71	79	98

[a] Actual numbers suspect and are believed to be much greater.

compared to fifty-three percent (53%) and forty-seven percent (47%) percent, respectively, at the present time. Single engine aircraft operations are anticipated to represent a smaller percentage of the total operations (68.9% in 1997, 62.2% in 2002, and 55.2% in 2012) with the opposite trend in multi-engine operations (24.6% in 1997, 31.0% in 2002, and 36.9% in 2012). Turboprop operations are expected to represent a greater portion of total operations in the future (4.6% in 1997, 4.8% in 2002, and 5.5% in 2012). Additionally, business jet operations are also expected to represent a larger portion of future operations at the airport (1.9% in 1997, 2.0% in 2002, and 2.4% in 2012).

The number of based aircraft is projected to increase from sixty-two (62) aircraft presently to ninety-eight (98) aircraft in 2012, an approximate fifty-eight percent (58%) increase. As with operations, single engine aircraft based at the airport will represent a smaller percentage of the total (74.7% in 1997, 69.6% in 2002, and 61.2% in 2012) with the opposite trend occurring with multi-engine aircraft (25.3% in 1997, 30.4% in 2002, and 38.8% in 2012).

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

C Capacity Analysis/ Facility Requirements

Capacity Analysis/Facility Requirements

Introduction

The capacity analysis for Clarence E. Page Airport is composed of two distinct, and very related elements: airfield capacity and landside capacity. The capacity of an airfield is primarily a function of the major aircraft operating surfaces that compose the facility and the configuration of those surfaces (runways and taxiways), but it is also related to and considered in conjunction with wind coverage, airspace utilization, and the availability and type of navigational aids. Landside capacity and facility requirements are used to determine those improvements that are needed regarding such facilities as terminal building space, FBO facilities, hangars, apron space, special use areas, access roadways and automobile parking. Capacity refers to the *number* of aircraft or operations that a facility can accommodate, either on an hourly or yearly basis, and does not refer to the *size* or *weight* of the aircraft.

The types of aircraft projected to use an airport are important for planning future airport facilities. Knowledge of future aircraft utilizing the airport provides information concerning the "Airport Reference Code" which has two components related to the "Design Aircraft" which is projected to utilize the airport. The first component, depicted by a capital letter, is the aircraft approach category and relates to aircraft approach speed. The second component, depicted by a Roman numeral, is the airplane design group and relates to airplane wingspan.

The aircraft fleet which operates out of Clarence E. Page Airport includes many itinerant operations by business jets and turboprop aircraft. Although exact records have not been kept on the number and type of business jet and turboprop operations, airport staff observations indicate that there are two "Design Aircraft". The Beechcraft Super King Air B200 sets the parameter for wingspan, fifty-four and one half feet (54.5'); and the IAI Westwind sets the approach speed parameter, 129 knots. Both aircraft currently operate frequently at the airport and are expected to continue to do so in the future. Clarence E. Page Airport is a Transport Airport, defined as "an airport that accommodates aircraft with approach speeds of 121 knots or more". The Westwind is such an aircraft and the airport should, therefore, be designed with the use of Airport Reference Code C-II criteria.

Airfield Capacity

This particular section deals with the capability of the airside facilities, i.e., runway and taxiways, to accommodate both the existing and projected demand at the airport. The capacity of an airport's airside facilities are a function of proper runway orientation to provide adequate wind coverage, and the actual physical size and layout of these facilities. These items are discussed below.

Wind Coverage

Surface wind conditions have a direct effect on the operation of an airport; runways not oriented to take the most complete advantage of prevailing winds will restrict the capacity of the airport to varying degrees. Wind conditions affect all airplanes in varying degrees; generally, the smaller the aircraft, the more it is affected, particularly by the crosswind component. To determine wind velocity and direction at Clarence E. Page Airport, wind data was obtained and an all-weather wind rose was constructed, see Figure C1. The wind data for Clarence E. Page Airport itself is lacking, and wind data from Will Rogers World Airport has been utilized in the construction of the wind rose.

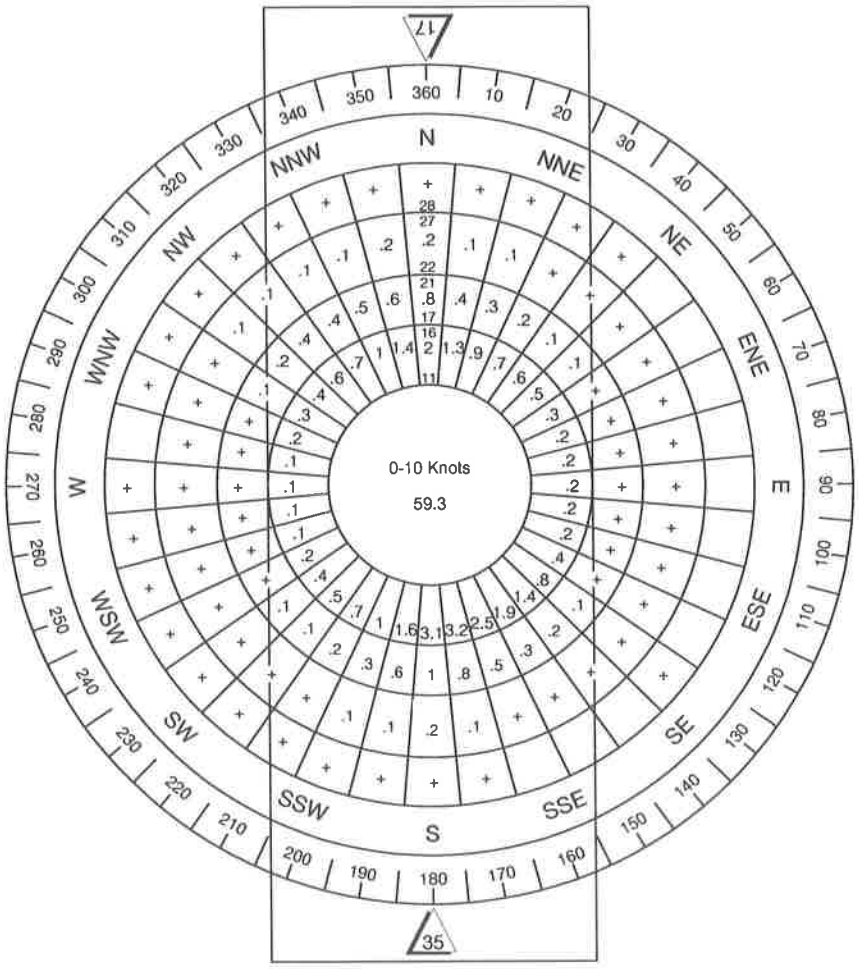
With the adoption of new standards reflected in AC 150-5300-13, the applicable crosswind components are now dictated by the operational and physical characteristics of the aircraft expected to use the airport. These standards specify that the 16 knot component is to be used for runways at airports with Airport Reference Code C-II. Thus, the 16 knot crosswind component is the applicable standard for Clarence E. Page Airport. The desirable wind coverage for an airport is ninety-five percent (95%). This means that runway orientation and configuration should be developed so that the maximum crosswind component is not exceeded more than five percent (5%) of the time. Based on the wind analysis for Clarence E. Page Airport, Runways 17L/35R and 17R/35L have a 99.2% wind coverage for the 16-knot crosswind component. Thus, the wind coverage provided by Runways 17L/35R and 17R/35L is adequate by generally accepted planning standards.

Operations on the existing runway configuration occur to the north approximately forty percent (40%) of the time annually, and occur to the south approximately sixty percent (60%) of the time.

Capacity Analysis

The methodology presented here provides for the determination of airport capacity based on the type and mix of aircraft utilizing the airport, runway configuration, taxiway exits and configuration and wind rose analysis.

Figure C1
ALL WEATHER WIND ROSE
Clarence E. Page Airport Master Plan



Source: National Oceanic and Atmospheric Administration
Oklahoma City, Oklahoma
Station 13967
Period of Record: 1981-1990

The Annual Service Volume (ASV) of an airport is a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time. Capacity

is a measure of the maximum number of aircraft operations which can be accommodated on the airport in an hour, and is referred to in terms of both Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) capacity.

The *assumptions* (as dictated by FAA Advisory Circular 150/5060-5) utilized to determine ASV and capacity are as follows: arrivals equal departures; the percent of touch-and-go operations is between zero and fifty percent of total operations; there is a full-length parallel taxiway with ample exits and no taxiway crossing problems; there are no airspace limitations; the airport has at least one runway equipped with an Instrument Landing System (ILS) and has the necessary Air Traffic Control (ATC) facilities and services to carry out operations in a radar environment; IFR weather conditions occur roughly ten percent of the time; and approximately eighty percent of the time the airport is operated with the runway use configuration which produces the greatest hourly capacity.

Based on the methodology presented above to determine the factors for long-range planning purposes for airports, the ASV for Clarence E. Page Airport has been determined to be approximately 355,000 operations, with a VFR capacity of approximately one hundred ninety-seven (197) operations per hour and an IFR capacity of approximately fifty-nine (59) operations per hour.

It is recognized that Clarence E. Page Airport does not conform to all of the assumptions stated above which results in a loss of capacity from the figures presented above. Among the differences between the airport and the assumptions are the lack of an Air Traffic Control Tower, no ILS and IFR weather conditions which occur much less than ten percent of the time. Although the airports actual annual service volume and hourly capacities are reduced from those listed above, it is not anticipated that Clarence E. Page Airport with its existing configuration will experience capacity related problems during the planning period. As can be seen, the airport's Annual Service Volume is significantly greater than the number of operations forecasted (40,300) for the end of the planning period. The FAA, in the *Terminal Area Forecasts* (TAF), indicates that the airport has an ASV of 195,000 operations.

It is recommended that when sixty percent (60%) of the ASV is reached, an airport should begin planning ways to increase that capacity; and when eighty percent (80%) of ASV is reached, then construction of facilities to increase capacity should be initiated. It is evident that the ASV of the airport will not be reached during the planning period, nor will the sixty or eighty percent levels be reached. This analysis indicates that the ASV and hourly capacity will not become a problem within the planning period, but these must be monitored so that construction of the needed facilities can commence at the proper time should operations change drastically from those presented in this document.

In addition to its operational characteristics, an airport's capability to accommodate the demand placed upon it is also a function of its physical characteristics. Physical characteristics consist of runway length, width and strength, in addition to other facilities. Specific runway requirements will be discussed in a later narrative.

Facility Requirements

This section deals with the actual physical facilities and/or improvements to existing facilities needed to safely and efficiently accommodate the projected demand upon the airport. The section consists of two separate analyses: those requirements dealing with *airside* facilities and those dealing with *landside* facilities.

Airside Facilities

The Super King Air and the Westwind are the "Design Aircraft" for dimensional criteria only (building restriction line setback, runway/ taxiway separation, aircraft parking separation, etc.), and are *not intended* to be used solely to dictate *runway length* requirements, although they may be used as a guide in the process of determining runway length. Generally, runway length requirements for design purposes are premised upon the size of aircraft utilizing an airport. The runway lengths that are associated with most general aviation aircraft include small aircraft under 12,500 pounds maximum takeoff weight and large aircraft under 60,000 pounds maximum takeoff weight.

As can be seen from the following table entitled *RUNWAY LENGTH REQUIREMENTS*, there are four runway lengths shown for small aircraft runways ranging in length from 3,000 feet to 4,600 feet. Each of these provides the proper length to accommodate a certain type of aircraft. All runway lengths are derived from the computer based FAA Airport Design Software supplied with AC 150/5300-13. Using this software, three values are entered into the computer, including the airport elevation of 1,353 feet AMSL, the Mean Normal Maximum Temperature (NMT) of 94 degrees Fahrenheit and the maximum difference in the runway elevation at the centerline of 8.1 feet (the existing runway gradient is .083%). This data input generates the appropriate runway lengths to accommodate a certain class of aircraft based on the physical characteristics of the airport.

There are four different lengths given for large aircraft type runways included in the following table which pertain to those aircraft, generally turbojet-powered, of 60,000 pounds or less maximum certificated takeoff weight. Each of these lengths provides a runway sufficient to satisfy the operational requirements of a certain percentage of the large aircraft fleet at a certain percentage of the useful load, (i.e., 75 percent of the fleet at 60 percent useful load). The useful load of an aircraft is

defined as the difference between the maximum allowable structural gross weight and the operating weight empty. In other words, it is the load that can be carried by the aircraft composed of passengers, fuel and cargo. The requirements of the large aircraft fleet range from 5,500 feet to 9,300 feet in length for Clarence E. Page Airport. Generally, the following aircraft comprise seventy-five percent of the large aircraft fleet: Gates Learjet, Rockwell Sabreliners, Cessna Citation I, II and III, Breguet Falcon, HS-125 and the IAI Westwind.

Table C1
RUNWAY LENGTH REQUIREMENTS
Clarence E. Page Airport Master Plan

Runway Category	Length (Feet)
Small Aircraft with less than 10 seats	
75% of Small Aircraft	3,000
95% of Small Aircraft	3,600
100% of Small Aircraft	4,200
Small Aircraft with more than 10 seats	4,600
Large Aircraft less than 60,000 pounds	
75% of fleet /60% useful load	5,500
100% of fleet /60% useful load	6,200
75% of fleet /90% useful load	7,200
100% of fleet /90% useful load	9,300

Criteria Based on 94° F NMT and Airport Elevation 1,353 AMSL
Source: AC 150/5300-13, Federal Aviation Administration

An important factor to remember when considering runway length requirements is that the actual length necessary for a runway is a function of elevation, temperature and stage length. As temperatures change on a daily basis, the runway length requirements change accordingly. The cooler the temperature, the shorter the runway necessary; therefore, because an airport is designed to accommodate a certain type aircraft and load, does not mean that at certain times a larger aircraft cannot use the airport or that an aircraft cannot use it with heavier loadings. However, the amount of time is limited when such operations could safely occur. The runway lengths depicted in the previous table are established to provide the ability to operate on that length with a high degree of certainty, regularity and safety. This is essential for a particular aircraft to be based at an airport.

In addition to runway length requirements, airport design criteria is also a determining factor in providing for future airport expansion and development. The design criteria for an airport is dependent upon the design aircraft dimensions, the type of, or lack of, instrumentation available or programmed at the airport and the type of aircraft projected to use the airport. The design criteria shown in the following table, entitled *DIMENSIONAL STANDARDS FOR AIRPORT REFERENCE CODE C-II*, are those dimensions required for Aircraft Approach Category C and Airplane Design Group II.

Table C2
DIMENSIONAL STANDARDS FOR AIRPORT REFERENCE CODE C-II
Clarence E. Page Airport Master Plan

Item	Required Dimension (in feet)	Existing Dimension (in feet)
R/W Width	100	100
R/W Safety Area Width	500	500
R/W Safety Area Length [1]	1,000	1,000
T/W Width	35	40
R/W CL T/W	400	400
R/W CL to AC Parking	500	550

[1] Beyond runway end
Criteria Based on Airplane Design Group I, Approach Category B
Source: AC 150/5300-13, Federal Aviation Administration

Landside Facilities

Landside facilities include the terminal building, fixed base operators (FBO) areas, aircraft parking areas, aircraft storage facilities, access and perimeter roads, and other aviation oriented facilities. Upon analysis of these facilities, current deficiencies can be noted in terms of meeting future demands which are addressed in a following portion of this section.

The number and type of projected operations and based aircraft can be converted into projected landside facilities needs. In general, the accompanying table, entitled *LANDSIDE FACILITIES, 1997-2012*, shows the type of facilities and the number of units or acres needed to accommodate that facility in order to meet the potential demand for each development phase. As can be seen, by the year 2012, a total of approximately twenty-four (23.8) acres will be needed for landside facilities. Of this, approximately seventeen (16.5) acres will be required for hangars, both T-

hangars and executive hangars. In addition, there will be approximately six (6.3) acres needed for aircraft parking apron. The remaining area is designated for terminal/FBO and fire-rescue facilities, not including automobile parking facilities. Access and perimeter roadway locations and land requirements are not included in this tabulation because the amount of land necessary for these facilities will be a function of the location of the other facilities as well as the most effective routing of these roadways. The table depicts the area required for landside facilities during all stages of development, by five-year increments. This will assist in the development of detailed facility staging discussed in a later section of the document.

Table C3
LANDSIDE FACILITIES, 1997-2012
Clarence E. Page Airport Master Plan

Facility	1997	2002	2007	2012
Itinerant Apron	3.5 ac	4.2 ac	5.0 ac	6.0 ac
Based AC Apron	0.2 ac	0.2 ac	0.3 ac	0.3 ac
Hangars				
T-hangar (no./ac)	20/1.6 ac	20/1.6 ac	21/1.7 ac	22/1.7 ac
Individual (no./ac)	41/6.5 ac	45/7.2 ac	50/8.0 ac	56/9.0 ac
Executive (no./ac)	6/2.5 ac	9/3.6 ac	12/4.7 ac	15/5.8 ac
Terminal/FBO	.5 ac	.5 ac	.5 ac	.5 ac
Fire-Rescue	.5 ac	.5 ac	.5 ac	.5 ac
TOTAL	15.3 ac	17.8 ac	20.7 ac	23.8 ac

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

D Development Concepts and Influences

Development Concepts and Influences

Introduction

In concert with the status of the airport, some basic assumptions have been established which are intended to direct the thrust of airport development in the future. These assumptions are supported by the aviation activity forecasts and the various considerations on which the forecasts have been based. The assumptions focus on airport growth and development, and as a result, do not subscribe to a static condition or even minimal expansion. Instead, these assumptions center on aggressive airport and associated uses enhancement, and directly relate to and support community needs, and economic development.

The first assumption states that the airport facility shall continue to be developed to *transport criteria*. It was determined that the role of the airport would be that of serving and accommodating transport type aircraft, to attract business/corporate aviation activity and to serve as a reliever airport for Will Rogers World Airport. This translates into an airport facility with a *precision instrument approach* and a *runway of at least 6,000 feet in length*, which will accommodate the existing and forecasted aircraft fleet. Thus, the airport should be designed to *precision standards*, with the proper clearances appropriate to that designation.

The second assumption focuses on the need to continue to *accommodate and attract business/industrial traffic*. Clarence E. Page Airport's role as a business/corporate aviation activity center is increasing, with both existing and forecasted demand for an aviation facility capable of accommodating corporate aircraft. The number of itinerant aircraft operations is indicative of the significant role that the airport is playing in the local business economy. It was determined that this role must be taken into consideration in the formulation of the Airport Development Plan. This is reflected in the type and amount of aircraft storage facilities planned at the airport. In addition, *the airport will be planned to accommodate the forecast operations, as expressed in the Annual Service Volume capabilities.*

The third assumption concentrates on the need to *maximize landside development* at the airport. It is recognized that the airport has limited funds with which to operate, but has an abundance of land available for development; therefore, the need is to develop the airport to optimize the available existing airport property. This is expressed in the location of the planned facilities at the airport, taking advantage of the current facilities location and *developing the available area to maximum benefit.*

The fourth assumption emphasizes the relationship of the airport to *off-airport land uses and the compatibility and complementary development of each.* This is inherent in the design considerations and placement of facilities so as to complement, to the extent possible, off-airport development and to ensure the continued compatibility of the airport environs with airport operations.

Goals for Development

Accompanying these assumptions are several goals which have been established for purposes of directing the plan and its content and establishing continuity in the future for airport development. These goals take into account several categorical considerations relating to the needs of the airport both in the short-term and the long-term, including safety, noise, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness. While all are project oriented, some obviously represent more tangible activities than others. However, all are deemed important and appropriate to the future of the airport.

It is the intent of this Airport Master Plan and the City of Oklahoma City to:

- Provide effective direction for the future development of Clarence E. Page Airport through the preparation of a sound plan and through adherence to the adopted development program.
- Enhance the self-sustaining capability of the airport and ensure the financial feasibility of airport development.
- Accommodate forecast aircraft operations in a safe and efficient manner by providing proper facilities and activities on or near the airport.
- Encourage the development of additional business and industrial operations at the airport.

- Provide necessary services and facilities to serve the forecast aircraft.

- Encourage the protection of existing public and private investment of land and facilities, and encourage the resolution of existing and potential land use conflicts both on and off airport property.

- Develop and maintain a continuous public awareness program designed to inform the public as to the benefits and positive contributions of the airport to the City of Oklahoma City and the entire region.

- Plan and develop the airport to be environmentally compatible with the community and minimize environmental impacts.

- Plan and develop the airport to be capable of accommodating the future needs and requirements of the aviation community, the surrounding communities and the region.

- Provide the opportunity for and encourage the development of compatible land uses on and off the airport to take advantage of the excellent location of the airport within the metropolitan area and the region.

Noise and Land Use

In predicting the approximate noise impacts that could occur from the development of Clarence E. Page Airport, several assumptions were made to determine the "most severe condition" in terms of the number of operations, number and type of aircraft, and the airport configuration that would be most reasonable for the existing situation and for the end of the planning period, year 2012. These were used to determine noise levels and impacts for the present and future development of the airport. It is very likely that these conditions will never be achieved at the airport, but the reason for showing the most severe conditions is to aid in land use planning and control measures. If development is strictly controlled within these contours, then most noise related land use problems should be alleviated before they develop. The existing operations by aircraft type that were used as a basis for generating the noise contours are shown in the following table, entitled *EXISTING AIRCRAFT OPERATIONS, 1991.*

Table D1
EXISTING AIRCRAFT OPERATIONS, 1991
Clarence E. Page Airport Master Plan

Aircraft Type	Operations
General Aviation:	
Single Engine	15,300 (80.0%)
Multi-engine	2,870 (15.0%)
Turboprop	630 (3.3%)
Business Jet	330 (1.7%)
TOTAL	19,130 (100%)

Day-Night Sound Level

The day-night sound level (Ldn) methodology was used to determine both the potential noise levels that could be expected to occur with the proposed project and the noise levels resulting from existing conditions. The basic unit in the computation of Ldn is the Sound Exposure Level (SEL). An SEL is computed by adding the dB(A) level for each second of a noise event above a certain threshold. For example, a noise monitor located in a quiet residential area [40 dB(A)] receives the sound impulses of an approaching aircraft and records the highest dB(A) reading for each second of the event as the aircraft approaches and departs the site. Each of these one-second readings are then added logarithmically to compute the SEL.

The computations of Ldn involve the addition, weighting and averaging of each SEL to achieve the Ldn level in a particular location. The SEL of any single noise event occurring between the hours of 10:00 p.m. and 7:00 a.m. is automatically weighted by adding 10 dB(A) to the SEL to account for the assumed additional irritation perceived during that time period. All SELs are then averaged over a given time period (day, week, year) to achieve a level characteristic of the total noise environment. Very simply, an Ldn level for a specified area over a given time is approximately equal to the average dB(A) level which has the same sound level as the intermittent noise events. Thus, a 65 Ldn level describes an area as having a constant noise level of 65 dB(A) which is the approximate average of single noise events even though the area would experience noise events much higher than 65 dB(A) and periods of quiet.

The main advantage of Ldn is that it provides a common measure for a variety of differing noise environments. The same Ldn level can describe both an area with very few high level noise events and an area with many low level events. Ldn is

thus constructed because it has been found that the total noise energy in an area predicts community response.

Ldn levels usually are depicted as grid cells or contours. Grid cells are squares of land of a specific size which are entirely characterized by a noise level. Contours are interpolations of noise levels based on the centroid of a grid cell and drawn to connect all points of similar level. Contours appear similar to topographical contours and form concentric "footprints" about a noise source. These footprints of Ldn contours drawn about an airport are used to predict community response to the noise from aircraft using that airport.

The Ldn contours are related to land use planning and development, as the contours define land areas having different land use compatibility with respect to aircraft noise; hence, the contours may be used as a guide to land use planning, zoning, and airport development. The table on the following page, entitled *COMPARATIVE NOISE LEVELS*, depicts the typical dB(A) values of noise commonly experienced by people. This shows the relative impact of single event noise in "A" weighted level.

Again, this information can act as a guide to the city for land use planning and control. It must be remembered that the Ldn contours do not delineate areas that are either free from excessive noise or areas that will be subjected to excessive noise. In other words, it cannot be expected that a person living on one side of an Ldn contour will have a markedly different reaction than a person living nearby, but on the other side. What can be expected is that the general aggregate community response to noise within the Ldn 65 contour, for example, will be less than the public response from the Ldn 75 contour.

Land Use Compatibility Matrix

The *LAND USE COMPATIBILITY MATRIX* on the following page indicates which land uses are compatible within certain Ldn noise contours. It identifies land uses as being compatible, incompatible, or compatible if sound attenuated. The matrix shows which land uses are acceptable within each contour and should be used as a guide for land use planning purposes and a tool to compare relative land use impacts which would result from the different development alternatives. This study utilizes the Ldn 65, 70 and 75 contours to determine land use impacts. The area between the Ldn 65 and Ldn 70 contours is an area of significant noise exposure where many types of land uses are normally unacceptable and where land use compatibility controls are recommended. The Ldn 70 contour identifies land uses which are subjected to a significant level of noise and the sensitivity of various uses to noise is increased. Finally, the Ldn 75 contour identifies land uses which are subjected to a greater significant level of noise and where most uses should be discouraged unless properly sound attenuated.

Table D2
COMPARATIVE NOISE LEVELS
Clarence E. Page Airport Master Plan

Activity	dBA Levels
Rustling Leaves	20
Room in Quiet Dwelling at Midnight	32
Soft Whisper at 5 feet	34
Men's Clothing Department of Large Store	53
Window Air Conditioner	55
Conversational Speech	60
Household Department of Large Store	62
Busy Restaurant	65
Typing Pool	65
Vacuum Cleaner in House (at 10 feet)	69
Ringing Alarm Clock (at 2 feet)	80
Loudly Reproduced Orchestral Music in Large Room	82
Printing Press Plant (medium size automatic)	86
Heavy City Traffic	92
Heavy Diesel-Propelled Vehicle (at 25 feet)	92
Air Grinder	95
Cut-off Saw	97
Home Lawn Mower	98
Turbine Condenser	98
150 Cubic Foot Air Conditioner	100
Banging of Steel Plate	104
Air Hammer	107
Jet Airliner (500 feet overhead)	115

NOTE: Prolonged levels over 85 dB(A) represent beginning of hearing damage.
Adapted from Impact of Noise on People, Federal Aviation Administration.

Land Use	Yearly Day-Night Sound Level(L_{dn}) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)1	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

KEY TO TABLE 1

SLUCM	Standard Land Use Coding Manual.
Y(Yes)	Land Use and related structures compatible without restrictions.
N(No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30 or 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided that special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Source: FAR Part 150

Figure D1 ***Land Use Compatibility Matrix***

Clarence E. Page Airport Master Plan

Existing Noise and Land Use

Using the existing aircraft operation numbers and types previously presented in Table D1, *EXISTING AIRCRAFT OPERATIONS, 1991*, existing noise contours were generated and are presented in Figure D2, entitled *EXISTING NOISE CONTOURS (1991) WITH EXISTING LAND USE*. The existing operations at Clarence E. Page Airport were sufficient to generate the Ldn 65, 70 and 75 contours. Under existing conditions, all the contours remain on airport property and thus indicates that the airport is in a very good position with no land use incompatibilities associated with the existing noise contours.

Future Noise and Land Use

The following table identifies those aircraft types and operations forecasted to occur at Clarence E. Page Airport in 2012. These aircraft types and operation numbers were used to generate the future noise contours.

Table D3
FUTURE AIRCRAFT OPERATIONS, 2012
Clarence E. Page Airport Master Plan

Aircraft Type	Operations
General Aviation	
Single Engine	22,240 (55.2%)
Multi-engine	14,870 (36.9%)
Turboprop	2,220 (5.5%)
Business Jet	970 (2.4%)
TOTAL OPERATIONS	40,300 (100%)

As with the existing situation, future operations were sufficient to generate the Ldn 65, 70 and 75 noise contours. The future contours remain entirely on airport property under future conditions; and therefore no conflicts with noncompatible land uses will be encountered. The future noise contours are illustrated in the

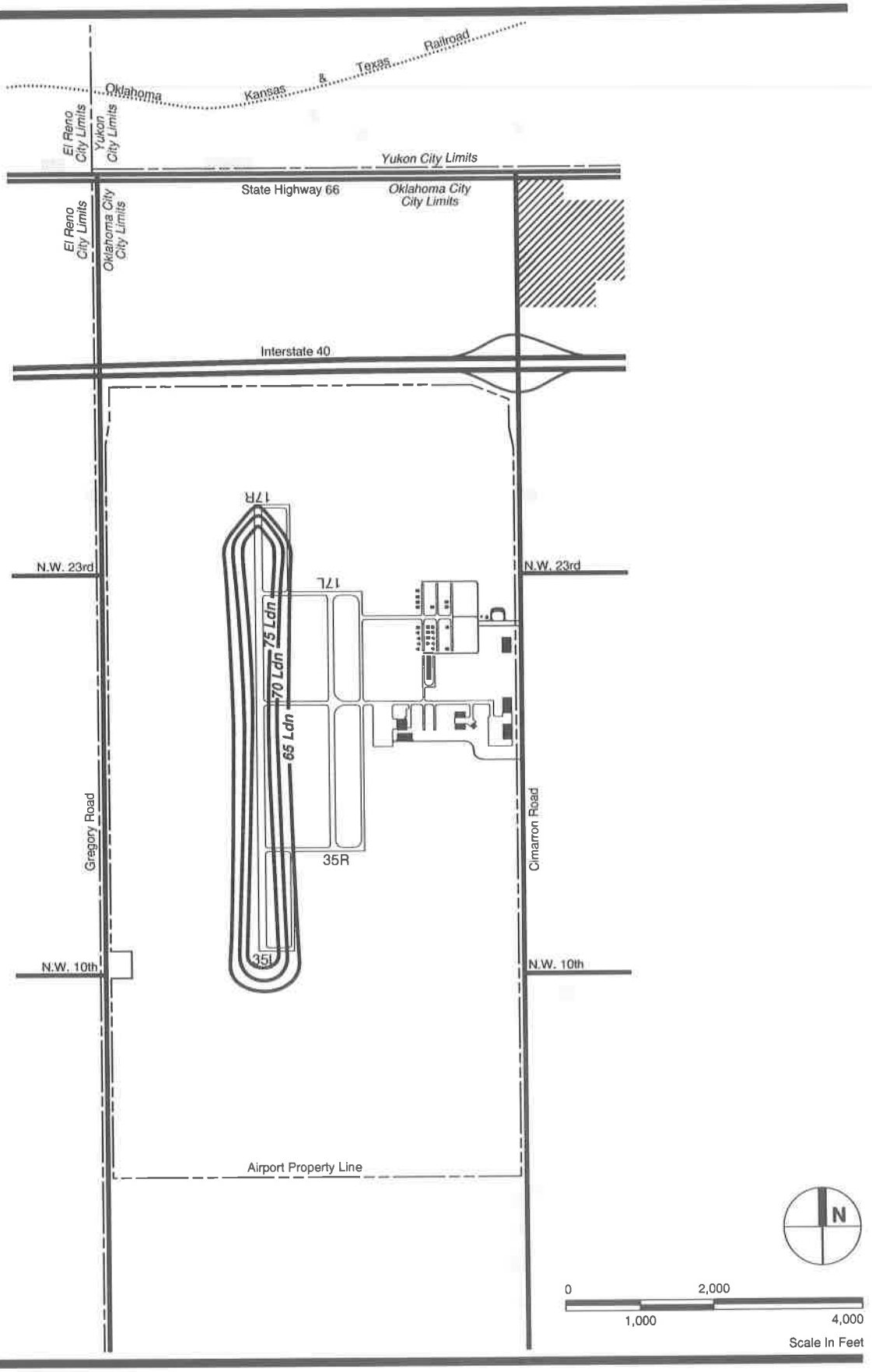


Figure D2 ***Existing Noise Contours (1991) With Existing Land Use***

Clarence E. Page Airport Master Plan

Residential

Industrial

Agricultural/Open Space

BARNARD DUNKELBERG & COMPANY
HTB, Inc.

following figure, entitled *FUTURE NOISE CONTOURS (2012) WITH EXISTING LAND USE*.

Nationally, the aircraft fleet, particularly the corporate jet fleet, is becoming quieter. The majority of the aircraft which produce the greatest noise levels will be removed from service during the twenty-year planning period on which this study is based. This trend has been incorporated into the future noise projections at Clarence E. Page Airport.

Airport Environs Land Use Plan

The area surrounding Clarence E. Page Airport experiences no significant land use impacts due to noise intrusion and is not expected to in the future. However, if the situation changes drastically in the future, the City of Oklahoma City should utilize the *LAND USE COMPATIBILITY MATRIX* presented previously as a guide in instituting land use controls to ensure land use compatibility with the airport.

While noise impacts are significant ingredients in establishing a basis for sound land use planning practices within the environs of the airport, in many cases encompassing a greater area than those covered by other considerations, safety areas in the form of runway protection zones and approach surfaces are additional factors on which to base land use decisions and implementation practices. Therefore, the same land use planning practices and mechanisms are appropriate and should be employed in terms of establishing a proper and realistic set of land use recommendations for the airport environs. These practices will ensure longevity of growth in aviation activity beyond that programmed in this Master Plan for Clarence E. Page Airport. As stated previously, a Height Zoning Map and Ordinance has been prepared as a portion of this Master Plan. These documents will assist the City of Oklahoma City in protecting an obstruction free aviation operation area around the airport.

The figure entitled *AIRPORT ENVIRONS LAND USE PLAN*, provides a graphic depiction of the recommended land use pattern within the environs of Clarence E. Page Airport. Again, the purpose here is to establish a land use plan and associated recommendations which will lead toward an environment that is protective and compatible in nature and will assure airport development designed to meet aviation needs and the expectations of the community. This plan generally conforms to the *FRAMEWORK FOR GROWTH, THE OKC PLAN, 1989-2010*, which was adopted by the City of Oklahoma City in 1990.

The plan recommends that residential land use be discouraged in the general vicinity of the airport. This will prevent single event noise from the occasional flyover from

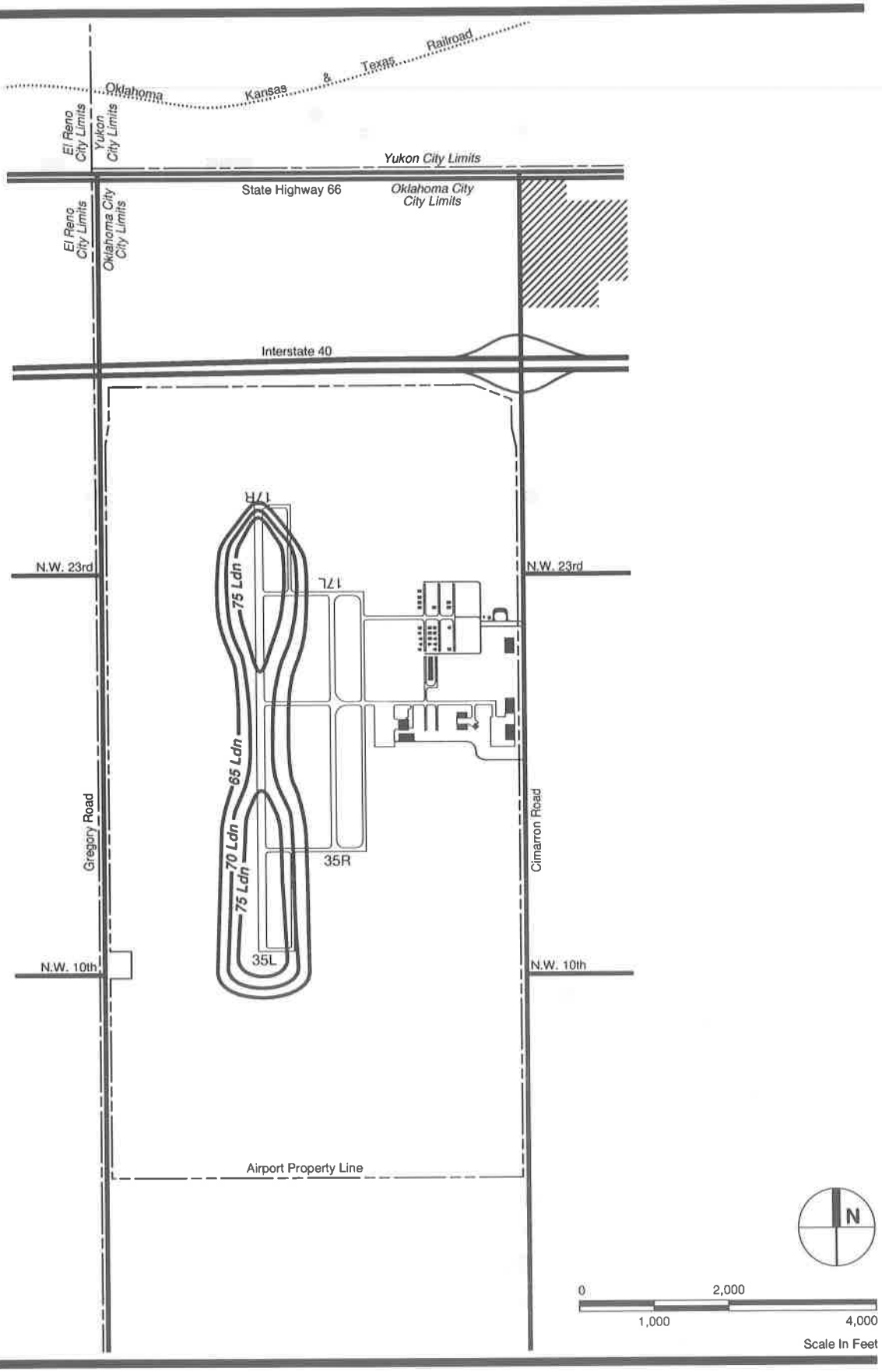


Figure D3 ***Future Noise Contours (2012) With Existing Land Use***

Residential

Industrial

Agricultural/Open Space

Clarence E. Page Airport Master Plan

BARNARD DUNKELBERG & COMPANY HTB, Inc.

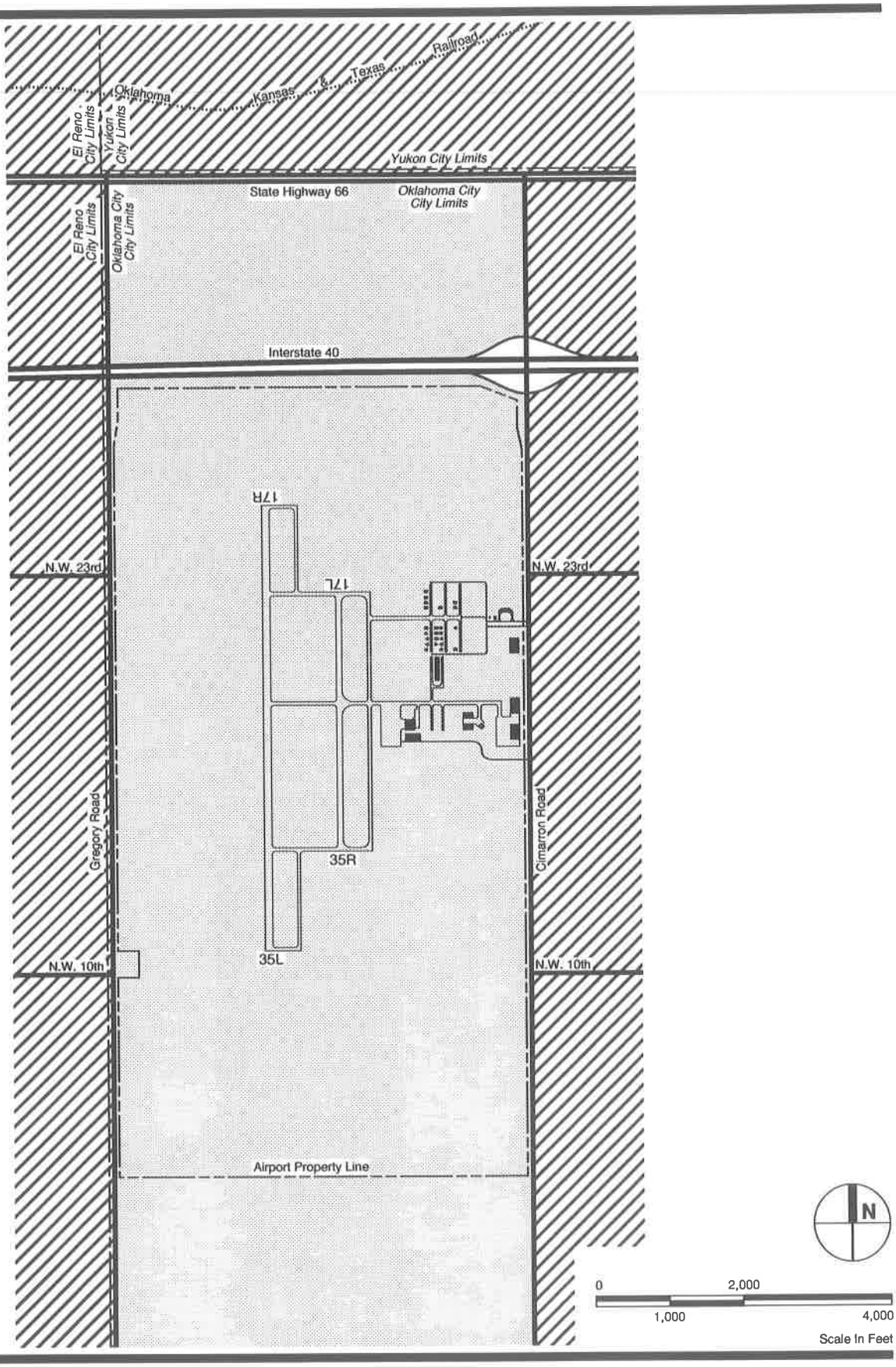


Figure D4 ***Airport Environs Land Use Plan***

Clarence E. Page Airport Master Plan

Industrial

Transportation/Communication/Utilities

BARNARD DUNKELBERG & COMPANY HTB, Inc.

being intrusive; which can cause more irritation than the cumulative noise levels associated with aircraft operations. Because of the fact that general aviation aircraft do not follow as precise a flight track as commercial aircraft, resulting in a wide variation of actual aircraft flyover locations, there are many noise complaints registered at general aviation airports beyond the Ldn 65 contour. If residential development does take place in the vicinity of the airport, an avigation easement should be required to ensure that actual notice of possible aircraft flyover impacts is given to potential residents and will help avoid future noise complaints.

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

E Development Plan

Development Plan

Introduction

The Clarence E. Page Airport Development Plan has evolved from an analysis of many considerations. Among these are: aviation demand; aviation forecasts; a capacity analysis; aircraft operational characteristics and requirements inherent to the airport; facility requirements and modifications; physical issues and conditions; and the general direction or thrust for the airport and the City of Oklahoma City as characterized in the previously noted statement of goals. In the interest of addressing immediate conditions and issues, and assuring adherence to future airport needs and accommodating the demands anticipated during the forthcoming long-range planning period, the Development Plan presents a plan and program describing both airside and landside facilities. The specific projects associated with each facility category (airside and landside) are assembled in a unified development scheme. Particular emphasis is placed on the initial part of the planning period, the first five years. Here the projections are more definable and the magnitude of program accomplishment is more pronounced. Further, this early development is essential to the future well-being of this community facility and the continued enhancement of aviation development, and in turn, economic development in Oklahoma City and the region.

The Plan is categorically reviewed here in the sense that each project or development category (Airside Development, Landside Development, Associated Development) is discussed independently, with individual elements contained within a particular category noted and described (e.g., runways, taxiways, special facilities and roadway development). In addition, the Development Plan for Clarence E. Page Airport is graphically represented on the *AIRPORT LAYOUT PLAN* (ALP) which is presented at the end of this chapter.

Alternatives Development and Evaluation

To meet the projected demand through the year 2012 (the end of the planning period for purposes here), several alternatives for airport and associated facility development, as well as environs development, were formulated and evaluated as to the feasibility of each. The forecast operations and the goals of the community relative to aviation development and economic enhancement were considered. The great number of itinerant aircraft operations is an indication of the importance of the airport to the regional business community. The degree to which the airport serves the business/corporate community has increased in recent years and this increase is expected to continue in the future. Because of its significance to the economy of the surrounding area, the increasingly important role of the airport as a center for business/corporate aviation activity *cannot* be and *is not* overlooked in the formulation of alternatives for future airport development.

The generalized alternatives are outlined and discussed in the following narrative. Following is a review of these development alternatives, the purpose of which is to fulfill *major* facility requirements and accomplish the objectives of the planning and airport development program. The recommendations for the development of the total facility are presented.

Because all other airport functions relate to and revolve around the basic runway layout, runway system alternatives must be carefully examined and evaluated. Specific considerations include the number of runways, the length of the runways, orientation and approach/runway protection zone criteria needed to support forecasted use during the planning period. The main objective of the alternative analysis presented herein is to analyze those alternatives which will result in an airport system capable of accommodating the forecast aircraft operations. This analysis also includes maximizing airport property for aviation and non-aviation development opportunities, minimizing airport generated impacts on surrounding property, and minimizing airport development costs.

Development Goals

The following goals have been established to guide the development of Clarence E. Page Airport:

1) With a primary runway length of 6,000 feet, the existing runway is capable of accommodating the majority of the business jet fleet utilizing the airport under most operational conditions. Therefore, no extension to Runway 17R/35L will be analyzed as a portion of this study. Also, because the existing runways provide adequate

wind coverage, there will be no alternative examined which includes the development of a crosswind runway.

2) Provision of a precision instrument approach.

3) Provision of a full parallel taxiway for Runway 17R/35L.

4) Maximizing safety and efficiency of the airport's facilities.

5) Costs of airport development should be minimized.

6) The impact of the airport's operation on surrounding land uses should be minimized.

7) Landside development opportunities should be maximized.

Development Alternatives

The following development alternatives were investigated:

Alternative One - Utilization of Existing Airport Configuration

Development Alternative One is presented in the following figure entitled *DEVELOPMENT ALTERNATIVE ONE*.

- **Runway/Taxiway System.** This alternative maintains a primary runway length of 6,000 feet for Runway 17R/35L which is adequate to accommodate 100% of the Large Aircraft Fleet at 60% useful load. Also, this alternative provides for a full length parallel taxiway for Runway 17L/35R, but does not meet the stated goal of providing a full length parallel taxiway for Runway 17R/35L.

- **Approaches.** The existing Airport Layout Plan reflects a non-precision approach runway protection zone for Runway 17R with an approach slope of 34:1; a non-precision approach runway protection zone for Runway 17L with an approach slope of 50:1; a non-precision approach runway protection zone for Runway 35R with an approach slope of 50:1; and a precision approach runway protection zone for Runway 17L with an approach slope of 100:1. However, at this time, the airport has no published straight-in instrument approach of any kind; therefore, this alternative does not meet the stated goal of providing a precision instrument approach.

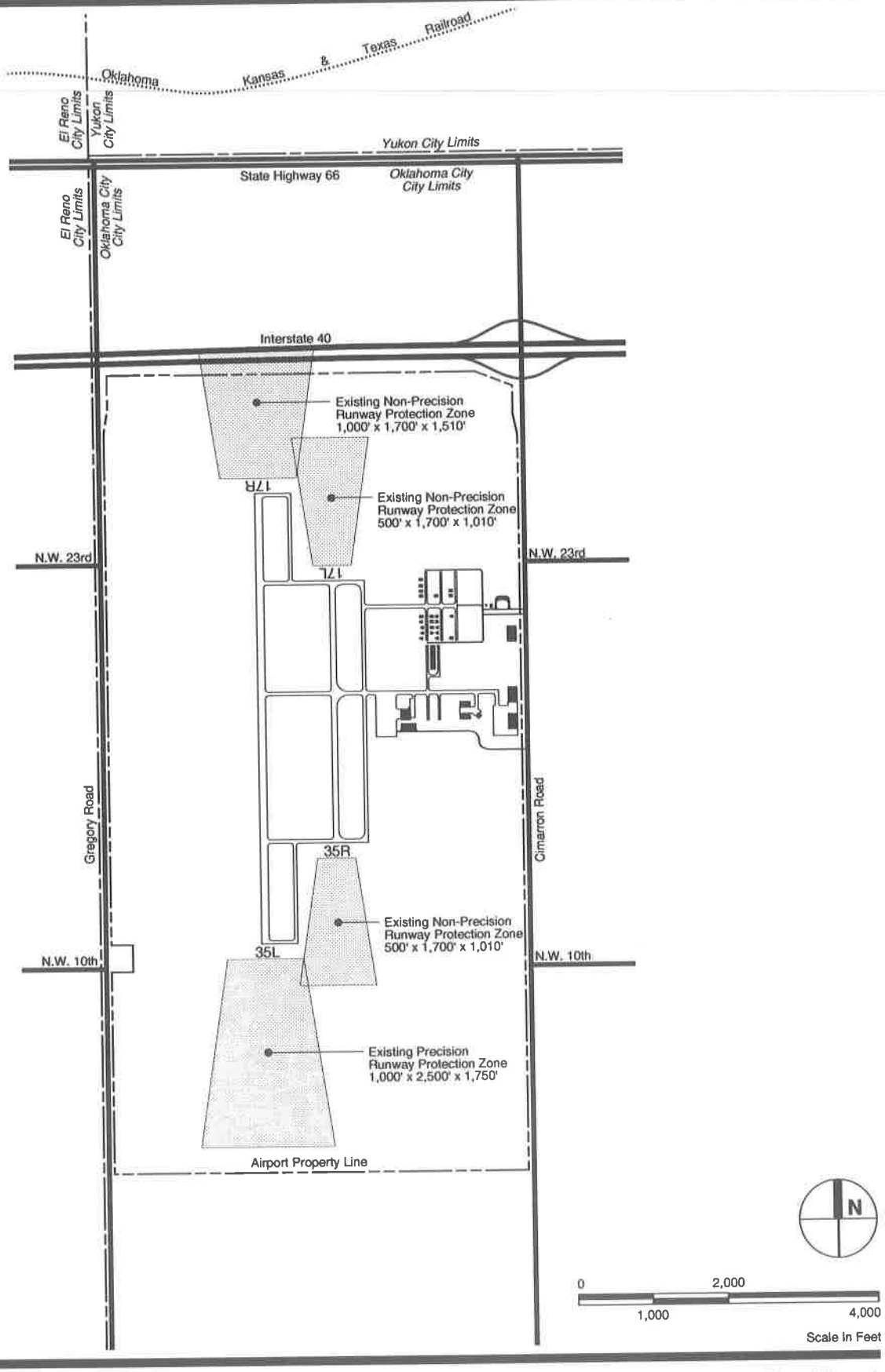


Figure E1 ***Development Alternative One***

Clarence E. Page Airport Master Plan

- **Property Acquisition.** The airport currently owns enough property to accommodate the required runway safety areas and the runway protection zones for Runway 17L, Runway 35L and Runway 35R. However, the non-precision approach runway protection zone for Runway 17R extends off of airport property approximately 250 feet, but does not extend north of the I-40 right-of-way.

This alternative offers the advantage of being the least expensive to implement. It maintains two runways with lengths of 6,000 feet and 3,500 feet, which meets the goal of accommodating all business/corporate aircraft at the airport. However, Alternative One does not meet the goals of providing a precision instrument approach or constructing a full length parallel taxiway for Runway 17R/35L.

Alternative Two - Extend Runway 17L/35R 1,500 Feet to the North

This Development Alternative is presented in the following figure entitled *DEVELOPMENT ALTERNATIVE TWO*.

- **Runway/Taxiway System.** This alternative provides for a primary runway length of 6,000 feet and a secondary runway length of 5,000 feet, which provides two runways capable of accommodating business jet aircraft. Also, this alternative provides for a full length parallel taxiway to be constructed 400 feet to the west of Runway 17R/35L and an extension of the parallel taxiway for Runway 17L/35R.

- **Approaches.** This alternative provides for a precision instrument approach to Runway 35L. There is an existing 50:1 precision approach runway protection zone for this runway that is obstruction free and Alternative Two will require that the runway protection zone be maintained in such a manner. The non-precision approach runway protection zone for the extension of Runway 17L would extend beyond airport property over I-40, but the Interstate would not constitute an obstruction to the 34:1 approach slope surface. The existing non-precision approach runway protection zones for the other runways would remain the same and require the removal of obstructions that are currently contained in the FAA's Airport Master Record Form 5010.

- **Property Acquisition.** The airport presently owns the land necessary to accommodate a runway extension of 1,500 feet to Runway 17L/35R and the associated 1,000 foot safety area. However, only 1,160 feet of the non-precision runway protection zone would remain on airport property, with the remaining 540 feet extending beyond airport property. Through either easement or fee simple title the airport would need to acquire the rights to a minimum of five (5) acres to the north of

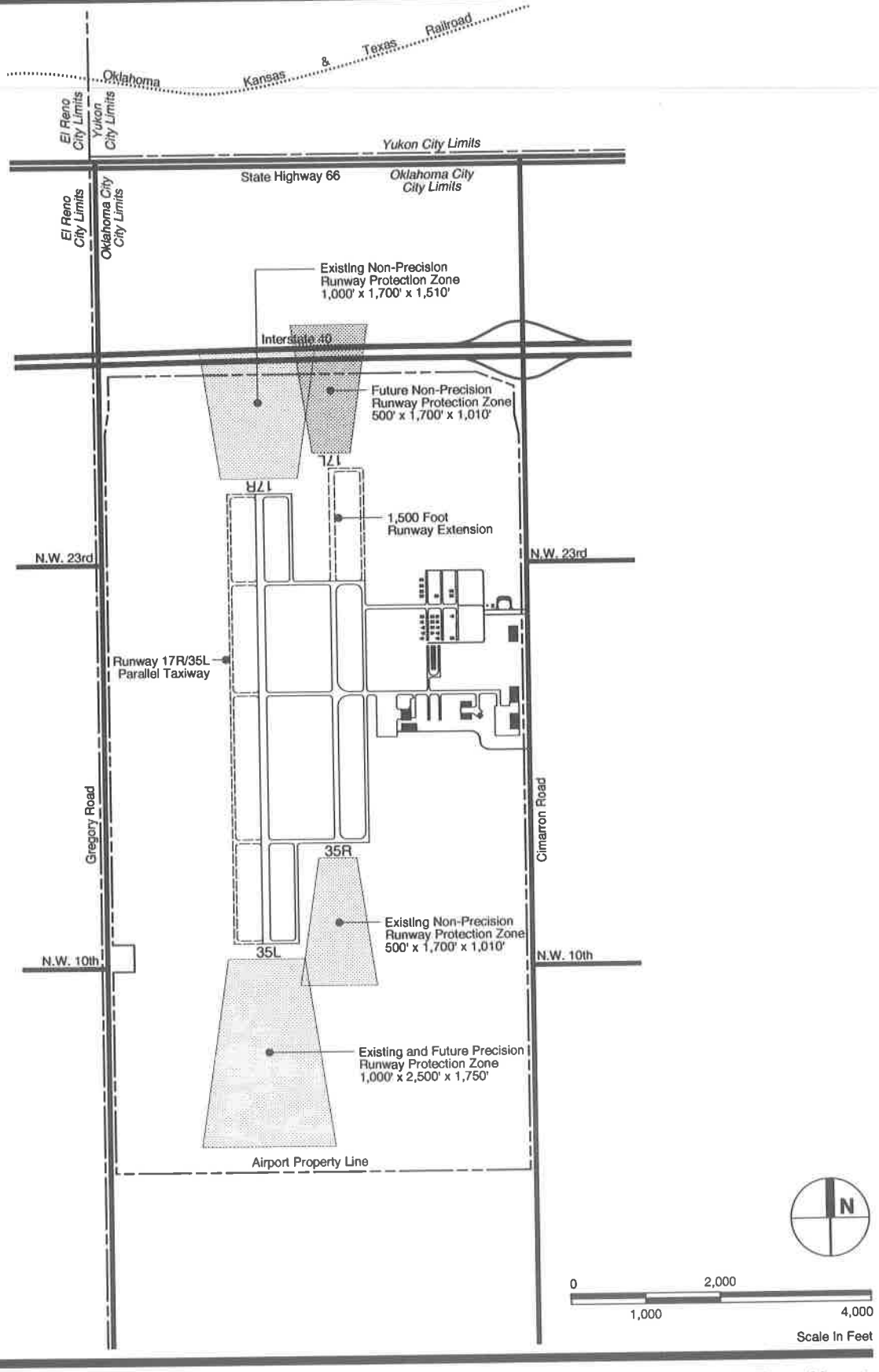


Figure E2 ***Development Alternative Two***

Clarence E. Page Airport Master Plan

the I-40 right-of-way to fully accommodate a future non-precision approach runway protection zone. However, if a visual approach runway protection zone was established for the runway extension, then no property acquisition would be required as the entire runway protection zone would remain on airport property.

- **Development Costs.** Major cost items associated with this airport development include:

  1) Extension of Runway 17L/35R 1,500 feet to the north.
  2) Extension of Runway 17L/35R parallel taxiway.
  3) Construction of Runway 17R/35L full length parallel taxiway.
  4) Acquiring rights to approximately five (5) acres of land associated with a non-precision approach runway protection zone.

In summary, the results of the implementation of Alternative Two are to provide for a primary runway length of 6,000 feet and a secondary runway length of 5,000 feet. This alternative also provides a full length parallel taxiway for Runway 17R/35L, accommodates all business/corporate aircraft, provides a precision instrument approach and would require the acquisition of rights to a minimum of five (5) acres of land associated with a future non-precision approach runway protection zone for the runway extension.

Alternative Three - Extend Runway 17L/35R 1,500 Feet to the South

Development Alternative Three is illustrated in the following figure, entitled *DEVELOPMENT ALTERNATIVE THREE*.

- **Runway/Taxiway System.** This alternative is the same as Alternative Two with the exception that the runway and taxiway extensions are 1,500 feet to the south on Runway 17L/35R. This alternative provides a primary runway length of 6,000 feet and a secondary runway length of 5,000 feet, allowing business jet operations on both runways. As with the preceding alternative, a full length parallel taxiway is planned to be constructed 400 feet to the west of Runway 17R/35L and the parallel taxiway for Runway 17L/35R is extended 1,500 feet to the south.

- **Approaches.** As with Alternative Two, this alternative provides a precision instrument approach to Runway 35L. There appear to be no serious obstruction limitations associated with the provision of a 34:1 non-precision approach runway protection zone for the extension to Runway 35R as it remains entirely on airport property. The existing runway protection zones would remain the same and require the removal of obstructions listed in the FAA's Airport Master Record Form 5010.

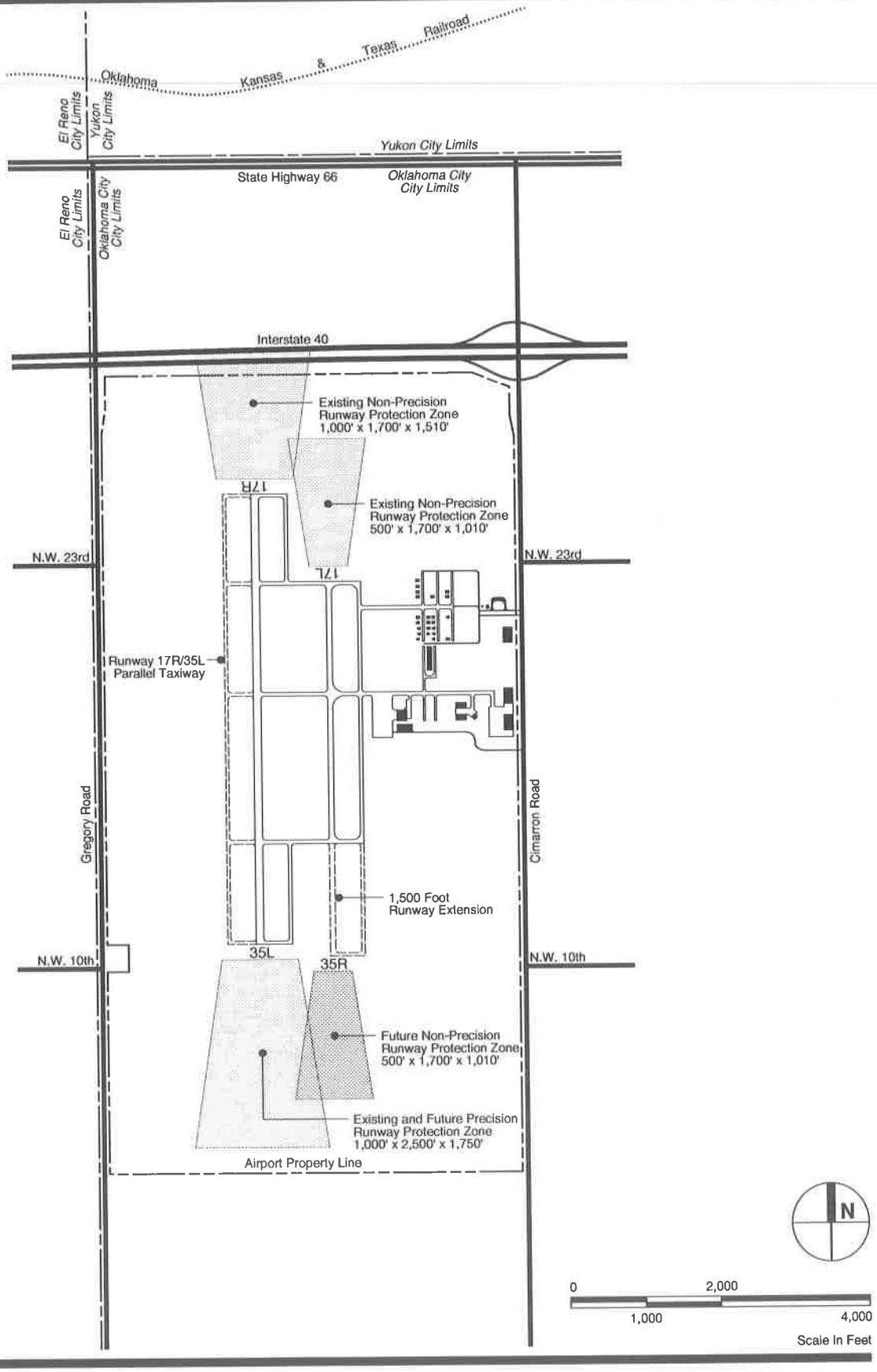


Figure E3 ***Development Alternative Three***

Clarence E. Page Airport Master Plan

- **Property Acquisition.** This alternative does not require the acquisition of any property as the runway extension, runway safety area and all runway protection zones would remain on airport property.

- **Development Costs.** Major cost items associated with Alternative Three development include:

  1) Extension of Runway 17L/35R 1,500 feet to the south.
  2) Extension of Runway 17L/35R parallel taxiway.
  3) Construction of Runway 17R/35L full length parallel taxiway.

Alternative Three provides for a primary runway length of 6,000 feet and a secondary runway length of 5,000 feet which accommodates all the aircraft forecast to utilize the airport. Development requires extension of Runway 17L/35R, the construction of a full length parallel taxiway for Runway 17R/35L and the provision of a precision instrument approach procedure.

Alternative Four- Closure of Runway 17L/35R

This alternative is illustrated in the following figure, entitled *DEVELOPMENT ALTERNATIVE FOUR*.

- **Runway/Taxiway System.** This alternative provides for maintaining Runway 17R/35L at a length of 6,000 feet and the closing of Runway 17L/35R. This alternative also recommends the connection of the partial parallel taxiway currently serving Runway 17R/35L to provide a full length parallel taxiway.

- **Approaches.** Alternative Four provides for a precision approach to Runway 17R. The associated precision approach runway protection zone would extend beyond airport property over I-40, but the Interstate would not constitute an obstruction to the 50:1 approach slope surface. There does not appear to be any obstruction associated with the area beyond the Interstate right-of-way. The existing runway protection zone is penetrated by a fence and this obstruction would need to be alleviated in the future.

- **Property Acquisition.** Existing airport property would accommodate all of the 1,000 foot runway safety area and approximately 1,450 feet of the proposed precision approach runway protection zone on the north. Therefore, the airport would need to acquire, through either easement or fee simple title, approximately twenty-seven (27) acres to the north of airport property and the I-40 right-of-way.

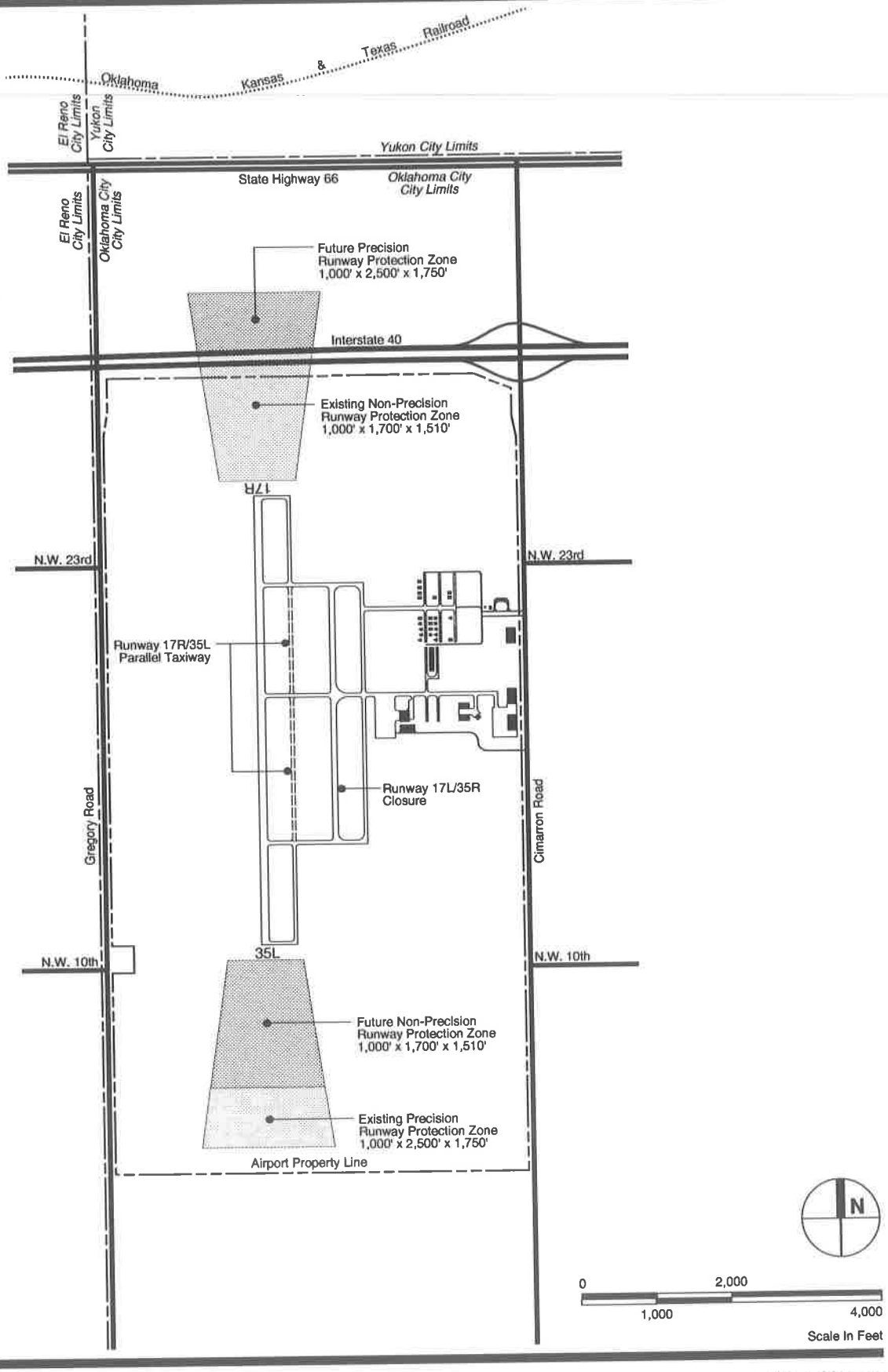


Figure E4 ***Development Alternative Four***

Clarence E. Page Airport Master Plan

- **Development Costs.** Major cost items associated with Alternative Four development include:

  1) Construction of Runway 17R/35L full length parallel taxiway.
  2) Acquisition of approximately 27 acres in fee simple title or easements for the precision runway protection zone.

Implementation of the final alternative provides for a runway length of 6,000 feet which enables all forecasted aircraft to safely operate at the airport. Alternative Four also provides a full length parallel taxiway for Runway 17R/35L and a precision instrument approach procedure for Runway 17R. Development of this alternative requires the closing of Runway 17L/35R; thereby creating more development area on the east side of the airport and eliminating the maintenance associated with the runway, but it also means eliminating a runway that is often used by small aircraft operators. The alternative also requires the purchase of twenty-seven (27) acres of land, in either fee simple title or easements, for the provision of the precision approach runway protection zone.

Airside Development Plan

There are two primary elements of the airport which comprise the airside category of facilities: runways and taxiways. These elements represent the nucleus of the aviation facility around which all other elements and development activities revolve. It is paramount that this "framework" be established with a commitment and knowledge that the ultimate needs, demands and expectations of the airport, as well as the demonstrated and expected associated uses, facilities and activities can be accommodated and will be positioned appropriately and beneficially as the airport matures. As defined in the Facility Requirements Chapter, the airport will be developed using Transport Airport Reference Code C-II criteria. The ultimate airside configuration is shown in the following figure entitled *AIRSIDE DEVELOPMENT PLAN*.

Runways

After careful examination and review of the above mentioned alternatives, elements of the various alternatives were combined into a plan which is considered to be the most viable, realistic and flexible. Based on known conditions, the need to be able to dependably and regularly serve the business aircraft fleet and the need to maintain development costs at a manageable level, this combination best meets the needs of the airport and the community and will form the basis for a recommended Development Plan. The majority of the elements for the recommended Development Plan were taken from Alternatives Two and Four.

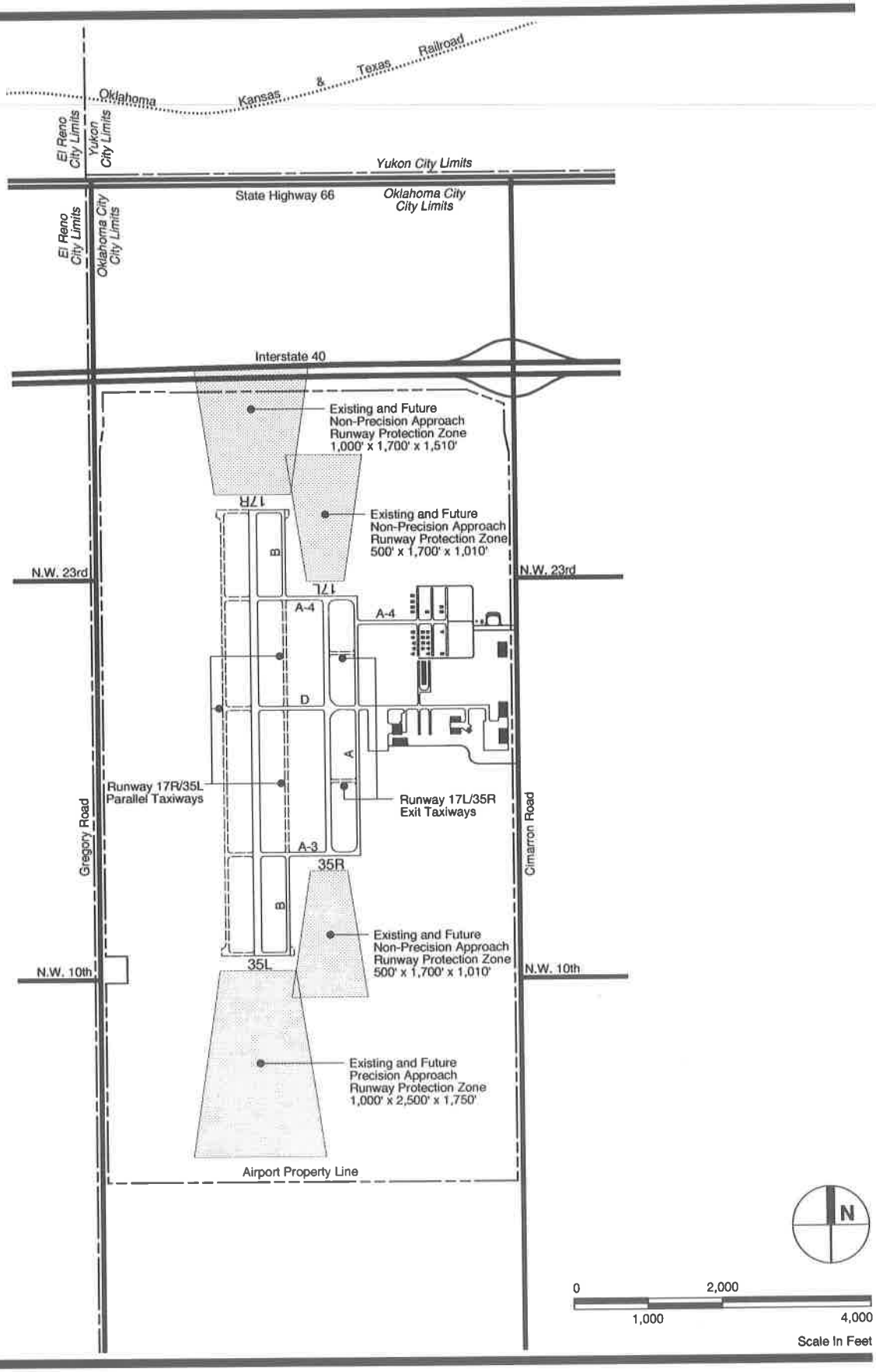


Figure E5 ***Airside Development Plan***

Clarence E. Page Airport Master Plan

To satisfy the goal of accommodating the business/corporate aircraft fleet and of minimizing cost to the airport, the Development Plan calls for both of the existing runways to remain open throughout the planning period and beyond. It is not considered operationally necessary to lengthen Runway 17L/35R as it is currently adequate to accommodate most small aircraft. As stated previously, Runway 17R/35L is adequate in length to accommodate the majority of all aircraft that are forecast to operate at Clarence E. Page Airport. This decision is reinforced by the fact that new generation aircraft are requiring shorter runways than older aircraft, and are capable of carrying heavier loadings with shorter runway length requirements. This trend is expected to continue in the future, with aircraft becoming more efficient, and thus requiring less runway to operate.

It is not considered justifiable during the planning period of this document to recommend an extension to Runway 17R/35L. However, it is recommended that the area to the south of this runway be preserved for runway and taxiway development to an ultimate length of 7,200 feet if a need ever arises in the future for the extension. It is recognized that aircraft requiring a runway length as long as 7,200 feet could operate at Will Rogers World Airport or Wiley Post Airport.

In order to maintain both runways, certain improvements will need to be performed on the existing runways. First, the drainage structure and associated pavement located approximately 2,950 feet north of the threshold of Runway 35L will need to be reconstructed. Second, Runway 17L/35R will need to be regraded and reconstructed to remove the hump in the middle of the runway.

Approaches

In order to improve service and business access to Clarence E. Page Airport, the development of improved approach procedures is a high priority. In the short term, the primary recommendation is for a Non-Directional Beacon (NDB) to be placed on airport property to allow a non-precision approach to both Runway 17R and Runway 35L.

An analysis of IFR wind conditions indicates that a precision instrument approach procedure from the south would be the most beneficial for Clarence E. Page Airport. The Development Plan recommends placing an Instrument Landing System (ILS) on Runway 35L. The Plan also recommends that obstructions penetrating the approach slope surfaces to the existing runway protection zones be removed in order to provide for the safe and efficient operation of aircraft at the airport.

Taxiways

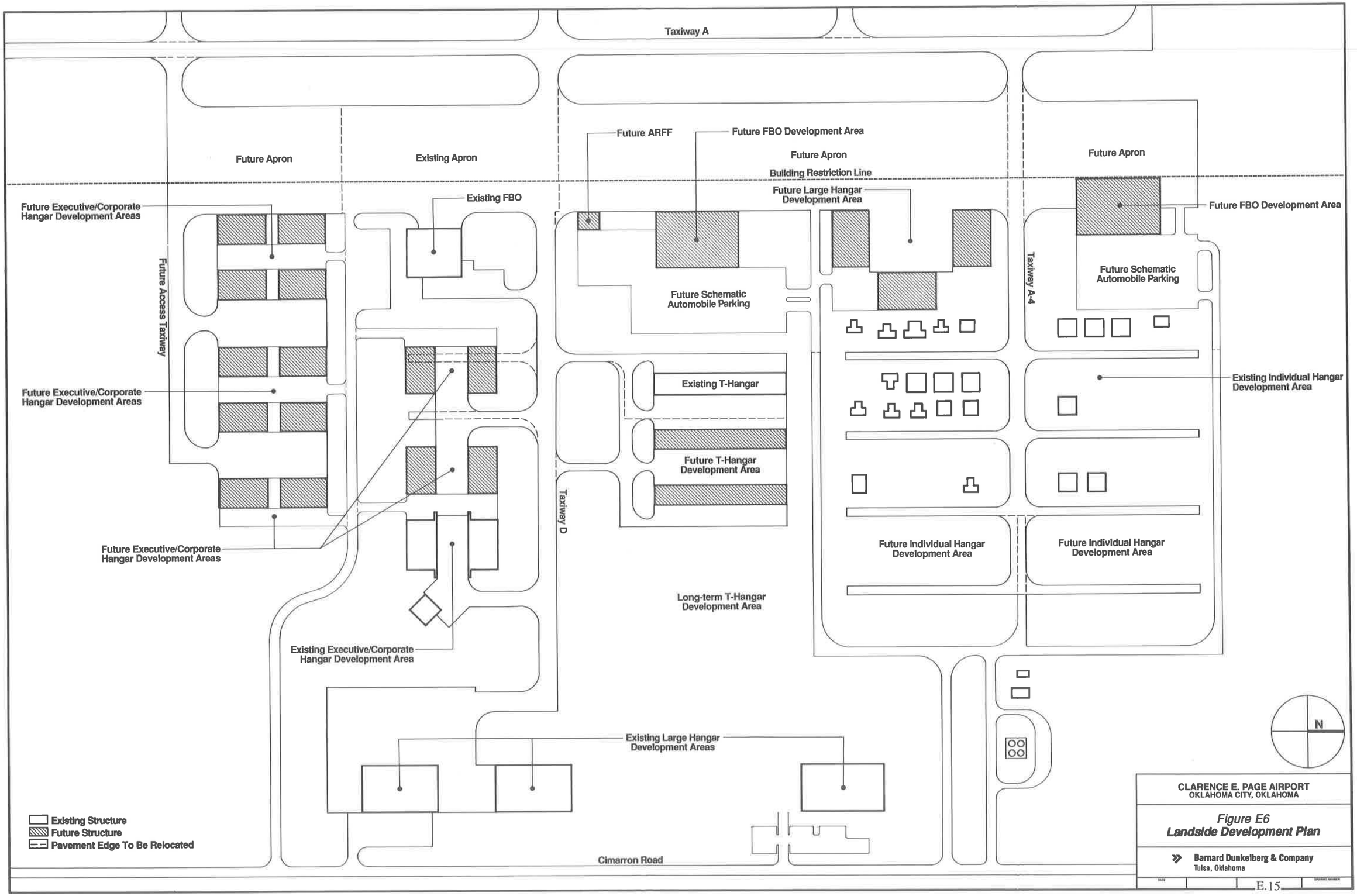
The Development Plan specifies taxiway improvements which will enable aircraft access to future airport development areas and which will improve the flow of taxiing aircraft as demands on the airside system increase with forecasted increases of aviation activity. The first is the connection of the partial parallel taxiways to the east of Runway 17R/35L to provide a full length parallel taxiway. The construction of the taxiway in this location will provide proper access to the existing and planned runways, taxiways and airport development areas. In addition, the ability to construct a parallel taxiway 400 feet to the west of Runway 17R/35L should be protected; however, this taxiway will only be required when development occurs on the west side of the airport. The second recommendation is for two (2) exit taxiways to be constructed on Runway 17L/35R to improve aircraft access from the runway to the parallel taxiway. The third is for connector taxiways to be built, as demand dictates, to provide access from the parallel taxiway to aviation development areas and aprons. In addition, run-up/pull-out areas will be located on both ends of Runway 17R/35L.

Landside Development Plan

Landside facilities consists of aircraft parking aprons, hangar development areas, airport access and utilities serving the airport. These improvements are explained in detail in the following paragraphs. The Development Plan and Program provides sufficient facilities to accommodate the projected demand for these facilities as outlined in the facility requirements section of this document. The aviation use development area is illustrated in the following figure, entitled *LANDSIDE DEVELOPMENT PLAN*.

Aprons

Clarence E. Page Airport is presently served by two aircraft parking aprons that are able to accommodate the existing number of based and itinerant aircraft. With the demand for aircraft parking apron forecasted to increase, the construction of additional apron space is needed to accommodate the future number of based and itinerant aircraft. The Development Plan calls for the apron to be expanded, as demand dictates, north and south of the existing apron located west of the FBO and adjacent to Taxiway A. This expansion is to occur in phases and in conjunction with future airport development.



CLARENCE E. PAGE AIRPORT
OKLAHOMA CITY, OKLAHOMA

Figure E6
Landside Development Plan

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Tulsa, Oklahoma

Hangars

Several hangar development areas are specified by the Development Plan. The timing of future hangar development at Clarence E. Page Airport is to be demand driven. In other words, the Development Plan is not proposing that development be based on years; rather, it should be based on the demand for facilities. The Development Plan allocates areas in which hangar development should take place as demand occurs for additional aircraft storage units. The existing individual hangar development area should be expanded to take advantage of unused space, while additional T-hangar development should take place to the east of the existing T-hangar. As many as fifty-seven (57) more individual hangars can be developed and as many as six (6) new 16 unit T-hangars can be developed. Large hangar development can be developed west of the individual hangar/T-hangar area and south of Taxiway A-4, directly adjacent to the expanded apron. Additional corporate/executive hangars should be developed west of the existing executive/corporate hangars and south of the airport entrance road. These two areas combined can accommodate fourteen (14) new executive/corporate hangars.

Quality FBO facilities are important to general aviation airports. Many times FBO facilities are the initial point of contact between air travelers and the flying public. Therefore, the Development Plan allocates two (2) areas for construction of future FBO hangar facilities and aprons. The first area is located west of the existing T-hangar, and the second area is located to the north of the future large hangar development area. The future FBO development areas are provided with excellent access, both airside and landside, and are located to provide exceptional visibility to the flying public. The FBO's will also benefit economically from the close proximity to the fuel farm, the T-hangars and the individual hangars.

Airport Rescue and Fire Fighting (ARFF) Facility

For safety reasons, it is important that the airport be served by an Airport Rescue and Fire Fighting (ARFF) facility in the future. The Development Plan recommends that the proposed ARFF facility be located between the existing FBO hangar and the future FBO, just north of Taxiway D. In this location, the ARFF facility can quickly and easily respond to emergencies on existing airport facilities and those facilities planned within the timeframe of this document and beyond. The possibility of the ARFF facility on the airport serving as a fire protection facility for the surrounding area should also be explored.

Airport Access

The airport entrance road currently provides vehicular access between the FBO and Cimarron Road to the east, with the fuel storage road providing vehicular access to the individual hangar/T-hangar area. This existing road layout will continue to

serve the vehicular needs of airport users. An extension of the existing roadways serving the individual hangar/T-hangar development areas is proposed to provide a direct and efficient access route to the various aviation use areas on the future apron.

Automobile parking is also an important element of landside access at an airport. The primary users of automobile parking will be the users of the future FBO facilities. Adequate space has been provided directly adjacent to the proposed FBO's for the development of automobile parking to serve these facilities.

A major premise which influenced the formulation of the Development Plan in the area of landside access is related to the layout of the executive/corporate hangars, large hangars, and FBO facilities. Each hangar is provided with apron/taxiway access from the airside and automobile access/parking from the landside. This will ensure the positive separation between aircraft operating surfaces and vehicular access facilities. It should not be necessary for automobiles to drive on apron areas or taxiways to access a large hangar. In addition, each landside access point to the apron areas should be equipped with electronic, user controlled gates which will prevent airfield access by unauthorized individuals.

Utilities

One of the most important considerations of airport development, and one which is often overlooked, is the provision of adequate utilities to support aviation related and non-aviation related development on airport property. Thus proper utilities will need to be provided to ensure that airport development is not limited in the future. A significant increase in the number of users at the airport may dictate the need for an upgrade to a sanitary sewer system serving the airport.

Associated Development

Another aspect of future development at Clarence E. Page Airport which must be carefully examined is the provision of areas for associated development. Many businesses find it advantageous to be located near or on an airport, particularly those entities which use aircraft to support their need to transport their products or personnel. The diverse economy of the Oklahoma City metropolitan area provides many examples of businesses which can benefit from the support provided by an airport. The medical industry, with the need for rapid shipment of supplies and personnel, is a classic example of the benefits air transportation can offer. Obviously a location on or near the airport property can most efficiently make use of the airport facilities.

As can be seen on the following figure, entitled *ASSOCIATED DEVELOPMENT PLAN*, there are several areas on airport property where associated development can take place in the future. The Development Plan has set aside areas for several types of development at Clarence E. Page Airport. These types include aviation use development areas, non-aviation agricultural use development areas and non-aviation commercial/industrial use development areas.

The first type of associated development taken into consideration in the formulation of the Development Plan for Clarence E. Page Airport was the provision for aviation use development areas. These areas have been previously described and include the provision of future T-hangar development areas, individual hangar development and executive/corporate hangar development areas. Other areas that have been designated for specific uses include expanded FBO facilities, an ARFF facility and expanded apron areas.

In addition to specific use areas, the Development Plan allocates areas for unspecified uses as well. Because access to the taxiways and aprons can be provided at a minimum cost, the area to the south of the airport entrance road is best suited for aviation development. Because airside access is more difficult, the area located just north of the existing individual hangars and the parcel of land located south of the proposed aviation development area are planned for either aviation or non-aviation use development.

The second associated use category examined is agricultural leasing. The majority of the land west of the runways is currently being utilized for agricultural purposes and will continue to be used agriculturally until it is needed for large aviation related development that cannot be accommodated on the east side of the airport; therefore, this area will need to be protected for such development to occur in the future.

The development of commercial property on the airport is designated for the northeast corner of airport property. This location provides exceptional visibility from I-40 and excellent access by way of Cimarron Road. In addition, direct airside access cannot easily be developed for this area because of its location away from airport facilities. There is also an opportunity for industrial aviation development in the southeast corner of airport property. Located in this area, industrial aviation development could take advantage of good access to I-40 but be separated from airport related facilities and uses.

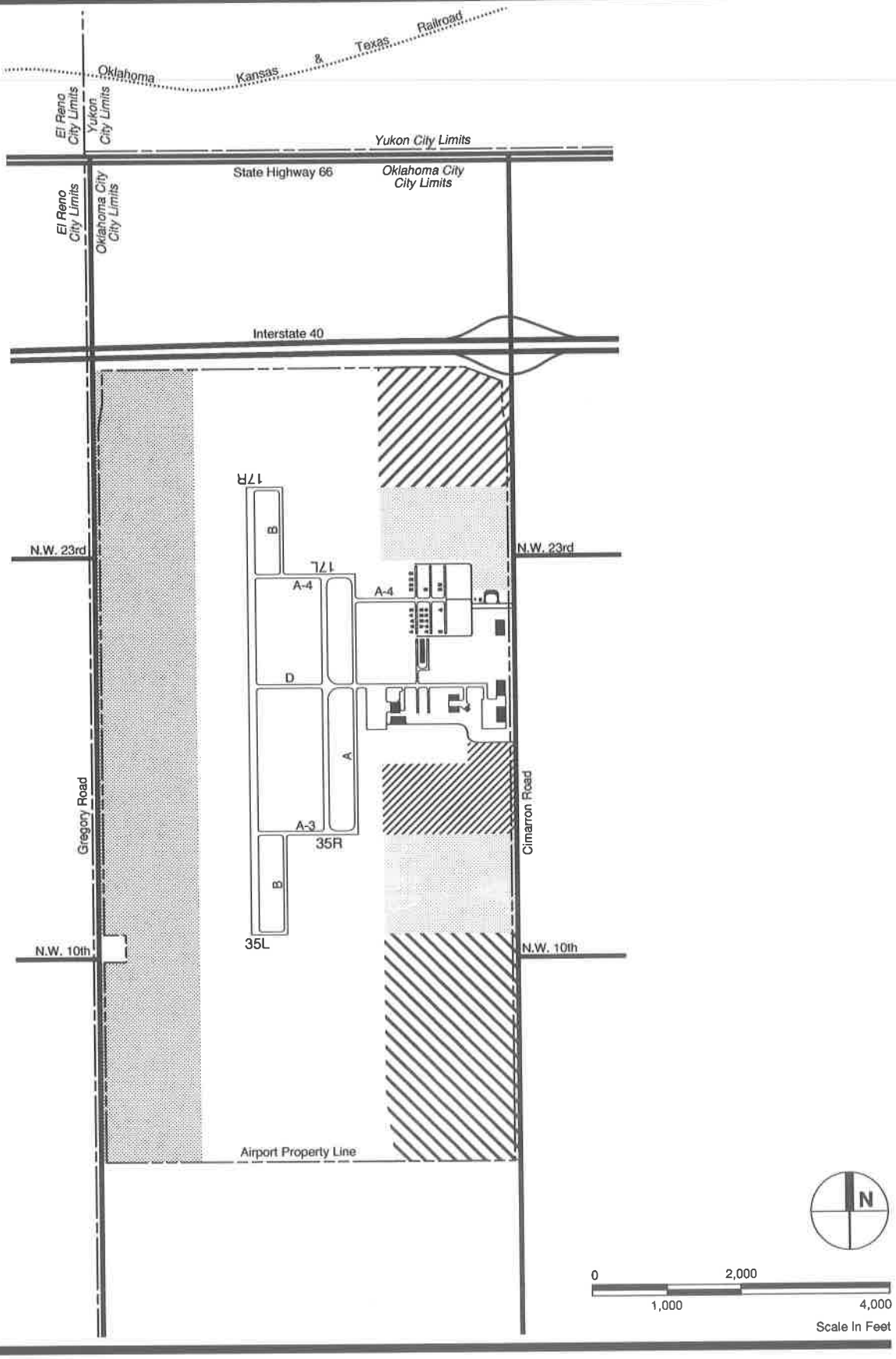


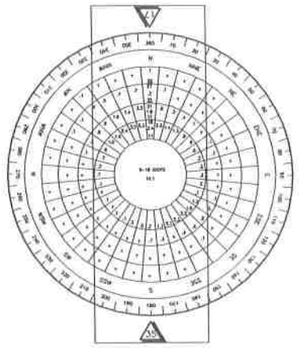
Figure E7 ***Associated Development Plan***

Clarence E. Page Airport Master Plan

- ***Aviation or Non-Aviation Development***
- ***Non-Aviation Commercial Development***
- ***Agricultural Leasing***
- ***Aviation Development***
- ***Industrial Development***

BARNARD DUNKELBERG & COMPANY HTB, Inc.

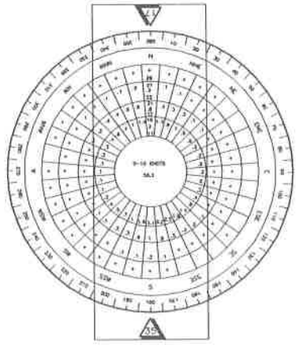
REVISIONS						MODIFICATION OF STANDARDS								
No.		Date	No.		Date	ITEM	AIRPLANE DESIGN GROUP		STANDARD		MODIFICATION		REMARKS	APPROVAL DATE
							EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE		



IFR WIND ROSE

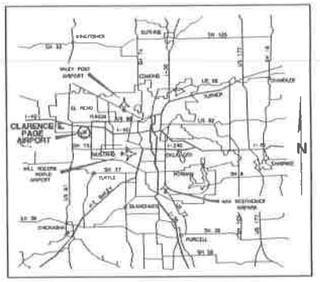
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)
NATIONAL CLIMATIC DATA CENTER, OKLAHOMA CITY, OKLAHOMA
PERIOD OF RECORD 1961–1990.

RUNWAY	% COVERAGE	CROSSWINDS
17–35	99.1	16 KNOTS

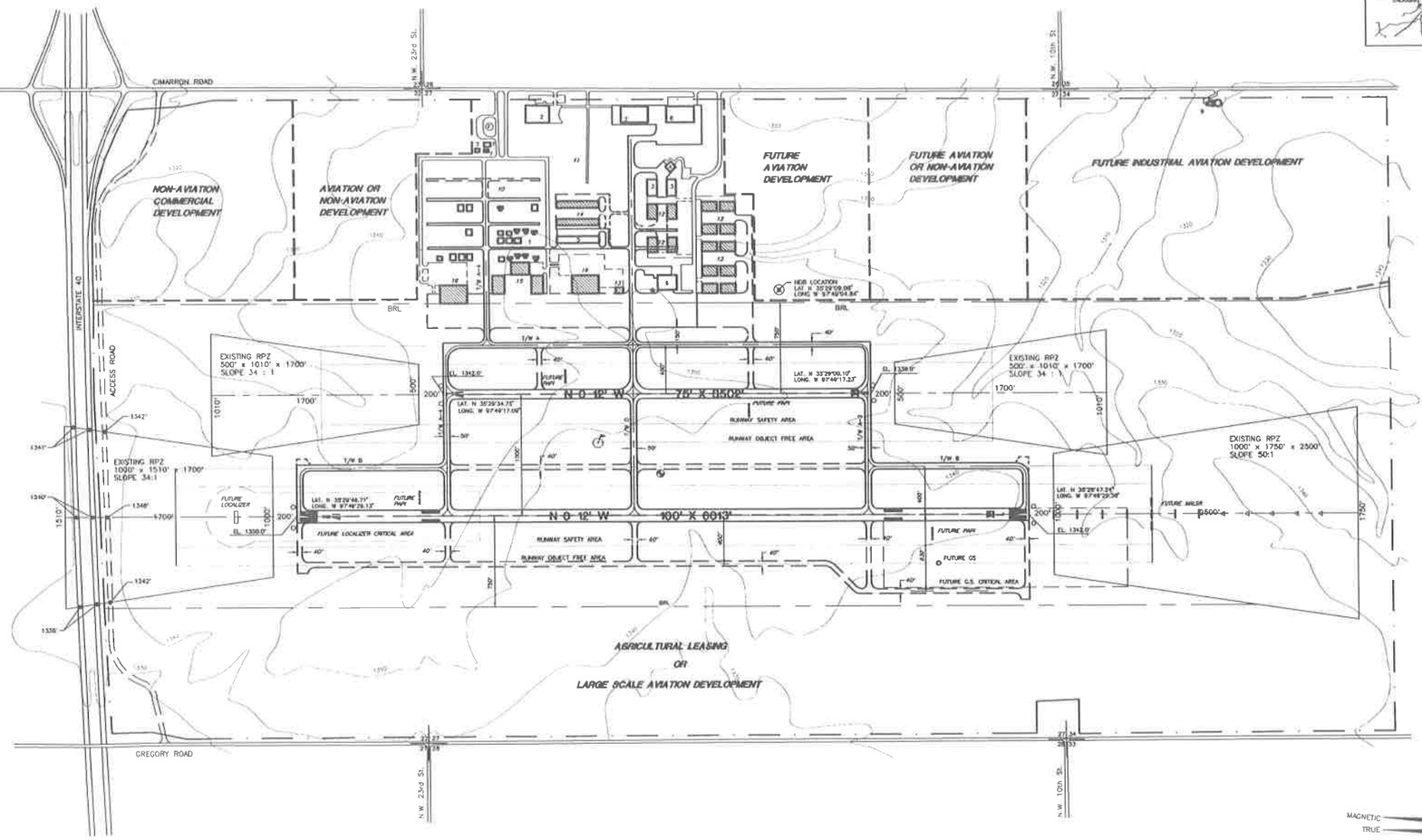


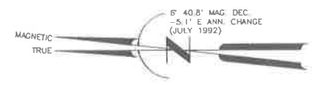
ALL WEATHER WIND ROSE

SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OKLAHOMA CITY, OKLAHOMA
STATION 13967
PERIOD OF RECORD: 1981–1990



LOCATION MAP





0 250 500 1000 1500
GRAPHIC SCALE IN FEET

BUILDING LEGEND	
1. EXISTING INDIVIDUAL HANGAR AREA	16. FUTURE T80'S
2. EXISTING INDUSTRIAL BUILDINGS	
3. EXISTING EXECUTIVE / CORPORATE HANGARS	
4. CORP. OFFICE	
5. EXISTING T-HANGAR	
6. EXISTING T80	
7. AIRPORT STORAGE BUILDINGS	
8. MAINTENANCE HANGAR	
9. NOAA RADAR FACILITY	
10. FUTURE INDIVIDUAL HANGAR DEVELOPMENT AREA	
11. FUTURE T-HANGER DEVELOPMENT AREA	
12. FUTURE EXECUTIVE / CORPORATE HANGARS DEVELOPMENT AREA	
13. FUTURE ARFF	
14. FUTURE T-HANGARS	
15. FUTURE LARGE HANGARS	

RUNWAY DATA				
ITEM	17R/35L		17L/35R	
	EXISTING	FUTURE	EXISTING	FUTURE
RUNWAY WIDTH AND LENGTH	100' X 6013'	100' X 6013'	75' X 3502'	75' X 3502'
RUNWAY MARKING	NON-PREC	PREC	BASIC	BASIC
RUNWAY LIGHTING	HIRL	HIRL	MIRL	MIRL
RUNWAY SAFETY AREA	500' X 6013'	500' X 6013'	500' X 5502'	500' X 5502'
INSTRUMENT RUNWAY	NONE	ILS	NONE	NONE
NAVIGATIONAL AIDS	NONE	NDB, ILS	NONE	NONE
LANDING AIDS	NONE	REILS, PAPI, MALSR	NONE	REILS, PAPI
APPROACH SURFACES	34:1/50:1	34:1/50:1	34:1/34:1	34:1/34:1
PAVEMENT STRENGTH (IN 1000 LBS.)	600	600	175	175
PAVEMENT TYPE	CONCRETE	CONCRETE	ASPH./CONC	ASPH./CONC
EFFECTIVE RUNWAY GRADIENT %	0.83	0.83	.41	.41
% WIND COVERAGE (16 KNOTS)	99.25	99.25	99.25	99.25
AIRPLANE DESIGN GROUP	II	II	II	II

AIRPORT DATA		
ITEM	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL)	1353	1353
AIRPORT REFERENCE POINT (ARP) (%)	LAT. 35° 29' 17.10" LON. 97° 40' 24.78"	LAT. 35° 29' 17.10" LON. 97° 40' 24.78"
MEAN MAX. TEMP. HOTTEST MONTH (°F)	94	94
AIRPORT PROPERTY (ACRES)	1000	1000
UNICOM (MHz)	123.0	123.0
NPIAS CATEGORY	TRANSPORT	TRANSPORT
CONTROL TOWER (MHz)	NONE	NONE
AIRPLANE APPROACH CATEGORY	C	C
AIRPORT REFERENCE CODE	C-II	C-II

LAYOUT PLAN LEGEND		
ITEM	EXISTING	FUTURE
BUILDING RESTRICTION LINE	BRL	BRL
AIRPORT PROPERTY LINE		
RUNWAY PROTECTION ZONE		
BUILDINGS		
AIRFIELD PAVEMENT		
FUEL STORAGE	F	
BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
PRECISION APPROACH PATH INDICATOR (PAPI)		4
RUNWAY END IDENTIFIER LIGHTS (REILS)		O

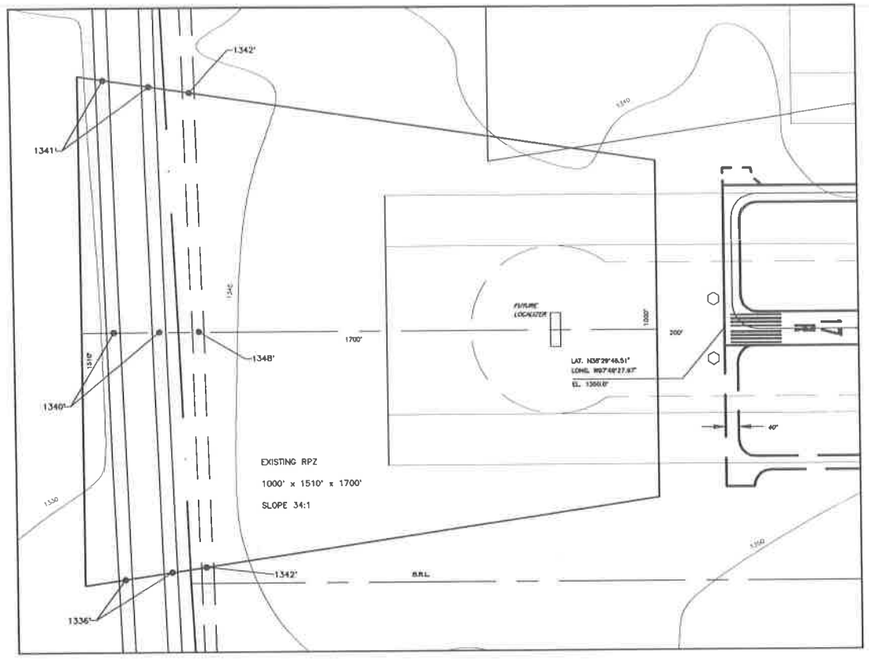
NOTE: THIS DRAWING SHOULD NOT BE USED AS A STANDARD FOR PLANNING OR DESIGN.
MAGNETIC DECLINATION OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY.
TOPOGRAPHICAL INFORMATION OBTAINED FROM CITY OF OKLAHOMA CITY, OKLAHOMA.

CLARENCE E. PAGE AIRPORT
OKLAHOMA CITY, OKLAHOMA

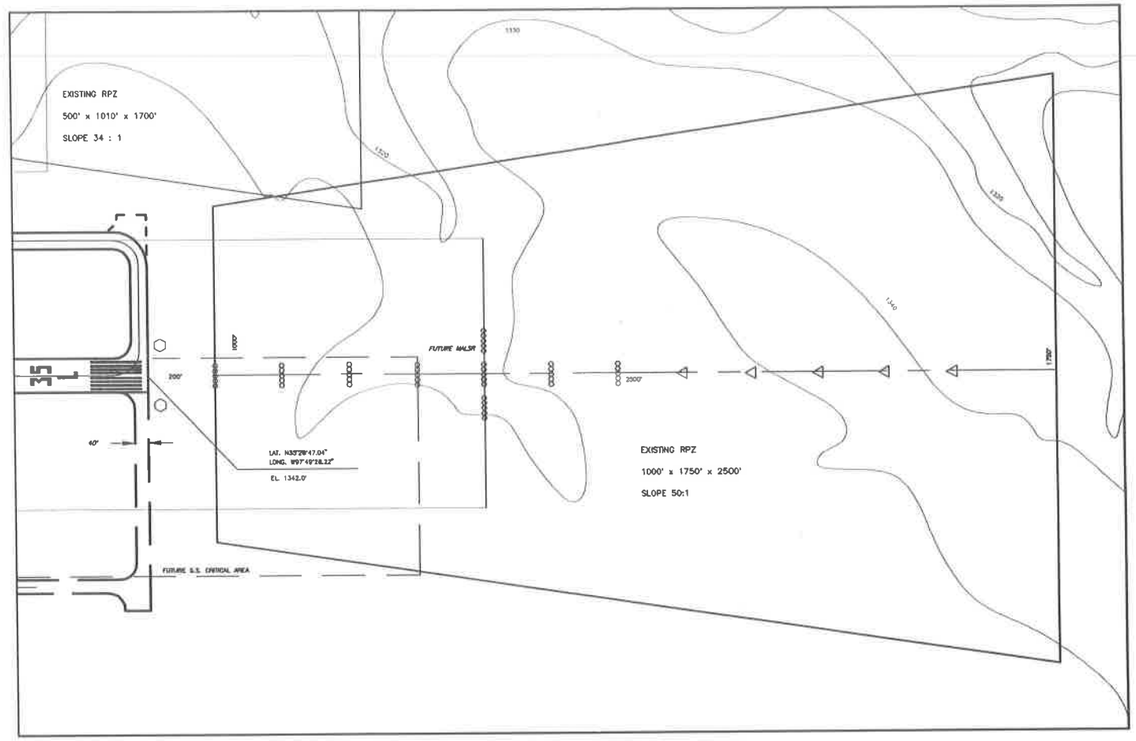
Figure E8
Airport Layout Plan

BARNARD DUNKELBERG & COMPANY
TULSA, OKLAHOMA

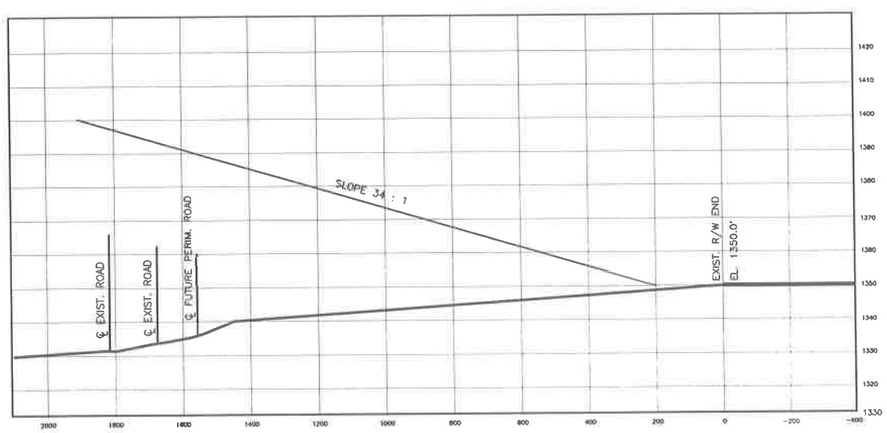
DATE: JAN. 1993 | E.20 | DRAWING NUMBER



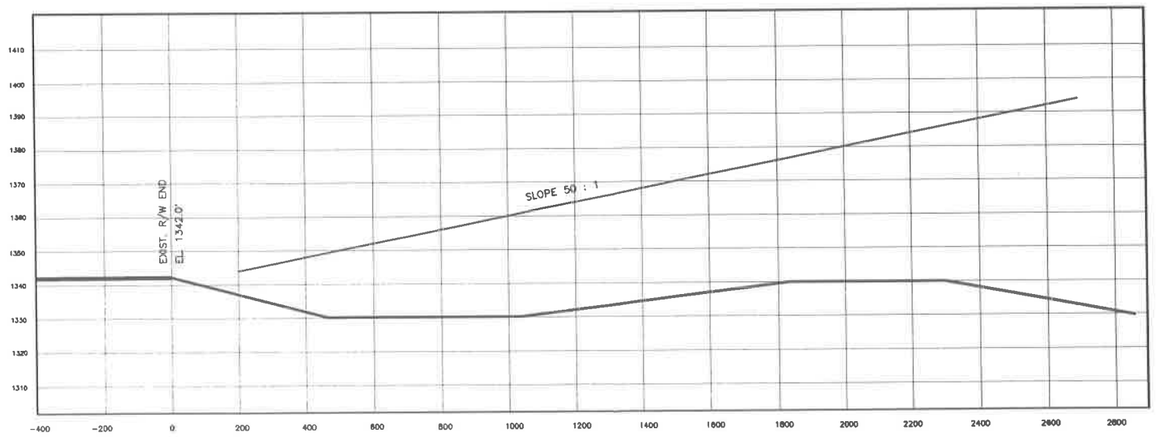
RUNWAY 17R APPROACH PLAN



RUNWAY 35L APPROACH PLAN



RUNWAY 17R APPROACH PROFILE



RUNWAY 35L APPROACH PROFILE

REVISIONS					
No.		Date	No.		Date

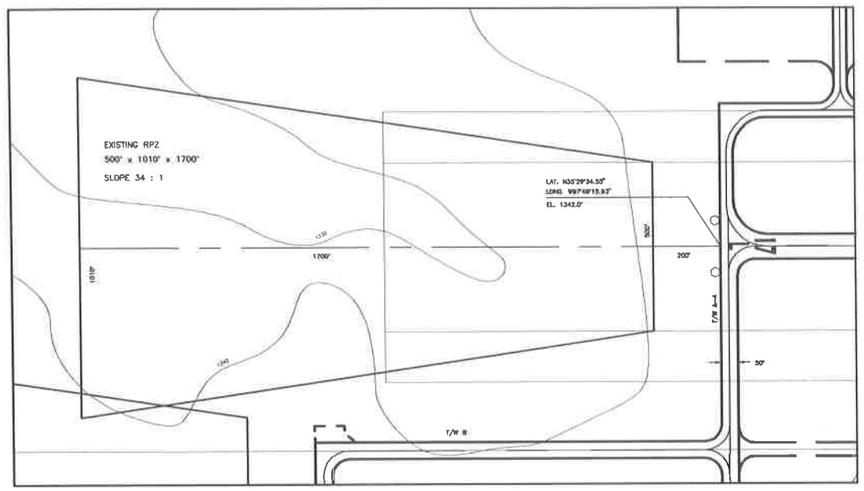
CLARENCE E. PAGE AIRPORT
OKLAHOMA CITY, OKLAHOMA

Figure E9
Runway 17R/35L RPZ Plans and Profiles

BARNARD DUNKELBERG & COMPANY
TULSA, OKLAHOMA

DATE: FEB., 1993

DRAWING NUMBER



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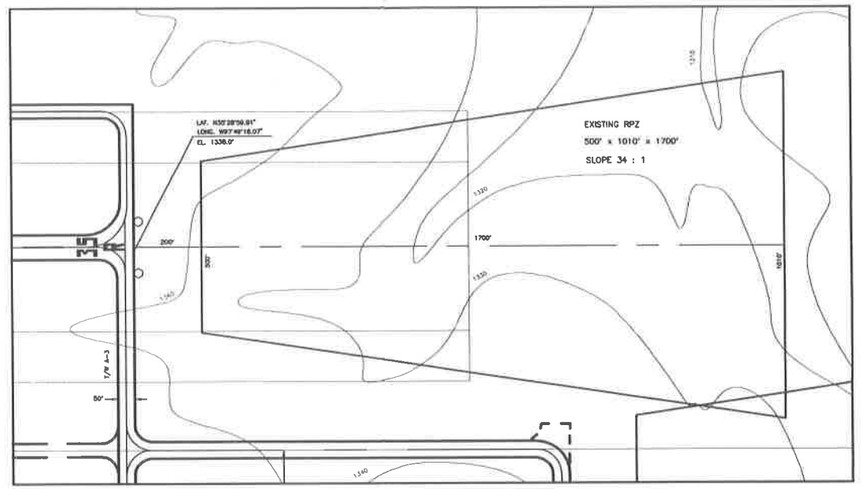
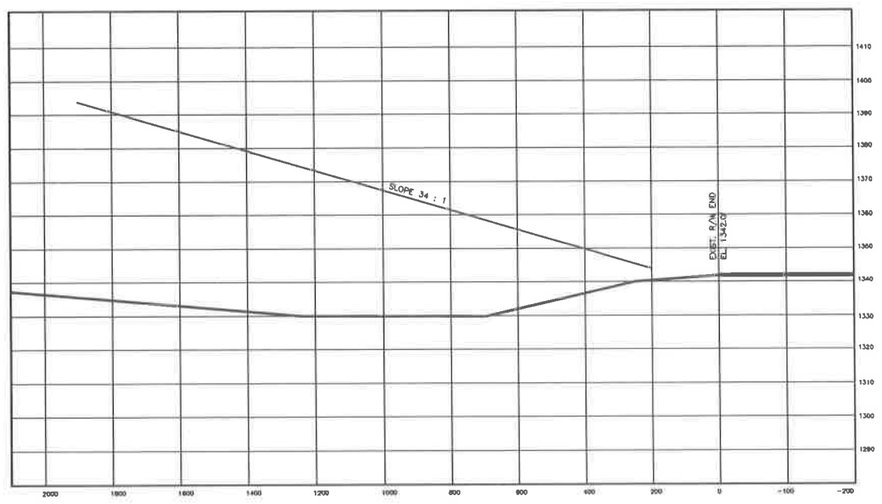
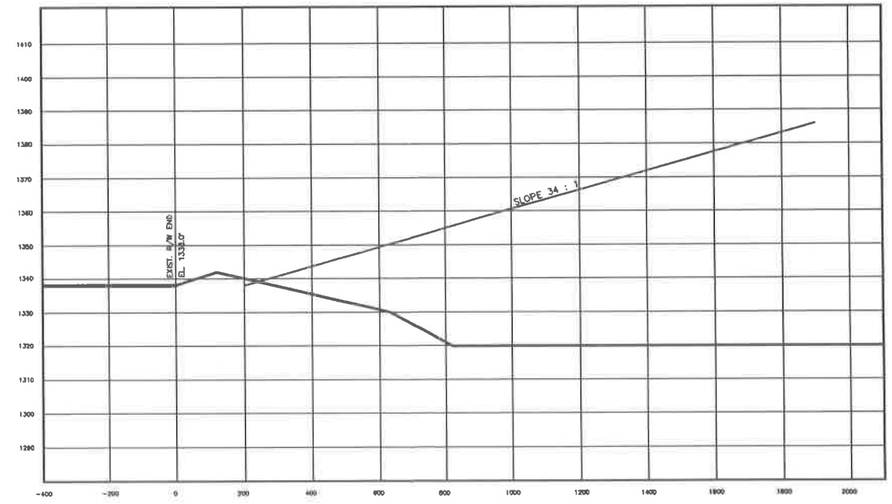


RUNWAY 35R APPROACH PLAN



RUNWAY 17L APPROACH PROFILE



RUNWAY 35R APPROACH PROFILE

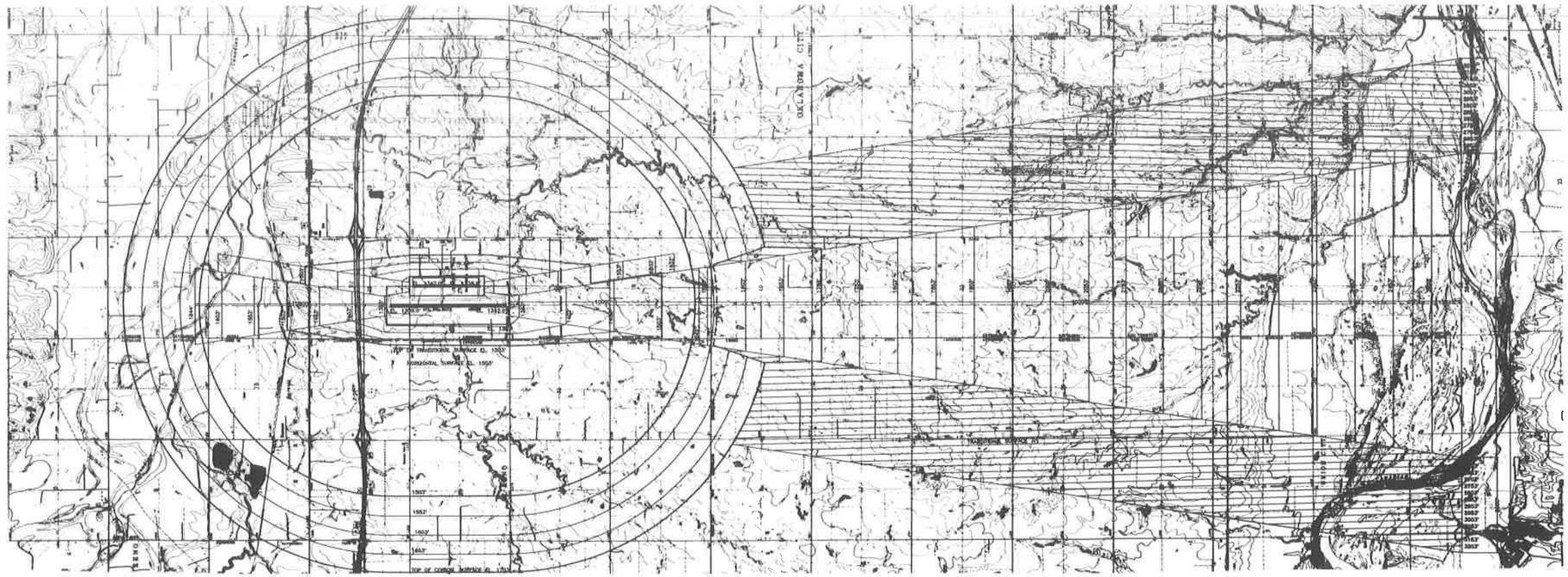
REVISIONS					
No.		Date	No.		Date

CLARENCE E. PAGE AIRPORT
OKLAHOMA CITY, OKLAHOMA

Figure E10
Runway 17L/35R RPZ Plans and Profiles

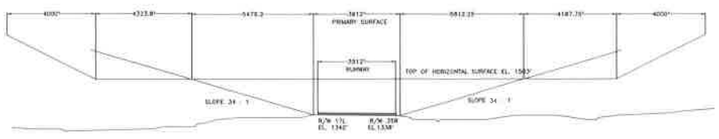
BARNARD DUNKELBERG & COMPANY
TULSA, OKLAHOMA

DATE: FEB., 1993

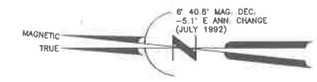


PLAN VIEW

RUNWAY 17R/35L



RUNWAY 17L /35R



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CLARENCE E. PAGE AIRPORT
OKLAHOMA CITY, OKLAHOMA

Figure E11
Airport Airspace Drawing

BARNARD DUNKELBERG & COMPANY
TULSA, OKLAHOMA

DATE		DRAWING NUMBER
MAY 1993		E.23

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

F Development Program

Development Program

Introduction

The airfield and landslide facility requirements necessary to satisfy the forecast aviation demands for Clarence E. Page Airport have been placed into three phases: short-range (1997), intermediate-range (2002), and long-range (2012). These facility requirements are illustrated by time period graphically on the phasing plan and in conjunction with cost estimates presented on the following pages.

Cost Estimates

Cost estimates have been categorized by: the total cost for each project or improvement; that portion of the total cost anticipated to be paid by the Federal Aviation Administration under the Airport Improvement Program (AIP) or similar program; and that portion to be borne by the community, the airport or related entity. The local share can include additional sources such as regional commissions and organizations, and other local organizations and units of government.

The percentage of costs borne by each of these agencies is subject to change depending upon their appropriate funding legislation and policy at the time of construction. The relationship between anticipated federal funding and local matching funds, as shown in this document, is based on current FAA participation of ninety percent (90%) of the total project cost and local participation of ten percent (10%). This 90%/10% allocation has been utilized to reflect the most prominent historical allocation of FAA funds. Before detailed planning on a particular project is developed, the funding structures and requirements should be identified to determine the current funding policies by the various funding entities. All project cost estimates presented in this report are based on 1992 costs.

Phasing Plan

The following illustration and cost estimates indicate the suggested phasing for projects during the short-, intermediate-, and long-range planning periods. These are suggested schedules and variance from them may be necessary, especially during the latter time periods. Attention has been given the first five years as being the most critical and the scheduled projects outlined in that timeframe should be adhered to as much as possible. The demand for certain facilities, especially in the latter timeframe, and the economic feasibility of their development are to be the prime factors influencing the timing of individual project construction. Care must be taken to provide for adequate lead time for detailed planning and construction of facilities in order to meet aviation demands. It is also important to minimize the disruptive scheduling where a portion of the facility may become inoperative due to construction and to prevent extra costs resulting from improper project scheduling.

Summary

As presented in the accompanying table, the Development Plan cost estimates for the twenty-year planning period, not including maintenance and operating expenses, amount to approximately $21,291,000. The anticipated FAA share is approximately $4,580,100, and the local share being approximately $16,710,900. Approximately $14,912,000 of the local share will generate revenue and could be financed using revenue bonds or private financing. The reason that the overall federal and local share does not follow the anticipated 90/10 ratio is because some items recommended are ineligible for federal funding and must be totally financed through local sources.

Of the *local* share, approximately $3,326,600 are required during the short-term period, $5,241,800 during the intermediate-term period and the remaining $8,142,500 during the long-term period. In addition, maintenance and operation expenses will increase as the airport develops and more airport facilities are completed. Revenues generated by these facilities should also increase. It is a worthy and feasible goal that operational expenses and revenues should balance at Clarence E. Page Airport. This relationship should, however, be monitored closely so that future imbalances can be anticipated and provided for in the budgeting and capital improvements process. The *federal* share includes programmed expenditures of $1,607,400 during the short-term period, $2,005,200 during the intermediate-term period, and $967,500 during the long-term period.

Table F1
PHASE I (0-5 YEARS) DEVELOPMENT PLAN PROJECT COSTS
Clarence E. Page Airport Master Plan

	Project Description	Total Cost	Recommended Financing Method Local	Federal
A.1	Construct Executive/Corporate Hangar Taxiway and Aprons	$189,000	$18,900	$170,100
A.2	Install Centerline and Edge Reflectors for Taxiways A and D East of Runway 17L/35R	$29,000	$2,900	$26,100
A.3	Install NDB	$45,000	$4,500	$40,500
A.4	Pave Access Road From Fuel Farm to T-Hangar Area, Extend Taxilane at Hangar 6B, and Resurface Taxiway A-4	$93,000	$93,000	
A.5	Reconstruct Joint Seal for Parallel and Connecting Taxiway System, Remove and Replace Selected Slab Areas and Perform Area Grading	$250,000	$25,000	$225,000
A.6	Install Underdrain System for Runway 17R/35L and Connecting and Parallel Taxiways	$270,000	$27,000	$243,000
A.7	Construct Connection of Taxiway B, With MITL	$823,000	$82,300	$740,700
A.8	Construct 2 Exit Taxiways, With MITL	$180,000	$18,000	$162,000
A.9	Construct 6 Individual Hangars *	$578,000	$578,000	
A.10	Construct 4 Executive/Corporate Hangars *	$2,430,000	$2,430,000	
A.11	Construct Executive/Corporate Hangar Access Roads and Auto Parking	$47,000	$47,000	
A.12	Install REILs and PAPIs on Runways 17R/35L and 17L/35R **	FAA F&E		
	Sub-Total/Phase I	$4,934,000	$3,326,600	$1,607,400

* Local Share Subject to Revenue Bond or Private Financing.

** Funded by Facilities and Engineering Division of FAA.

Note: Costs are intended for planning purposes only and should not be used for construction cost estimates.

Table F2
PHASE II (5-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS
Clarence E. Page Airport Master Plan

	Project Description	Total Cost	Recommended Financing Method Local	Federal
B.1	Reconstruct Runway 17L/35R and Connecting Taxiways	$470,000	$47,000	$423,000
B.2	Construct Run-up/Pull Out Areas on Taxiway B, With MITL	$175,000	$17,500	$157,500
B.3	Construct Apron South of Existing FBO	$600,000	$60,000	$540,000
B.4	Construct ARFF/FBO Apron North of Taxiway D	$850,000	$85,000	$765,000
B.5	Construct 5 Individual Hangars *	$482,000	$482,000	
B.6	Construct Executive/Corporate Hangar Taxiway and Aprons	$133,000	$13,300	$119,700
B.7	Construct 3 Executive/Corporate Hangars *	$1,822,000	$1,822,000	
B.8	Construct Executive/Corporate Hangar Access Road and Auto Parking	$65,000	$65,000	
B.9	Construct Access Roadway Extension	$35,000	$35,000	
B.10	Construct FBO Hangar With Auto Parking *	$2,300,000	$2,300,000	
B.11	Construct ARFF Facility With Auto Parking	$315,000	$315,000	
	Sub-Total/Phase II	$7,247,000	$5,241,800	$2,005,200

* Local Share Subject to Revenue Bond or Private Financing.

Note: Costs are intended for planning purposes only and should not be used for construction cost estimates.

Table F3
PHASE III (10-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS
Clarence E. Page Airport Master Plan

	Project Description	Total Cost	Recommended Financing Method Local	Federal
C.1	Install ILS **	FAA F&E		
C.2	Construct Access Roadway Extension	$25,000	$25,000	
C.3	Construct FBO Apron North of Taxiway A-4	$500,000	$50,000	$450,000
C.4	Construct FBO Hangar With Auto Parking *	$2,300,000	$2,300,000	
C.5	Construct Executive/Corporate Hangar Taxiway and Aprons	$350,000	$35,000	$315,000
C.6	Construct 6 Executive/Corporate Hangars *	$4,000,000	$4,000,000	
C.7	Construct Executive/Corporate Hangar Access Roads and Auto Parking	$110,000	$110,000	
C.8	Construct 12 Individual Hangars *	$1,200,000	$1,200,000	
C.9	Construct T-Hangar Taxiways and Aprons	$200,000	$20,000	$180,000
C.10	Construct 1 Sixteen Unit T-Hangar *	$400,000	$400,000	
C.11	Install 4 Electronic Gates	$25,000	$2,500	$22,500
	Sub-Total/Phase III	$9,110,000	$8,142,500	$967,500
	GRAND TOTAL ***	$21,291,000	$16,710,900	$4,580,100

* Local Share Subject to Revenue Bond or Private Financing.

** Funded by Facilities and Engineering Division of FAA.

*** $14,912,000.00 of the Total Local Share is Subject to Revenue Bond or Private Financing.

Note: Costs are intended for planning purposes only and should not be used for construction cost estimates.

PHASE I (0-5 YEARS) DEVELOPMENT PLAN PROJECTS

A.1 Construct Executive/Corporate Hangar Taxiway and Aprons
A.2 Install Centerline and Edge Reflectors for Taxiways A and D East of Runway 17L/35R
A.3 Install NDB
A.4 Pave Access Road from Fuel Farm to T-Hangar Area, Extend Taxilane at Hangar 6B, and Resurface Taxiway A-4
A.5 Reconstruct joint Seal for Parallel and Connecting Taxiway System, Remove and Replace Selected Slab Areas and Perform Area Grading
A.6 Install Underdrain System for Runway 17R/35L and Connecting and Parallel Taxiways
A.7 Construct Connection of Taxiway B, with MITL
A.8 Construct 2 Exit Taxiways with MITL
A.9 Construct 6 Individual Hangars
A.10 Construct 4 Executive/Corporate Hangars
A.11 Construct Executive/Corporate Hangar Access Roads and Auto Parking
A.12 Install REILs and PAPIs on Runways 17R/35L and 17L/35R

PHASE II (5-10 YEARS) DEVELOPMENT PLAN PROJECTS

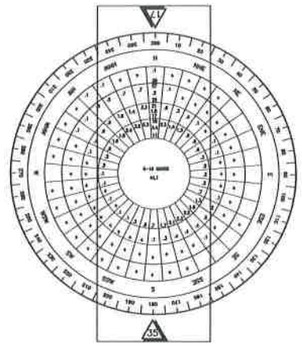
B.1 Reconstruct Runway 17L/35R and Connecting Taxiways
B.2 Construct Run-up/Pull Out Areas on Taxiway B, with MITL
B.3 Construct Apron South of Existing FBO
B.4 Construct ARFF/FBO Apron North of Taxiway D
B.5 Construct 5 Individual Hangars
B.6 Construct Executive/Corporate Hangar Taxiway and Aprons
B.7 Construct 3 Executive/Corporate Hangars
B.8 Construct Executive/Corporate Hangar Access Road and Auto Parking
B.9 Construct Access Roadway Extension
B.10 Construct FBO Hangar with Auto Parking
B.11 Construct ARFF Facility with Auto Parking

PHASE III (10-20 YEARS) DEVELOPMENT PLAN PROJECTS

C.1 Install ILS
C.2 Construct Access Roadway Extension
C.3 Construct FBO Apron North of Taxiway A-4
C.4 Construct FBO Hangar with Auto Parking
C.5 Construct Executive/Corporate Hangar Taxiway and Aprons
C.6 Construct 6 Executive/Corporate Hangars
C.7 Construct Executive/Corporate Hangar Access Roads and Auto Parking
C.8 Construct 12 Individual Hangars
C.9 Construct T-Hangar Taxiways and Aprons
C.10 Construct 1 Sixteen Unit-T Hangar
C.11 Install 4 Electronic Gates

REVISIONS					
No.		Date	No.		Date

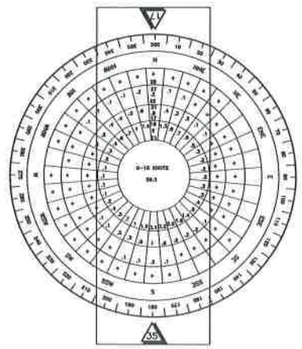
MODIFICATION OF STANDARDS									
ITEM	AIRPLANE DESIGN GROUP		STANDARD		MODIFICATION		REMARKS	APPROVAL DATE
	EXISTING	*FUTURE*	EXISTING	*FUTURE*	EXISTING	*FUTURE*		



IFR WIND ROSE

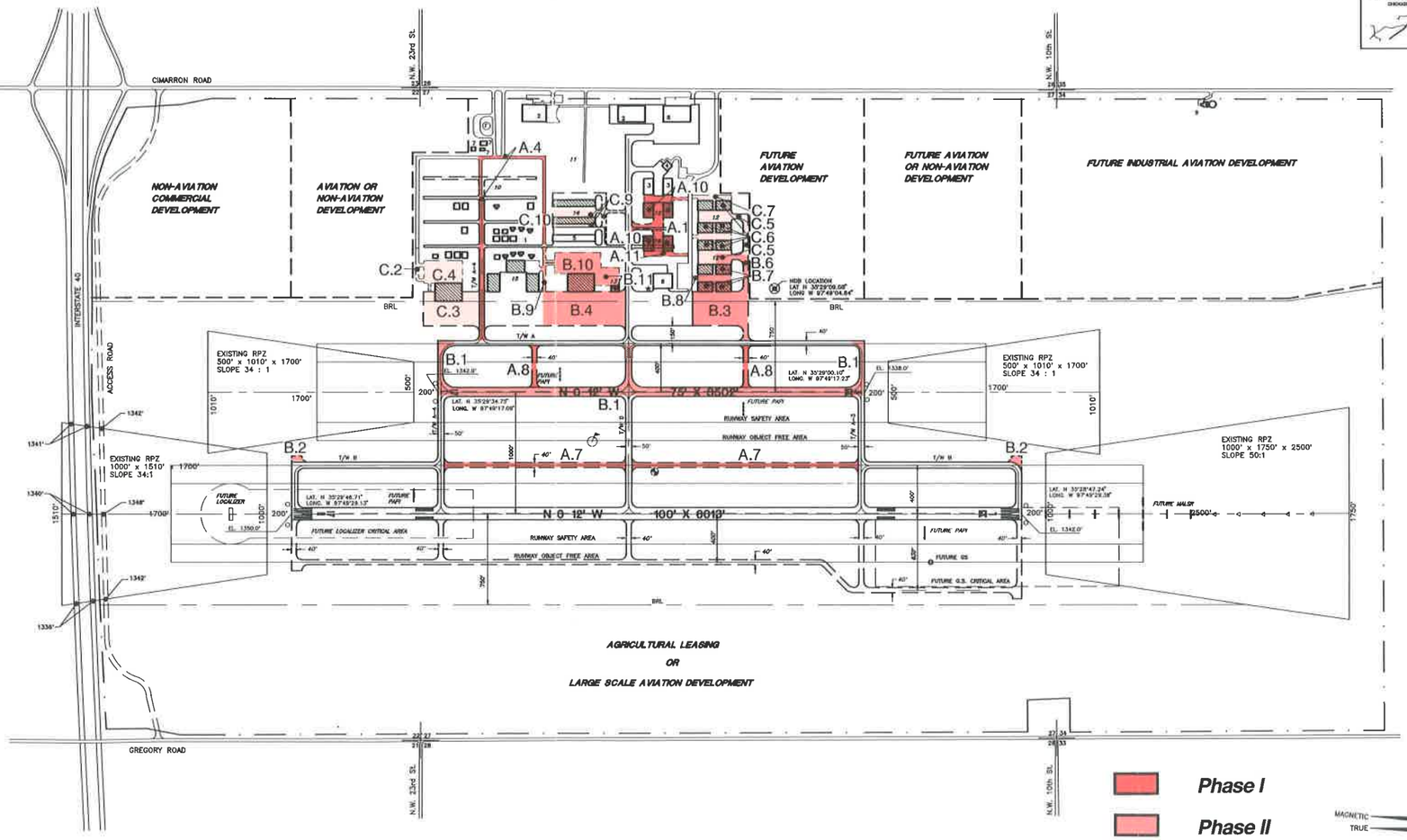
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)
NATIONAL CLIMATIC DATA CENTER, OKLAHOMA CITY, OKLAHOMA
PERIOD OF RECORD 1961–1990.

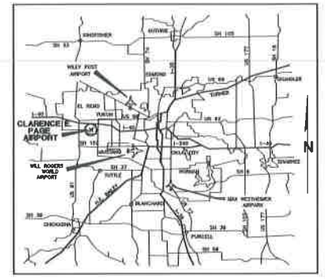
RUNWAY	% COVERAGE	CROSSWINDS
17–35	99.1	16 KNOTS



ALL WEATHER WIND ROSE

SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OKLAHOMA CITY, OKLAHOMA
STATION 13967
PERIOD OF RECORD: 1961–1990



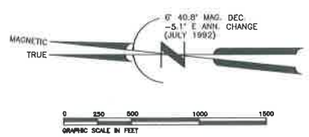


LOCATION MAP

Phase I

Phase II

Phase III



BUILDING LEGEND	
1. EXISTING INDIVIDUAL HANGAR AREA	18. FUTURE FBO'S
2. EXISTING INDUSTRIAL BUILDINGS	
3. EXISTING EXECUTIVE / CORPORATE HANGARS	
4. CORP. OFFICE	
5. EXISTING T-HANGAR	
6. EXISTING FBO	
7. AIRPORT STORAGE BUILDINGS	
8. MAINTENANCE HANGAR	
9. NOAA RADAR FACILITY	
10. FUTURE INDIVIDUAL HANGAR DEVELOPMENT AREA	
11. FUTURE T-HANGER DEVELOPMENT AREA	
12. FUTURE EXECUTIVE / CORPORATE HANGARS DEVELOPMENT AREA	
13. FUTURE ARFF	
14. FUTURE T-HANGARS	
15. FUTURE LARGE HANGARS	

RUNWAY DATA				
ITEM	17R/35L		17L/35R	
	EXISTING	*FUTURE*	EXISTING	*FUTURE*
RUNWAY WIDTH AND LENGTH	100' X 8013'	*100' X 8013'*	75' X 3502'	*75' X 3502'*
RUNWAY MARKING	NON-PREC.	*PREC.*	BASIC	*BASIC*
RUNWAY LIGHTING	HIRL	*HIRL*	MIRL	*MIRL*
RUNWAY SAFETY AREA	500' X 8013'	*500' X 8013'*	500' X 5502'	*500' X 5502'*
INSTRUMENT RUNWAY	NONE	*ILS*	NONE	*NONE*
NAVIGATIONAL AIDS	NONE	*NDB, ILS*	NONE	*NONE*
LANDING AIDS	NONE	*REILS, PAPI, MALSR*	NONE	*REILS, PAPI*
APPROACH SURFACES	34:1/50:1	*34:1/50:1*	34:1/34:1	*34:1/34:1*
PAVEMENT STRENGTH (IN 1000 LBS.)	600	*600*	175	*175*
PAVEMENT TYPE	CONCRETE	*CONCRETE*	ASPH./CONC.	*ASPH./CONC.*
EFFECTIVE RUNWAY GRADIENT %	.083	*.083*	.41	*.41*
% WIND COVERAGE (16 KNOTS)	99.25	*99.25*	99.25	*99.25*
AIRPLANE DESIGN GROUP	II	*II*	II	*II*

AIRPORT DATA		
ITEM	EXISTING	*FUTURE*
AIRPORT ELEVATION (AMSL)	1353	*1353*
AIRPORT REFERENCE POINT (ARP)	LAT. 35° 29' 17.10" LON. 97° 48' 14.76"	*LAT. 35° 29' 17.10" LON. 97° 48' 14.76"*
MEAN MAX. TEMP. HOTTEST MONTH (°F)	94	*94*
AIRPORT PROPERTY (ACRES)	1000	*1000*
UNICOM (MHz)	123.0	*123.0*
NPIAS CATEGORY	TRANSPORT	*TRANSPORT*
CONTROL TOWER (MHz)	NONE	*NONE*
AIRPLANE APPROACH CATEGORY	C	C
AIRPORT REFERENCE CODE	C–II	C–II

LAYOUT PLAN LEGEND		
ITEM	EXISTING	*FUTURE*
BUILDING RESTRICTION LINE	BRL	*BRL*
AIRPORT PROPERTY LINE		
RUNWAY PROTECTION ZONE		
BUILDINGS		
AIRFIELD PAVEMENT		
FUEL STORAGE	F	
BEACON	*	
LIGHTED WIND CONE & SEGMENTED CIRCLE		
PRECISION APPROACH PATH INDICATOR (PAPI)		I
RUNWAY END IDENTIFIER LIGHTS (REILS)		O

NOTE: THIS DRAWING SHOULD NOT BE USED AS A STANDARD FOR PLANNING OR DESIGN. MAGNETIC DECLINATION OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY. TOPOGRAPHICAL INFORMATION OBTAINED FROM CITY OF OKLAHOMA CITY, OKLAHOMA.

CLARENCE E. PAGE AIRPORT
OKLAHOMA CITY, OKLAHOMA

Figure F1 **Phasing Plan**

BARNARD DUNKELBERG & COMPANY
TULSA, OKLAHOMA

DATE			DRAWING NUMBER
JAN. 1993			F.6

Clarence E. Page Airport
Oklahoma City, Oklahoma

Master Plan

G Financial Program

Financial Program

Introduction

The various projects relating to the continued development of Clarence E. Page Airport are determined by local authorities; as such, the primary responsibility for developing the financing program is assigned to the Oklahoma City Airport Trust. Financing a program or a series of programs can be accomplished through various methods or techniques, by utilizing certain sources or a combination of sources such as taxes, general obligation bonds, revenue bonds, private financing, state funds, government assistance and city financing from present revenue sources, and possibly others. To review these potentials, this section deals with the economic feasibility of accomplishing the actions recommended in the preceding portions of this document. This evaluation includes an analysis of existing revenue and indebtedness, an analysis of existing leasing arrangements, a management analysis and a financial plan.

Financial Analysis

Most public airport operations, particularly those that have little or no air carrier service, do not necessarily generate adequate revenue over and above operating and maintenance costs to fund capital improvements and debt retirement. Because of this, these facilities are often subsidized by the respective city or other public entity for the resultant benefits such as transportation convenience and need and attraction of business and industrial concerns. With the assistance of various funding approaches and programs, airport development can be feasibly accomplished for the benefit of the community as a whole. This has been true in the case of Clarence E. Page Airport and the City of Oklahoma City. It appears that both the City and the Airport have generally striven to maximize revenue or income while minimizing expenses.

Leasing Practices. Leasing practices were examined to determine what improvements could be made toward yielding more revenue and attracting new commercial and industrial activity, and to establish minimum performance standards for all operations in order to maintain quality services and facilities which would promote the airport. In general, leases should not be a burden to the airport, but at the same time, should be designed so as to promote activity at the airport. They should generate revenue for the airport on a continual basis versus a one-time income. Leases, also, should not be executed for long periods of time unless they include frequent options with escalation clauses.

At no time should the leasing practices of the airport be established so as to be discriminatory, restrictive, or in any other way designed to eliminate competition among the services and facilities provided. In fact, this is in violation of the grant agreement executed between the Sponsor (Oklahoma City Airport Trust) and the Federal Aviation Administration.

Rental Rates. The following discussion concerns various methods which can be used to increase rental rates at an airport. These methods are in use at many general aviation airports in the country. At a minimum, future rental rates should be reviewed and revised if necessary, based upon a study of rental rates of airports with comparable services in Oklahoma.

Appraisal Rate. The land at the airport should be appraised. The rental rate should be a percentage of the appraised value sufficient to bring in an annual revenue that, over a ten- to fifteen-year time span, would equal the appraised value of the land. The appraisal should be conducted frequently since the value of land increases as the airport develops. To attract aviation related activity onto the airport, a smaller percentage than normal of the appraised value could be paid the first few years, with a higher percentage rental rate in the last few years to make up the difference.

Rate Per Square Foot of Land. The rental rate can be established as a fixed rent per square foot of land or tied to an appraised value of land. If tied to the appraised value, the rent per square foot rises as the land value increases. Raising rents, however, will depend on how often appraisals are conducted. If the rental per square foot is a fixed rate, an escalation clause should be included in the lease to cover rising maintenance and operating costs and the increasing value of land.

Percentage of Sales. The financial benefits which accrue to firms as sales increase at the airport complex should also accrue to the complex itself in order to defray increasing operations and maintenance costs. As is common at many general aviation airports, commercial facilities are charged a fixed rental rate plus a percentage of sales. In this way, the

airport benefits from the success of the firms located there. The firms realize revenues because the airport has provided the facilities which enable their business to exist, and additional improvements to the airport will enhance each firm's business. This is to say, if the City of Oklahoma City had not expended funds to establish and maintain the airport, then in order for the commercial operations to exist, they would have to personally invest in the establishment of runways, taxiways, aprons, etc. By this method, they are sharing in the cost of those investments in proportion to the success they realize as a result of the investment. As a general rule, the percentage of sales should apply to commercial establishments that deal in sales. Industrial firms which normally do not rely on local sales for support provide revenue for rising operation and maintenance costs through escalation clauses in their leases. Non-income producing tenants, such as those renting hangar space, should have rent based on the appraised value of the land, plus the cost of the improvements and amortization.

Site Selection. Various sites at the complex are more valuable than others due to their location and relationship to nearby facilities For example, property with direct access onto an apron is better situated for hangars than land which is away from the apron area. Each site should be evaluated based on its location advantages for various uses and its rental rate adjusted accordingly. Another example is sites which do not have access to the taxiway and runway system but still might be appropriate for non-aviation oriented industrial or commercial activities.

Minimum Performance Standards. Minimum Performance Standards should be included in the leases of commercial aeronautical firms to ensure that the necessary services are provided and that the quality of the services adequately promotes the airport. Performance standards should apply to the following categories: fuel and oil sales; flight training; crop dusting and spraying; hangar construction and rental; and specialized aircraft repair services. The FAA has suggested Performance Standards for these categories. It is recommended that coordination be undertaken with the FAA Airports District Office or the FAA Southwest Region Office when formalizing additional standards at Clarence E. Page Airport.

Industrial Sites. Any property on the airport which is ultimately utilized for industrial purposes, either aviation of non-aviation oriented industries, should provide continuous income to the airport. In other words, properties should not be sold to individuals, corporations or even industrial trusts. The airport should lease this property to desirable tenants or managers.

Funds generated from airport industrial sites will provide continued income to the airport and enable it to be maintained in a manner which will not only meet the needs of the industrial users, but also be a credit to the overall community of

Oklahoma City. It should be remembered that the airport often provides the traveler with his or her first impression of the community.

Maintenance. The requirement that the tenant be responsible for maintenance of facilities leased is an important item to include in any lease agreement. If a tenant is leasing a structure, then a specific amount of land adjacent to the structure should be included and the maintenance made the responsibility of the tenant. The tenant should be required to maintain the property in a visually acceptable manner. The same would be true if the tenant is strictly leasing land without any structures. Also, the maintenance responsibility for buildings which are owned by the airport and are being leased by the tenant should be identified so that the airport is not burdened with minor maintenance responsibilities. At no time should the airport maintain insurance on the buildings which insures non-airport owned contents. The cost of maintenance and insurance in such cases can exceed the established rental rate, especially if escalation clauses are not included.

Management Analysis

The City of Oklahoma City owns Clarence E. Page Airport and leases the airport to the Oklahoma City Airport Trust. The operation and development of the airport is the responsibility of the Airport Trust and the Department of Airports, along with the General Aviation Manager. The City of Oklahoma City is, however, the ultimate decision-making body for the airport.

The Oklahoma City Airport Trust should establish a program to educate the general citizenry about the importance of aviation to the community and its service area. With such a promotional campaign, support for the airport can be greatly improved in the city and surrounding communities, making it comparatively easier to obtain financing for not only operation and maintenance, but also for major capital improvements. The Chamber of Commerce and community service groups can be of immense help in such a campaign.

The implementation of this Master Plan development will not necessarily cause the need for additional personnel at the airport. As the number of facilities grow at the airport, however, additional City staff time may be needed to properly administer the airport. This might be most efficiently accomplished by providing additional staff at the airport who are paid out of the proceeds generated by new airport facilities.

It is also recommended that a spill prevention and counter measures program be formulated for the airport's fueling facilities, particularly if additional above ground fuel storage facilities are constructed at the airport. The fuel storage tanks at

Clarence E. Page Airport are owned by Mid-Continent Airmotive, who is responsible for reacting to any fuel storage emergencies.

Economic Benefits and Impacts

Airports contribute to the community's well-being in many different ways. The two major indicators of an airport's influence which may be measured are its transportation benefits and its economic impacts. Transportation benefits are the services that a local airport makes available to the surrounding area. The two services emphasized here are time saved and cost avoided by travelers, but benefits also include other advantages, such as improved transportation safety and comfort. Benefits are a measure of the improved transportation that the airport provides, and thus reflect the primary motive of a community in operating a public airport. Economic impacts are the regional economic activities, employment, and payrolls that can be attributed, directly and indirectly, to the operation of an airport. They describe the importance of aviation as an industry. Thus, the combination of increased efficiency and economic gain provide an indication of the total value the airport contributes to the community and the region.

In the operation of a private business, profit is a valid measure of the viability of the business. A public airport is usually operated as a public utility or community facility, with service, rather than profit, being the primary motive. Thus, profit is not of great significance in the determination of the regional economic significance of an airport.

As discussed above, benefits are those services that a community enjoys through the development and continued operation of an airport. Airports provide a variety of public benefits to the surrounding service area, the most obvious and of greatest value being time saved and cost avoided through the use of air transportation. Other benefits include the access to the national air transportation system that an airport provides; high levels of safety, comfort and convenience of aviation; and overall enhancement to the community. In addition, in the case of Clarence E. Page Airport, the benefit of reducing delays to aircraft utilizing Will Rogers World Airport. In providing access to the region, a reliever airport relieves congestion at a busy commercial service airport by providing general aviation aircraft with an attractive, usable and accessible alternative. Aircraft delays increase exponentially as traffic is added to a congested airport, and the benefits of a reliever airport can be quite large and may be expressed in the millions of dollars.

Many other benefits can be attributed to an airport, including the stimulation of additional business in the community, medical emergency and transportation benefits, civil defense facilities, community service aspects and public safety

aspects, among others. Not all of these benefits can be expressed in terms of dollars, but all are real and must be considered when addressing the value of an airport to a community.

Economic impacts generally fall into three categories: direct impacts, indirect impacts and induced impacts. *Direct* impacts are the result of activities performed on the airport by personnel with a direct involvement with aviation. Employment, purchasing of local goods and services, construction activities and capital improvements are examples of direct impacts. They may occur both on and off the airport. *Indirect* impacts are those impacts which are a result of off-airport activities that are attributable to airport activities. Induced impacts are those impacts which are the multiplier effect of the direct and indirect impacts. These can occur both locally and regionally.

Based on the methodology presented in the Federal Aviation Administration publication *Measuring the Regional Economic Significance of Airports,* generalized benefits and economic impacts can be established for Clarence E. Page Airport and are presented in the following table, entitled *AIRPORT ECONOMIC SIGNIFICANCE.* These figures are based on the number of based aircraft, both now and in the future, with an average number of both on-airport and off-airport employees attributed to these aircraft. In addition, an average salary is assigned each employee, with a multiplier then added to estimate induced benefits. The figures also represent the benefit that the airport has to the overall good of the community, taking into consideration the time and distance saved in driving to another general aviation airport (i.e., Wiley Post Airport). The measure of economic impact in this methodology is based on rules-of-thumb and averages derived for different types of airports, on a national basis, by the Federal Aviation Administration.

Table G1
AIRPORT ECONOMIC SIGNIFICANCE
Clarence E. Page Airport Master Plan

Year	Total Annual Transportation Benefit (Indirect Benefit)	Direct Plus Induced Benefit	Total
1991	$424,148	$331,528	$755,676
2012	$670,428	$524,028	$1,194,456

Because the FAA methodology uses generalized assumptions in the formulation of these amounts and 1985 data on which to base monetary estimates, these economic impact figures are considered to be conservative (low) for Clarence E. Page

Airport. However, even these conservative figures reflect the significance of the airport's contribution to the economy of the community and region. As can be seen, that contribution is expected to increase in the future, as the airport's role in providing aviation and non-aviation related facilities and services increases.

Financing Plan

Funding for the airport improvements program can be derived from a variety of sources. Each of these are discussed under the categorical headings of Grants, Revenue Bonds, General Obligation Bonds, Sales Tax, Bank Loans and Airport Revenues.

Grants. Under the Airport Improvements Program (AIP), the FAA grants funds to sponsors to cover a portion of the cost of airport construction. This includes land acquisition. Current legislation is set with a ninety/ten split for both planning and construction projects at general aviation airports. Eligible items under the AIP program are normally restricted to airfield facilities. There are some landside improvements eligible but they are normally those utilized for public purposes only. They do not include hangars and other facilities which would be used by individuals in a business nature.

Revenue Bonds. One possible source of financing, and one which is very often used for airport improvements throughout the United States, is the sale of revenue bonds. These are bonds which are retired from revenues generated by the facility constructed, or from all revenues occurring to the municipal airport. This method of financing does not impose an additional burden on the property owner as in the case of general obligation bonds. Also, the indebtedness created does not count against the city's bonding capacity and the revenue from the sales tax could be applied to retiring revenue bonds. Oklahoma law prohibits municipalities from issuing revenue bonds, although this method can be used by trusts and authorities established by municipalities for the purpose of issuing bonds. All bonds must be issued pursuant to Oklahoma Statutes.

General Obligation Bonds. These bonds must be voted on and approved by the people, and the cost is paid for by tax assessments on property owned by them. The issuance of general obligation bonds is governed by Oklahoma Statutes concerning the amount of indebtedness allowed. The major problem with general obligation bonds is that they are available only in limited amounts (as established by the bonding mil limit of the public entity and the willingness of the electorate to be taxed) and the airport will be competing with other capital improvement needs of the City for funds.

Sales Tax. Where revenues are sufficient, a certain portion of the sales tax can be earmarked for various improvements. Some communities have voted an additional sales tax levy to be applied towards specific projects. These sales tax revenues can be used to retire revenue bonds or they can be used to go directly towards the improvements.

Bank Loans. Some public entities, where evidence of ability to repay is adequate, have been able to obtain direct bank loans for certain improvements. These generally can be obtained at low interest rates and with flexibility in the payments.

Airport Revenues. Sound leasing practices are very important in the development of a financial program for an airport. A general aviation airport is both a public service and a business; therefore, it must be operated as both. Financial assistance to the public airport is often provided by the city, county, state, federal, and private sources where available. In return, the airport helps promote jobs, development, and economic benefits to those areas which it serves, as well as providing a major element of the public transportation system. This is the public service component. From a business standpoint, the airport has the ability to generate certain revenues, and therefore, the obligation to do so. The most successful and satisfactory method of accomplishing this, whether it be through the leasing of aviation activities or industrial activities, is through rental rate methods. Three such rental rate methods used at many of the airports around the country are land appraisal rates, per square foot rates, and percentage of sales, as outlined earlier.

Financial Feasibility

The funding of Clarence E. Page Airport's recommended Development Plan and Program is not only dependent upon the availability of Federal funds, but also dependent upon increased revenue generation at the airport, public/private development ventures, and community support. The FAA receives requests from airport sponsors which exceed the amount of funds available through the Airport Improvements Program. Therefore, Clarence E. Page Airport will be competing for Federal funds with the other general aviation airports in the region.

With this Master Plan, Clarence E. Page Airport can document its need for FAA development grant funds. The primary concern at this time is the source of the local funds to match the grant moneys, where anticipated, or for the total project where no matching funds are available. Most general aviation airports, including Clarence E. Page Airport are not totally self-financing. Historically, capital improvements at the airport have been financed through the use of funds unrelated to those generated at the airport. The following table presents a summary of historical airport revenues and expenditures for fiscal years 1986-1991.

Table G2
STATEMENT OF OPERATIONS INCOME AND EXPENSES, 1986-1991
Clarence E. Page Airport Master Plan

	Year Ended June 30,					
	1986	**1987**	**1988**	**1989**	**1990**	**1991**
REVENUES	$92,950	$88,293	$142,320	$128,455	$128,864	$171,725
EXPENDITURES	$337,901	$315,105	$319,422	$338,996	$227,894	$230,903
INCOME (Loss)	($244,951)	($226,812)	($177,102)	($210,541)	($99,030)	($59,178)

SOURCE: Oklahoma City Airports Comparison of Revenues and Expenditures.

For the twenty-year planning period, it is estimated that the local share of development costs for Clarence E. Page Airport will be approximately $16,710,900, if the recommended development plan is followed. Of that amount, $14,912,000, will be spent on projects which are able to be financed using revenue bonds or private financing. This leaves $1,798,900, or an average of approximately $89,945 per year over the twenty-year planning period, to be funded locally. This is an ambitious but reasonable goal for Clarence E. Page Airport and the Oklahoma City Airport Trust. It does not take into consideration possible future increases in airport generated revenues which can be used to offset all or a portion of the local share of future development costs.

The increases in revenues necessary to fund the Development Program can be generated in several ways. The first category of funds which will increase over the planning period are ground and facility lease revenues. At present, the City of Oklahoma City is taking advantage of existing resources by leasing land and facilities for aircraft storage and aircraft maintenance operations. As the airport develops, lease revenues will increase as additional commercial aviation facilities are constructed. Additional funds will also be generated from the new aircraft storage units (T-hangars, individual hangars and executive hangars) when constructed; however, because revenue bonds are a likely method to finance these improvements, the additional funds will go mainly toward bond retirement for a number of years after the hangars are completed.

In addition to those funds which will be generated on the airport, off-airport benefits must also be considered in the funding of airport improvements. The industrial and commercial development in the vicinity of the airport will directly benefit from the proximity to an adequate and well maintained airport, but will not generate funds which will be directly returned to Clarence E. Page Airport. In a

larger sense, certainly the economy of the City of Oklahoma City and the surrounding area benefits from having a quality aviation facility which is being provided at Clarence E. Page Airport. The economy of the area will also benefit from the continued development of the airport to better serve the business community. Thus, a portion of the indirect benefits which are generated by airport improvements should be funneled back into the airport for continued development.

With consideration of increased revenues generated on the airport and the off-airport economic benefits of continued airport development, the local share of the improvement cost involved in the Clarence E. Page Airport Development Plan is reasonable. The continued development of Clarence E. Page Airport cannot be a passive effort on the part of the City of Oklahoma City. This Airport Master Plan provides a selling tool and marketing strategies for the airport in combination with other business opportunities within the community. The facilities offered at Clarence E. Page Airport, along with other positive aspects of the Oklahoma City area, provide opportunities for business development which are very marketable. The airport is a valuable asset which benefits airport users as well as the citizens and businesses of the community as a whole. Clarence E. Page Airport should be recognized as an economic stimulator for the region and aggressively promoted as such.